



SDG COSTING & FINANCING FOR LOW-INCOME DEVELOPING COUNTRIES



SUSTAINABLE DEVELOPMENT
SOLUTIONS NETWORK
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More information on the [Working Group on SDG Costing and Financing](#).

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Executive Summary

The Sustainable Development Goals (SDGs) call for major societal transformations that will require significant fiscal outlays as well as private investments. The fiscal outlays cover public investments, the public provision of social services, and social protection for vulnerable populations. The key message of this paper, building on recent reports by the IMF and SDSN (IMF, 2019b; SDSN, 2018) is that the governments of Low-Income Developing Countries (LIDCs) will require a substantial increase in fiscal (budget) revenues, far beyond what they can achieve by their own fiscal reforms. For this reason, SDG financing will require substantial international cooperation to enable the LIDCs to finance their SDG fiscal outlays. One important source of increased revenues should be the globally coordinated taxation of ultra-high-net worth assets. Today's ultra-rich should help to pay for the survival and basic needs of the world's poorest people.

The countries considered in this paper include all 59 LIDCs as classified by the IMF (this list of countries is included in Appendix II). The LIDCs include all countries classified by the World Bank as Low-Income Countries (LICs), with the exception of North Korea and Syria, and a subset of Lower-Middle-Income Countries (LMICs). For the purposes of this paper, all references to LMICs refer *only* to the subset of LMIC countries that are also classified as LIDCs¹. Together, the 59 LIDCs have a combined 2019 population of 1.5 billion people, of which 645 million are in LICs and 904 million are in the LIDC subset of LMICs. Together, these 59 countries are expected to reach a population of just under two billion by 2030.

Virtually all of these countries will require substantially more fiscal resources to cover the financing requirements of the SDGs. The SDSN therefore assumes – and calls for – a bold program of increased domestic resource mobilization (DRM) in these countries. It is assumed that each country will raise the ratio of government revenues to GDP by 5 percentage points between 2019 and 2030. Yet even such a bold mobilization of fiscal resources would be insufficient to meet the full SDG funding needs. The resulting shortfall is referred to as the “SDG financing gap.”

According to our estimates, the average SDG financing gap per year for all 59 LIDCs is on the order of \$400 billion between 2019-2030. This is a huge sum, of course, from the point of view of the world's poor countries. Yet it is a manageable sum when viewed in the context of global production, constituting roughly 0.4 percent per annum of Gross World Product, and roughly 0.7 percent per annum of the combined GDP of the world's advanced economies. It is also a reasonable investment to tackle urgent and complex issues such as climate change, biodiversity loss, healthcare, education, social protection, water, sanitation, and green infrastructure in the world's LIDCs.

¹ The World Bank's LIC group includes countries with a GDP per capita at or below \$1,025, and LMIC group includes countries with a GDP per capita above \$US 1,025 and at or below \$US 3,995. The IMF's LIDC group includes most but not all countries with a GDP per capita at or below \$US 2,700. The major exclusions are India, Pakistan, and the Philippines, which are deemed to have market access similar to other emerging economies.

This paper proposes new international financing mechanisms to fill the SDG financing gap through the following measures (with targeted incremental dollar flows in parentheses): mobilizing private investments in blended financing (\$50 billion); mobilizing increased revenues earmarked for SDG-expenditures by closing international tax loopholes (\$50 billion); introducing globally harmonized taxes, such as wealth taxes for ultra-high net worth individuals (\$100 billion), financial transactions tax (\$50 billion), and carbon tax (\$50 billion); increasing and better targeting official development assistance (\$100 billion); and expanded private philanthropy through the Giving Pledge (\$30 billion). These quantitative targets are very preliminary at this stage. **A high priority for SDG financing is to prepare more detailed and precise estimates of the revenue-raising potential of the various policy options.**

Based on the estimates presented in the paper, the combination of the proposed policies would close the SDG financing gap. However, the estimates are still quite imprecise. Detailed empirical work will be needed to estimate potential revenues with greater precision. In the coming year, the SDSN will continue to work with academic institutions, NGOs and international organizations to refine the estimates of the revenue potential of the recommended tax changes, and will report to the UNGA in 2020.

The SDSN also recommends that all LIDC governments conduct an SDG Fiscal Needs Assessment (SDG FNA) in the coming year as a key step in SDG planning and budgeting at the country level, much like the guiding framework of the United Nations Integrated National Financing Framework (INFF) process. Multilateral institutions should focus efforts to help member states to prepare accurate SDG need assessments and financing strategies. There is currently no systematic collection, compilation and reporting on government budget spending across the major SDG sectors, and the SDSN calls for the publication of SDG-related fiscal data as a matter of high global priority.

It should be emphasized that SDG success will depend on much more than SDG financing. The LIDCs will need rapid economic growth, which in turn will require effective economic policies, macroeconomic balance, and low levels of corruption. Domestic resource mobilization is vital, and so too is the effective utilization of public revenues in well-designed and well-implemented programs of public investment and public service delivery. The international transfers emphasized in this paper must also be well utilized. We underscore the importance of high-quality, pooled financing mechanisms such as the Global Fund to Fight AIDS, TB, and Malaria.

The estimates in this study are based on an extensive literature review of SDG needs assessments in key sectors, including health, education, infrastructure, biodiversity, social protection, data for the SDGs and justice, as well as the much more limited literature on tax reforms and new taxes. Many expert practitioners on SDG needs assessments participated in an *ad hoc* Working Group on SDG Costing & Financing organized by the UN Sustainable Development Solutions Network (SDSN). The members of this ad hoc group generously offered their time and wisdom on SDG costing and needs. It is emphasized, however, that the conclusions of this paper are solely the responsibility of the SDSN Secretariat and do not reflect the views or official positions of any persons or organizations outside of the SDSN. It is also emphasized that our estimates are

provisional and evolving, and that needs assessments ultimately must take place at the country level. However, a global strategy is needed for closing the SDG financing gap, so this report proposes globally harmonized and earmarked taxes towards the SDGs.

I. Introduction

The 2030 Agenda for Sustainable Development provides policymakers and investors with a critical framework for the financing of solutions to sustainable development challenges. Tackling urgent and complex issues such as climate change, biodiversity loss, healthcare, education, social protection, water, sanitation, and green infrastructure, among others, requires adequate financing. To ensure a steady flow of investments, financiers require a coherent, measurable and time-bound framework, which is also politically supported by governments and global institutions alike. The Sustainable Development Goals (SDGs) offer that framework.

Despite the importance of the Agenda, no single government is currently on track to achieving the SDGs by 2030. This was demonstrated once again by the 2019 Global Sustainable Development Report, presenting the SDG Index and Dashboards for all UN member states. The findings of that report demonstrate that countries must increase their ambition significantly to meet the goals and targets. This shortfall pertains especially to Low-Income (LICs) and Lower-Middle-Income Countries (LMICs) that face an uphill development battle exacerbated by poverty and the shortfall of budget financing.

Four years after the adoption of the SDGs, many governments have yet to produce a comprehensive needs-based financial plan for meeting the SDGs. This is particularly concerning in poorer countries, which face the greatest challenges. The SDGs are complex and ambitious. Without an SDG-based budget, governments will be unable to deliver on the Goals.

The United Nations Secretary-General and Deputy Secretary-General requested that the Sustainable Development Solutions Network (SDSN) help to identify and present best estimates for the fiscal outlays required to achieve the SDGs in LICs and to identify ways to finance those outlays. To facilitate this work, SDSN convened the ad hoc Working Group on SDG Costing and Financing, co-chaired by Professor Jeffrey Sachs, Mr. Vitor Gaspar, Ms. Ceyla Pazarbasioglu and Mr. Jorge Moreira da Silva, in order to consolidate and compare the latest data on SDG needs assessments for the major SDG sectors.

Specifically, this paper aims to:

- a) Summarize the most recent SDG needs assessments from the academic and policy literature, with the aim to be comprehensive, and therefore covering: health, education, infrastructure (including climate adaptation and mitigation), agriculture, biodiversity & ecosystem services, social protection, justice, and data for the SDGs.

- b) Offer an updated estimate of overall SDG financing needs, as well as non-SDG public expenditure, and to compare these financing needs with the achievable domestic government revenues in order to calculate the SDG financing gap for the LIDCs.
- c) Identify ways to close the financing gap, including through international tax reforms, development finance and other official flows, private development assistance, and new, globally harmonized taxes earmarked to the SDGs.
- d) Recommend policy actions and enhanced international cooperation to secure adequate domestic and international SDG financing and to promote well-implemented, monitored and evaluated SDG investments.

The countries considered in this paper include all 59 LIDCs as classified by the IMF (this list of countries is included in Appendix II). The LIDCs include all countries classified by the World Bank as Low-Income Countries (LICs), with the exception of North Korea and Syria, and a subset of Lower-Middle-Income Countries (LMICs). For the purposes of this paper, all references to LMICs refer *only* to the subset of LMIC countries that are also classified as LIDCs. Together, the 59 LIDCs have a combined 2019 population of 1.5 billion people, of which 645 million are in LICs and 904 million are in the LIDC subset of LMICs. Together, these 59 countries are expected to reach a population of just under two billion by 2030.

It is important to underscore from the outset that this report only arrives at an order-of-magnitude estimate of SDG financing needs, and cannot in any way substitute for much-needed country-level costing and fiscal planning exercises to meet the SDGs. National efforts should be led by individual country governments in partnership with experts in the international financial institutions (IFIs), UN agencies, and other development partners including participants of the Working Group. This paper aims to stimulate such country-level SDG costing and financial planning exercises by compiling relevant estimates, presenting varying methods, and underlining the importance of a community of experts that can support countries in this work.

Again, this paper has greatly benefited from the ad hoc Working Group on SDG Costing and Financing; however, its participants are not in any way responsible or accountable for the conclusions and policy recommendations of this paper.

II. SDG Financing Needs

A. Overview

The focus of this report is on the public services and public investments to achieve the SDGs, and especially on the budgetary outlays that will be needed. (Schmidt-Traub, 2015) also includes SDG cost estimates for private-sector investments not considered here.

The SDSN focuses on the level of budgetary outlays needed to achieve the following:

- (1) Universal health coverage
- (2) Universal access to education for all children from pre-K through upper-secondary
- (3) Universal access to basic infrastructure (water, sanitation, electricity, transport)
- (4) Universal access to legal services
- (5) Universal access to social protection
- (6) Biodiversity conservation
- (7) Data for the SDGs
- (8) Humanitarian relief

In the cases of health, education, legal services, social protection, and biodiversity conservation, the assumption is cost of 100-percent coverage immediately (2019) and sustained through 2030. From 2019 onward, the SDSN assumes that no one is left to die for the want of basic healthcare coverage and that no child is deprived of access to schooling from pre-K to upper-secondary education. For infrastructure, the SDSN assumes that investments are made between 2019 and 2030 in order to achieve universal access to infrastructure services by 2030.

The focus is on most of the world's Low-Income-Developing-Countries (LIDCs). These are the countries that are eligible for concessional IMF financing, and that will need international financial transfers in order to achieve the SDGs. Basic data for this group of countries is shown in Table 1, including our projections for the period 2019-2030. Fortunately, the Upper-Middle-Income countries (UMICs) and the High-Income Countries (HICs) can generally finance the SDGs out of their own budgetary revenues without requiring international transfers.

Table 1: Summary Country Data²

	2019			2030			Average Per Year (2019-2030)		
	LICs	LMICs	LICs & LMICs	LICs	LMICs	LICs & LMICs	LICs	LMICs	LICs & LMICs
Countries	32	27	59	32	27	59			
GDP Growth	4.8%	4.9%	4.9%	5.7%	5.4%	5.5%	5.6%	5.2%	5.3%
GDP (US\$ Trillions)	0.5	1.6	2.1	0.9	2.8	3.7	0.7	2.1	2.8
Per Capita GDP (US\$)	790	1870	1284	1060	2782	1848	924	2312	1559
Population (Millions)	645	904	1549	844	1102	1946	742	1002	1744

Source: World Bank, World Development Indicators.

In order to estimate the SDG budget needs, the SDSN carried out an extensive literature review. The needs assessments used to construct the estimates in this report are not exhaustive of all published SDG needs assessments. In sectors where multiple studies exist, the one most similar in spirit to this paper’s exercise was selected. Criteria included the transparency of the methodology, whether the study disaggregates unit costs by country or by income categories (so that unit costs can be assigned to the 59 LIDCs in this report), and whether the investments are ambitious enough to reach the SDGs. Appendix III describes the studies used for each sector estimate of unit costs, as well as what method was applied where spending needs were not readily available for the LIDCs, or where additional steps were taken to avoid double counting. Appendix IV lists other SDG needs assessments that were not employed in the calculations for this report.

In some cases, the literature reports SDG needs as a percentage of GDP. In that case, the SDG needs were converted into dollars per capita using the United Nations World Population projections³ and IMF Gross Domestic Product projections.⁴ All dollar amounts are reported in real (inflation-adjusted) 2019 U.S. dollars.

B. Estimates of SDG Financing Needs

Based on the literature review, Table 2 lists unit costs per capita required in each sector. Note that the costs per capita for LIDCs are separated into LIC and LMIC, and later the estimates are combined to cover all 59 countries. In general, these estimates are the minimum costs possible to achieve basic coverage of SDG-related services. For example, the SDSN estimates that basic healthcare in LICs can be provided for \$86 per person per year. This compares with outlays in the high-income countries of \$3,000 per person per year or higher. Thus, a “gold standard” for

² Assuming countries stay in the same country grouping through 2030.

³ United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

⁴ IMF, World Economic Outlook, April 2019.

coverage is not the objective, but rather a minimum outlay consistent with basic human rights. Yet even at the minimum cost (a mere \$86 per person per year for healthcare) the fiscal costs are still beyond the financing means of the LIC governments.

These unit costs are then multiplied by the relevant population projections to estimate annual costs during 2019-2030. Once again, the assumption for services (health, education, social protection, etc.) is 100 percent coverage starting in 2019, while the assumption for infrastructure is a scale-up during 2019-2030 to achieve universal coverage by 2030. In all cases, the coverage is at the minimum feasible level to achieve basic human needs.⁵

In addition to the SDG outlays, governments have critical expenditures not considered strictly as SDGs investments. These include: public administration, courts, policing, defense, and other categories covered in “general government services,” “defense,” and “public order and safety,” in the national income accounts. These outlays come to an estimated 6 percent of GDP and should be added to the SDG costs in order to arrive at the total budgetary needs.

Table 2 summarizes per capita costs by sector. The total per capita annual cost to achieve the SDGs is estimated at \$414 for the LICs and \$541 for LMICs. Adding in the non-SDG budget categories, the total per capita fiscal costs come to \$460 for the LICs and \$644 for LMICs. This amounts to 59% of GDP in LICs and 36% of GDP in the LMICs in 2019.

⁵ A question arises as to whether synergies in the SDGs could lower the total costs, for example, if access to clean water and sanitation reduces the total healthcare costs. While such synergies surely exist, they are unlikely to affect the estimates of total needs by very much. The healthcare costs are the minimum costs to run a basic primary health system, which is needed even alongside full-scale SDG investments in water and sanitation. The total costs reflect the minimum sector needs in healthcare, schools, basic infrastructure, social protection, etc., and while their impact will be synergistic, their minimum-necessary costs will still be essentially additive as we assume.

Table 2: Unit Cost Estimates to Achieve the SDGs

Sector	Low-Income Countries		Lower-Middle-Income Countries	
	Per Capita Cost (2019 prices)	% of 2019 GDP	Per Capita Cost (2019 prices)	% of 2019 GDP
Health	\$85.7	10.8%	\$136.9	7.6%
Education	\$122.4	15.8%	\$167.5	9.5%
Infrastructure				
<i>Energy*</i>	\$30.4	3.9%	\$30.4	1.7%
<i>Flood protection*</i>	\$9.4	1.2%	\$9.4	0.5%
<i>Irrigation*</i>	\$4.1	0.5%	\$4.1	0.2%
<i>Transport*</i>	\$46.0	5.9%	\$46.0	2.6%
<i>WASH*</i>	\$21.2	2.7%	\$21.2	1.2%
<i>Telecommunications</i>	\$5.8	0.8%	\$10.1	0.6%
Biodiversity	\$4.9	0.6%	\$4.9	0.3%
Agriculture	\$9.5	1.2%	\$9.5	0.5%
Social protection				
<i>Child and Orphan Benefits</i>	\$18.4	2.4%	\$23.0	1.3%
<i>Maternity</i>	\$5.4	0.7%	\$6.5	0.4%
<i>Disability</i>	\$8.1	1.1%	\$13.3	0.8%
<i>Pension</i>	\$12.9	1.7%	\$28.5	1.6%
Justice	\$20.0	2.6%	\$20.0	1.1%
Humanitarian	\$9.3	1.2%	\$9.3	0.5%
Data	\$0.7	0.1%	\$0.7	0.0%
Sub-Total SDG Outlays	\$414.3	53.3%	\$541.3	30.7%
Non-SDG Public Expenditure	\$45.4	5.9%	\$103.1	5.9%
Total Fiscal Expenditures	\$459.8	59.1%	\$644.4	36.5%

*For infrastructure the regional averages were used in the model as inputs rather than the above listed unit costs.

Table 3 summarizes the total annual cost estimates by SDG sector for Low-Income Developing-Countries (LIDCs) in billions of 2019 US dollars. Total SDG investment needs increase from around \$753 billion in 2019 to \$1,000 billion in 2030.

Table 3: Total Costs to Finance the SDGs by Sector

(US\$ Billions in 2019 Constant Prices)

Sector	2019	2030	Average 2019-2030
Health	\$175.2	\$284.1	\$224.9
Education	\$230.4	\$288.0	\$258.7
Infrastructure	\$185.5	\$231.8	\$208.3
<i>Energy</i>	\$48.2	\$57.8	\$53.0
<i>Flood protection</i>	\$14.5	\$18.5	\$16.5
<i>Irrigation</i>	\$6.3	\$8.0	\$7.1
<i>Transport</i>	\$71.1	\$89.8	\$80.3
<i>WASH</i>	\$32.5	\$41.7	\$37.0
<i>Telecommunications</i>	\$12.9	\$16.1	\$14.5
Biodiversity	\$7.5	\$9.5	\$8.5
Agriculture	\$14.8	\$18.5	\$16.6
Social Protection	\$93.4	\$116.5	\$104.8
<i>Child and Orphan Benefits</i>	\$32.7	\$40.9	\$36.7
<i>Maternity</i>	\$9.4	\$11.7	\$10.5
<i>Disability</i>	\$17.3	\$21.6	\$19.4
<i>Pension</i>	\$34.1	\$42.3	\$38.1
Justice	\$31.0	\$38.9	\$34.9
Humanitarian	\$14.4	\$18.1	\$16.2
Data	\$1.1	\$1.4	\$1.2
TOTAL SDGs	\$753.2	\$1,006.8	\$874.0
Non-SDG Public Expenditure	\$122.5	\$152.0	\$137.0
TOTAL	\$875.7	\$1,158.8	\$1,011.0

Figure 1 shows that more than two-thirds of the SDG investment needs are associated with health, education and infrastructure expenditure requirements.

Figure 1: Cost Breakdowns

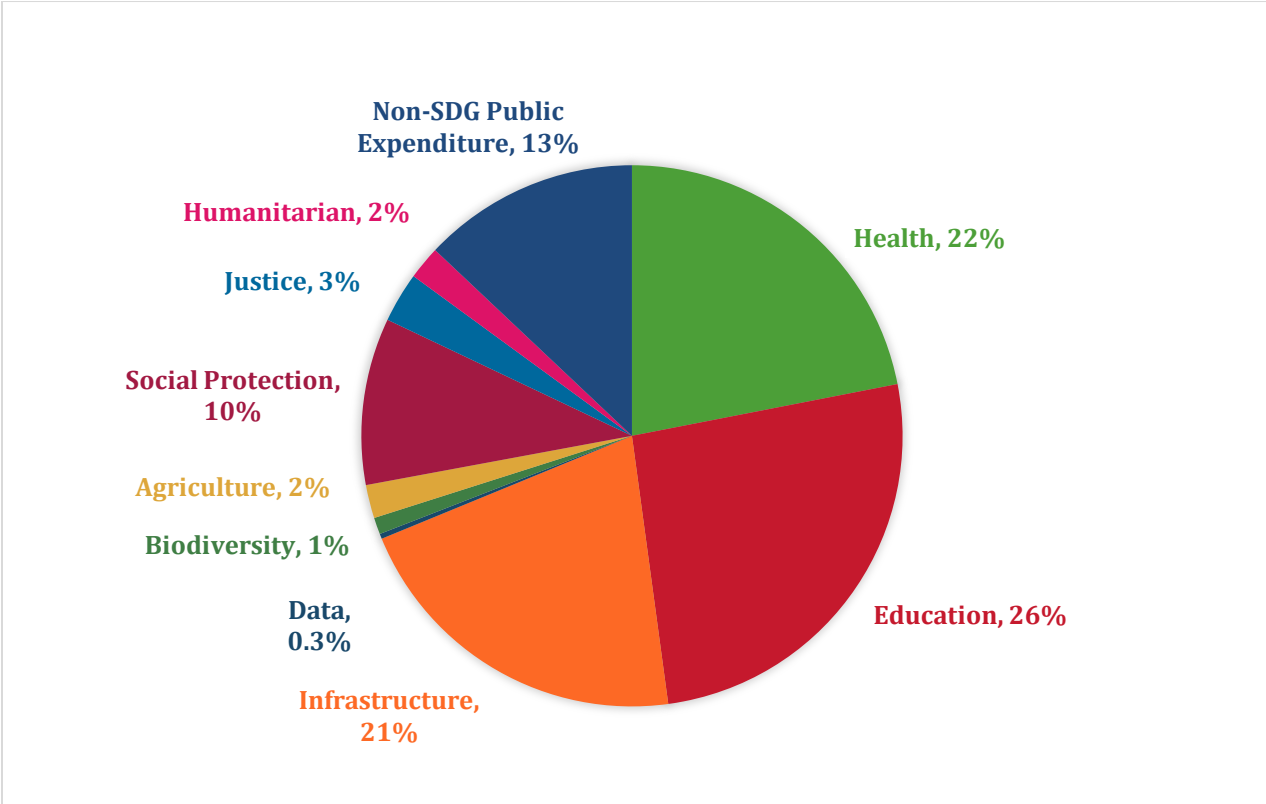


Table 4 summarizes the overall costs by country income category. Estimates are presented in \$US billions (2019 prices), per capita, and as a percentage of GDP.

Table 4: Fiscal Requirements by Country Income Grouping

US\$ Billions	2019	2030	Average 2019-2030
Low-Income (LICs)	\$294.6	\$406.8	\$348.2
Lower-Middle-Income (LMICs)	\$581.1	\$752.0	\$662.8
LICs and LMICs	\$875.7	\$1,158.8	\$1,011.0
US\$ Per Capita			
LICs	\$456.5	\$482.0	\$468.3
LMICs	\$643.1	\$682.2	\$660.9
LICs and LMICs	\$565.4	\$595.4	\$579.0
% GDP			
Average LICs	59%	45%	51%
Average LMICs	37%	27%	31%
Average LICs & LMICs	42%	31%	36%

The table makes clear that achieving the SDGs will require budget outlays on the order of 45-59 percent of GDP in LICs, and around 27-37 percent in LMICs. Such outlays are far beyond available domestic revenues. Therefore, the greatest SDG challenge for these countries arises from the fact that the available domestic budget revenues, even following ambitious domestic resource mobilization, will fall far short of the SDG budgetary requirements.

III. Calculating the SDG Financing Gap

In order to calculate the SDG Financing Gap, this report compares the SDG budget needs (inclusive of the necessary non-SDG outlays) with the potentially available domestic budget revenues. The SDSN makes a critical and bold assumption: that these countries **raise domestic revenues by 5 percentage points of GDP between 2019 and 2030, in a linear ramp-up of the revenue-GDP ratio.**⁶ Thus, if a country is collecting 20 percent of GDP in revenues today, it increases the domestic resource mobilization to 25 percent of GDP by 2030 in fixed percentage increments per year. This bold assumption is meant to put the heaviest onus of SDG financing squarely on the LICs themselves -- to the maximum extent feasible. It calls on all countries to mobilize more domestic revenues to cover the incremental costs associated with the SDGs.

⁶ This rule is followed except for three countries in which revenues are already above 40 percent of GDP: Kiribati, Lesotho and South Sudan

Data from the IMF (IMF, 2019c) provide the 2019 baseline for domestic revenue as a percentage of GDP. Total government revenues include taxes, profits of state-owned enterprises, social payments (such as payroll taxes for pensions), income on public assets, and grants received from abroad. GDP growth rates forecasted by the IMF (IMF, 2019e) provide an estimate of GDP for 2020-2024. The 2023-2024 growth rate is assumed to continue for 2024 – 2030 in order to project GDP until 2030. The SDSN then assumes a 5-percentage point rise in government revenues as a share of GDP, to arrive at the estimate of domestic revenues. Table 5 reports domestic revenue averages for the LIDCs in \$US billions, per capita, and as a percent of GDP.

Table 5: Domestic Revenue Mobilization Potential

<i>US\$ billions</i>	2019	2030	Average 2019-2030
Low-Income (LICs)	\$85.8	\$201.8	\$136.5
Lower-Middle-Income (LMICs)	\$231.6	\$560.4	\$376.3
LICs and LMICs	\$317.4	\$762.2	\$512.7
US\$ Per Capita			
LICs	\$132.9	\$239.1	\$181.0
LMICs	\$256.3	\$508.4	\$370.7
LICs and LMICs	\$204.9	\$391.6	\$289.8
% GDP			
Average LICs	17.2%	22.1%	19.8%
Average LMICs	14.6%	20.2%	17.7%
Average (LICs & LMICs)	15.2%	20.6%	18.2%

These projections reflect a highly ambitious yet realistic scenario for domestic resource mobilization, yet the revenues are far from adequate to achieve the SDGs. New financing options will be needed.

In addition to domestic revenues, Official Development Assistance (ODA) must play a key role in financing the SDGs. To calculate the SDG financing gap, ODA is assumed to continue as a constant fraction of the Gross National Income of the donor countries (based on the average for 2016 and 2017), assuming a 2 percent real growth of GNI in the donor countries (OECD, 2019e). Table 6 summarizes the business-as-usual estimates of ODA in \$US billions and per capita.

Table 6: ODA Flows to LICs and LMICs

<i>US\$ Billions</i>	2019	2030	Average 2019-2030
Low-Income Countries (LICs)	41.1	51.1	45.9
Lower-Middle-Income Countries (LMICs)	34.9	43.4	39.0
LICs and LMICs	76.0	94.5	85.0
<i>US\$ Per Capita</i>			
LICs	63.7	60.6	62.0
LMICs	38.7	39.4	39.0
LICs and LMICs	49.1	48.6	48.7

In addition to ODA flows, the estimate for current available financing includes philanthropy (OECD, 2019e). The average increase in philanthropic spending to developing countries between 2010 and 2017 of 14 percent was used to extrapolate this financing component to 2030. This follows the growth rate of total private philanthropy for development to LICs from OECD CRS database 2019.

The SDG financing gap is calculated as follows:

Fiscal costs by country (Table 4), which are composed of SDG financing needs + Non-SDG budget – Domestic Revenue Mobilization Potential (Table 5) – Projected ODA Flows (Table 6) – Projected Philanthropic Flows.

The results are shown in Table 7. On average during 2019 – 2030, the annual financing gap is on roughly \$400 billion or 15 percent of GDP for the entire group of countries. Even by 2030, after another decade of economic growth, the SDG financing gap is smaller but remains enormous, estimated to be at 17 percent of GDP in LICs and 5 percent of GDP in the LMICs. These massive gaps remain despite the assumption of a significant increase of domestic budget revenues equal to 5 percentage points of GDP.

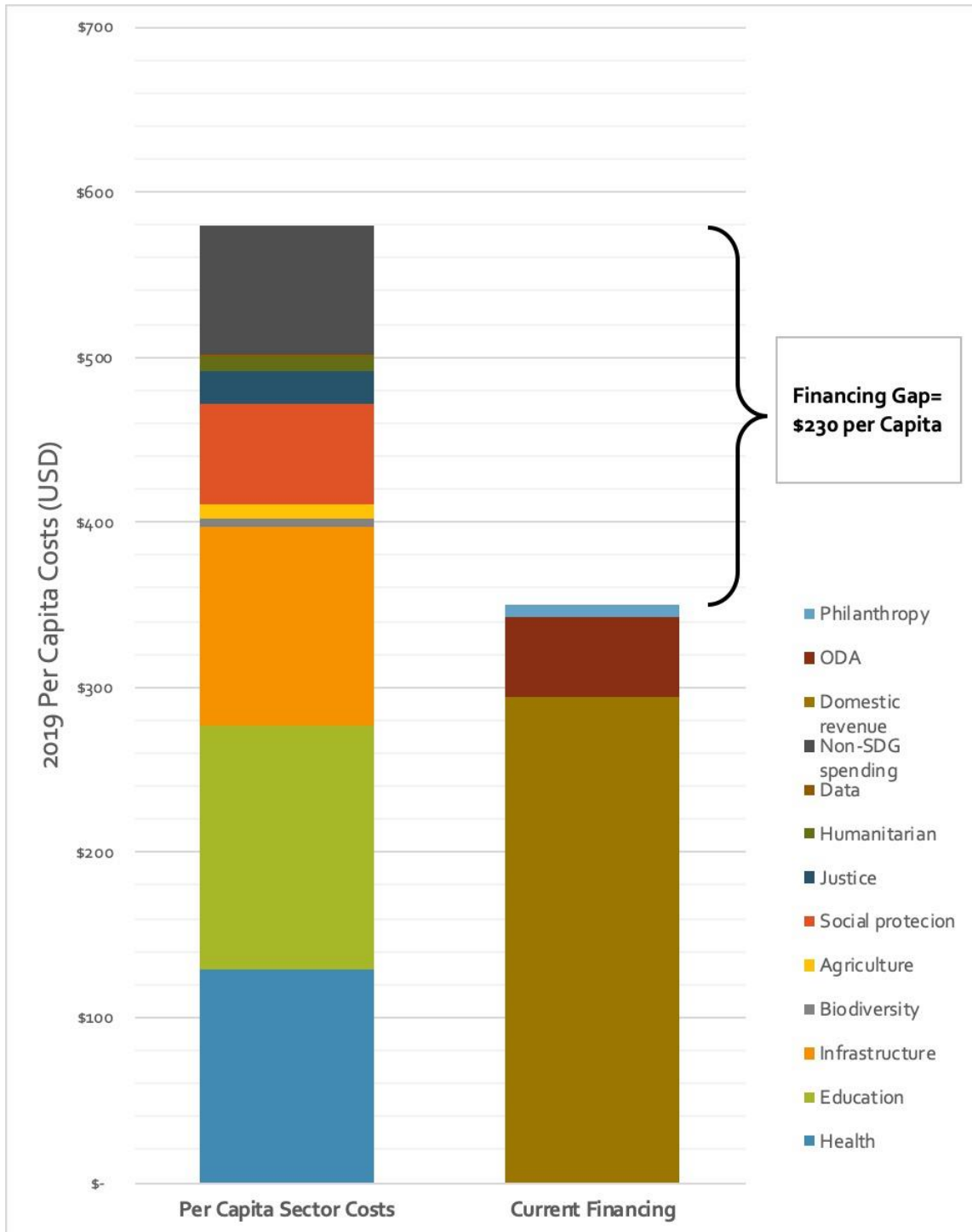
Table 7: Financing Gap per Annum*

US\$ Billions	2019	2030	Average 2019-2030
Low-Income Countries (LICs)	\$167.7	\$153.9	\$165.8
Lower-Middle-Income Countries (LMICs)	\$314.5	\$148.1	\$247.5
LICs and LMICs	\$476.8	\$278.2	\$400.6
US\$ Per Capita			
LICs	\$259.9	\$182.3	\$225.4
LMICs	\$348.1	\$134.4	\$251.2
LICs and LMICs	\$307.8	\$143.0	\$233.2
% GDP			
Average LICs	34%	17%	24%
Average LMICs	20%	5%	12%
Average LICs & LMICs	23%	8%	15%

* Philanthropy spending is not included in LIC and LMIC sub-estimates, as the data is not broken out by country classification.

Figure 2 shows the SDG costs per capita by sector together with the projected financing available for the SDGs in LICs. The average annual per capita SDG cost during 2019 - 2030 is just under \$600. The annual per capita SDG financing gap in LICs is around \$230.

Figure 2: The SDG Financing Gap, Average 2019-2030



The total SDG financing gap is daunting, on the order of an average \$400 billion per year. Yet this sum, vast relative to the resources available to the LIDCs, is very manageable from the point of view of the overall world economy, and particularly when compared to the size of the world's

advanced economies. These countries have the capacity to cover a meaningful fraction of the financing gap. In Table 8, the SDG financing gap is put in perspective and represented as the small fraction it comprises of both the overall wealth of the world and of the advanced economies, specifically.

The key message of Table 8 is that the SDG financing needs of the 59 LIDC countries can readily be sourced from the incomes of the advanced economies. The average annual SDG financing gap amounts to an average of just 0.7% of the advanced economies' GDP, and just 0.4% of the world economy as a whole.

Table 8: The SDG Financing Gap as a Percentage of Global Wealth

	2019	2030	Average 2019-2030
% GDP <i>Advanced Economies</i>	0.9%	0.4%	0.7%
% GDP <i>World</i>	0.5%	0.2%	0.4%

One way to reduce the estimated SDG financing gap is to assume a gradual scale-up of SDG services (e.g. health and education) alongside the gradual scale-up of domestic resource mobilization. By doing so, costs for SDG achievement are backloaded rather than immediate, and they are notably reduced. The funding gap in 2030 is estimated to be \$278 billion, a significant contrast with the funding gap average between 2019 and 2030 of \$400 billion and the 2019 gap of \$476 billion. Waiting longer is financially cheaper, but it comes at great human cost. Delays in funding can mean millions of unnecessary deaths and hundreds of millions of un- and under-educated children. The proposed scale-up of SDG outlays assumes immediate, 100 percent coverage of basic SDG services as of 2019, an assumption that is obviously unrealistic. In doing so, this paper's intent is to highlight the feasibility of accelerated, near-term SDG progress by combining a range of policy actions as an alternative to the backloaded SDG financing models that largely inform current SDG strategies.

The following discussion outlines these options to fill the financing gap as a package of measures that includes blended finance, globally coordinated and earmarked taxes, and philanthropy.

IV. Policy Options to Close the SDG Financing Gap

A. Overview

SDG 17 calls for global cooperation to enable the Low-Income Countries to meet the SDGs, and identifies five crucial targets for global financial cooperation in SDG public financing: strengthened domestic resource mobilization, Official Development Assistance (ODA), other financial resources, debt relief and restructuring, and promotion of financial investment in the world's poorest countries. Each of these is discussed below.

SDG 17 Targets

17.1. Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection.

17.2. Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 percent of ODA/GNI to developing countries and 0.15 to 0.20 percent of ODA/GNI to Least Developed Countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 percent of ODA/GNI to Least Developed Countries.

17.3. Mobilize additional financial resources for developing countries from multiple sources.

17.4. Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress.

17.5. Adopt and implement investment promotion regimes for Least Developed Countries.

While this paper addresses the broad options for mobilizing SDG budget financing, the suitability of strategies will necessarily vary country by country.

SDSN addresses six areas for increased budget revenues for SDG outlays:

- (B) Blended financing for infrastructure
- (C) International tax reform, especially to end corporate tax shifting and evasion
- (D) New globally harmonized taxes earmarked to the SDGs, especially on wealth
- (E) Increased Official Development Assistance (ODA)
- (F) Increased philanthropic giving, notably through the Giving Pledge
- (G) Debt relief of highly indebted LIDCs

B. Blended Finance for SDG Infrastructure

At least some of the necessary infrastructure financing, estimated to be over \$200 billion per year for the 59 countries, can be financed through project financing, including private equity and debt. These projects will often generate a flow of income from public tolls and tariff charges on roads, rail, water and sanitation, and power. A major challenge with private or blended financing is that much of the infrastructure will involve zero-toll services (e.g. roadways) or will service poor communities that are unable to pay commercial rates.

Nobody at this stage has detailed estimates of how much of the \$200 billion needed for infrastructure financing can therefore tap private capital markets, either by direct government borrowing against future project revenues, or through PPP arrangements in which private companies take a direct equity stake in the infrastructure projects.

For purposes here, an optimistic estimate of **\$50 billion per year in market financing of infrastructure projects**, or roughly one-fourth of the total, could be raised through private debt and equity in the context of blended financing for infrastructure. This is a very rough estimate to be tested and verified on a country-by-country basis. The challenge of infrastructure financing is greatest in the LICs, where private-market financing is most difficult given the very limited capacity of the economy to pay for infrastructure services. To illustrate this, between 2012 and 2017, only 6 percent (approximately \$9.3 billion) of the private finance mobilized by official development finance went to Low-Income Countries, whereas 70 percent was mobilized in Middle-Income Countries (OECD/UNCDF, 2019).

The OECD is currently working on more detailed guidance for policy-makers to support the implementation of blended finance, including to Low-Income Countries, acknowledging that these arrangements stand to benefit substantially from further analysis and guidance on issues such as effectively targeting economies and sectors that ensure blending delivers on its potential to mobilize capital, have substantial impact, and transform economies.

Blended Finance in Action: Promoting Off-Grid Energy Investment in Sub-Saharan Africa

Developing economies can leverage support from developed nations and international organizations to enable domestic conditions for private investments in social and environmental causes. One success story of such partnership is the ‘Beyond the Grid’ project initiated in 2014 by the USAID in partnership with governments of different African countries to expand off-grid and small-scale energy solutions in Sub-Saharan Africa. The goal of the partnership is to unlock private investments in off-grid energy production and to distribute electricity in remote areas of Africa where two out of three people still live without access to electricity (USAID, 2019). Aside from power distribution, there is a huge prospect for job creation for locals, infrastructure development for the smooth transfer of power and people, and the empowerment of rural women through their participation in the innovative energy sector (USAID, 2019).

At present, there are more than 40 private sector partners committed to creating social impact by investing over \$1 billion in mini-grid and power infrastructures in sub-Saharan Africa’s rural communities (USAID, 2019). This is a significant attempt to meet the initiative’s target of creating 60 million new connections for households and businesses by 2030 (USAID, 2019).

However, the continued success of the project is dependent on the ongoing support from local governments. So far, Kenya’s Ministry of Energy and Petroleum has played an exemplary role by developing legal and technical frameworks for connecting micro-grids to the central grid (USAID, 2019). With the support and guidance from the WBG, Kenya has been formulating and implementing reforms to expand private and commercial financing across the power sector and meet the fiscal target of achieving universal access to electricity by 2022 (OECD, 2019d). Some of the major reforms undertaken by the Government of Kenya are: (1) introduction of cost-reflective tariffs; (2) creation of sector regulators; (3) liberalization of generation activities; (4) creation of risk mitigation instruments from World Bank’s Multilateral Investment Guarantee Agency; and (5) creation of market-oriented power purchase agreements (PPAs) to establish relationships between generation and distribution utilities (OECD, 2019d).

The administrative and legislative bodies of other LICs and LMICs can observe these successful strategies, and within their own national context, identify and create a blueprint for reforms with the highest impact. With careful planning to ease avenues for preferred areas of investment, new industries can take hold, employment opportunities can be generated, and domestic spending within the country increased. With the right regulatory and incentive frameworks in place, private investment can then play a major role in strengthening the economic conditions and closing the finance gap to achieve the SDGs in LICs and LMICs.

C. International Tax Reform

It is estimated that tax havens are now home to \$25 trillion or more in offshore deposits, most of which belong to the top 0.1 percent of the planet’s wealthiest individuals (Henry, 2016). There are more than 90 financial secrecy jurisdictions around the world today, compared with just a dozen or so in the early 1970s. These tax havens facilitate massive tax evasion by rich individuals and by multinational companies, and enable illegality, including organized crime, kleptocracy, bribery, and crimes against humanity, including human trafficking. Indeed, the protection of these illicit activities should be seen as the fundamental and abiding purpose of these tax and secrecy havens (Crivelli et al., 2019)

The tax havens are one major cog in a massive global system of tax evasion and aggressive tax avoidance - exploiting loopholes and weak tax enforcement authorities (Shaxon, 2019) Tax evasion is facilitated by mechanisms such as transfer pricing within multinational companies, and by scams such as locating the intellectual property of major high-tech companies in tax havens. Instead of reporting profits subject to tax in major economies, the companies “pay” IP royalties to subsidiaries located in tax havens, thereby transferring company income from high-tax jurisdictions to the tax havens. It is difficult to estimate the total revenue loss due to such maneuvers, but detailed estimates (Crivelli et al., 2015, and Cobham and Janský, 2018) extrapolated to 2019 suggest tax losses on the order of 1-2 percent of GDP. Crivelli et al. offer the point estimate of 1.3 percent of GDP for the developing countries. This would come to around \$36 billion per year for the low-income developing countries during 2019-2030. An excellent recent overview of corporate tax erosion is provided by IMF (2019), “Corporate Taxation in the Global Economy.”

The OECD/G20 BEPS Project outlines 15 actions which include methods for addressing tax avoidance both domestically and internationally (IMF, 2019f). Each action has a different focus, allowing countries to choose the most relevant tools available. The overall recommendations focus on strengthening tax administration rules and laws, increasing transparency and reporting, and addressing hard-to-tax environments and structures, like the digital economy, MNEs, and intangibles (OECD, 2019a). There is no perfect recipe for addressing these DRM obstructions, but the BEPS initiative provides possible reforms to be addressed as needed in Low-Income-Developing-Countries (LIDCs) with additional revenue potential (IMF, 2019f).

Another major factor limiting tax revenues in developing countries is the global “race to the bottom” in corporate tax rates. Corporate tax rates have fallen from an average of 27.5 percent twelve years ago to 23.03 percent in 2018 (Tax Foundation, 2018). These decreases come at the same time that the net profits of the world’s top ten corporations have more than tripled in real terms, generating profits larger than the combined domestic revenues of 180 of the world’s poorest countries (McKinsey 2015, Global Justice Now 2015). Each country cuts its own tax rate to keep the rate lower than in peer countries, resulting in an ongoing trend of falling corporate tax payments in the face of soaring profits.

With a concerted global effort on policing profit shifting and base erosion and with the crackdown on the abusive use of tax havens for evasion and corruption, the Low-Income-Developing-Countries (LIDCs) **could mobilize around \$36 billion per year in additional revenues at current corporate tax rates if properly enforced, and up to \$50 billion per year if global cooperation also leads to higher corporate tax rates generally and the phaseout of corporate tax havens.** Yet all of this effort requires considerable cooperation at the global level, and especially among the OECD and G20 countries.

D. Globally Earmarked Taxes

There is no system of global taxation, nor is one likely any time soon. Yet it is possible and desirable to think about harmonized and coordinated tax efforts by UN member states in order

to raise revenues that would then be earmarked for SDG outlays. The “earmarking” could be accounted as additional ODA, or as a direct transfer from tax collections outside of ODA budgets. Either way, these funds would represent an additional net resource transfer to the budgets of the LIDCs. The term “earmarking” is used to mean that the intention of the new taxes would be to increase SDG financing; the taxes would not necessarily be earmarked in the juridical sense, only in the policy sense.

The SDSN recommends a focus on three harmonized and earmarked taxes:

- Ultra-high net worth
- Financial Transactions Tax
- Carbon Tax (to fund climate-related infrastructure)

Wealth Taxation

As global wealth concentration has increased, the number of billionaires and their combined net worth in real terms has roughly tripled in the past dozen years. As of March 2019, Forbes Magazine identified 2,153 billionaires with an estimated combined net worth of \$8.7 trillion (Forbes, 2019). With the global market appreciation since then, the combined wealth should be well above \$9 trillion at the time of this paper’s writing. A one percent tax on this net worth would therefore collect on the order of **\$87 billion per year** if successfully levied on all billionaires.

An earmarked net-worth tax should contemplate an even larger base. The base of individuals with net worth between \$30 million up to \$1 billion is estimated to number 256,000 individuals with a combined net worth of around \$32 trillion (White, 2019). Therefore, a 1 percent tax on this category would raise on the order of \$320 billion per year, assuming no change in the ultra-high-net-wealth tax base and with full compliance.

The world’s richest people are concentrated in the world’s richest countries. Ten countries account for 72.5 percent of the global high-net worth population (Wealth-X, 2019). A one percent tax on billionaire citizens solely in OECD countries would raise around \$58.7 billion. A two percent tax on this same population would raise \$117.4 billion.

The SDSN advocates that a global wealth tax should aim to raise **at least \$100 billion per year for the SDGs**, taking into account partial compliance, tax-base erosion, hidden assets, and other practical difficulties with wealth taxation.

Financial Transactions Tax

Financial markets around the world trade hundreds of billions of dollars in stocks and bonds—collectively referred to as securities— on a typical business day. A Financial Transactions Tax (FTT)

would impose a levy on the purchase of securities and on transactions involving derivatives. Many prominent economies have considered such a tax, and some have already implemented one, like Brazil, India, and South Africa. The G20 failed to pass an FTT tax in 2011. However, the EU is reportedly continuing the ongoing negotiations for a potential FTT within the EU (Kirwin, 2018). The EU has estimated that it could raise EUR 57 billion annually by imposing a tax of 0.1 percent on securities and 0.01 percent on derivatives (EU, 2013). In the United States, a one-basis-point transaction tax (0.01 percent) would raise \$185 billion over 10 years, or \$18.5 billion per year, according to estimates by the Tax Policy Center (Burman et al., 2015).

The FTT has long been advocated not only to raise revenues but to put “sand in the wheels” of speculative finance, a position made famous by Nobel Laureate James Tobin. The argument is that the global financial sectors in the US and UK in particular have become hypertrophied and underregulated, creating risks of financial crises such as in 1997 and 2008. The SDSN recommends an FTT that would aim to raise at least **\$50 billion per year**. The sums could potentially be higher, but there remains considerable uncertainty about the totals that could be efficiently collected.

Carbon Taxes

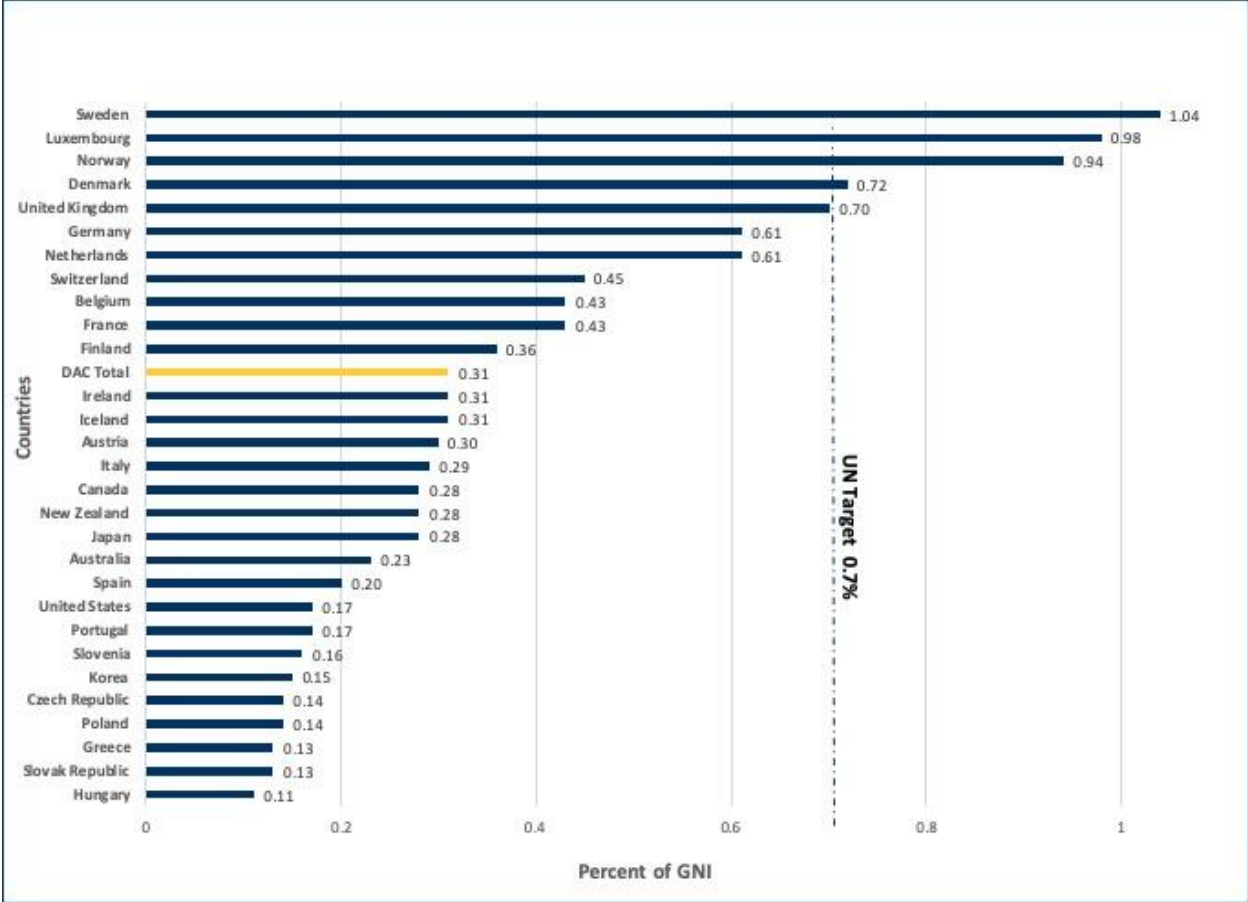
A globally coordinated carbon tax would be effective both in raising revenues for new programs for the SDGs and in reducing GHG emissions. According to the World Bank’s Carbon Pricing Dashboard, carbon pricing initiatives currently cover 46 national jurisdictions and 28 subnational jurisdictions, representing 20.1 percent of global GHG emissions. These generated around \$82 billion in revenue in 2018 (World Bank, 2019). Yet much more could be done and ambitions raised.

The annual emissions of the high-income countries (HICs) currently stands at around 40 percent of the world’s emissions, or roughly 14 billion tons of CO₂ per year (IPCC, 2019). If just \$4 per ton were earmarked for international transfers to help finance climate-related outlays in LIDCs, the revenues would amount to more than **\$50 billion per year**, a very reasonable target in view of the long-standing commitment of the HICs to provide developing countries with at least \$100 billion per year in climate financing by 2020. The estimated social cost of carbon (SOC) is far higher than \$4 per ton, and is currently put at around \$40 per ton. Higher carbon-tax revenues reflecting the SOC would presumably be earmarked to decarbonization within the high-income countries themselves.

E. Increasing Official Development Assistance (ODA)

As shown in Figure 6 below, only five of the DAC countries (Luxembourg, Germany, Denmark, Switzerland, France) currently achieve the 0.7 percent of GNI target for ODA. For the DAC donors as a whole, a rise in ODA from the current 0.31 percent of GNI to the target of 0.70 percent of GNI would raise roughly \$200 billion more per year in ODA, most of which could be directed towards the SDG financing gap.

Figure 3: ODA Grant Equivalent as a Percent of GNI



Source: OECD 2019b.

The United States, while being the largest donor in total outlays at \$34 billion, is one of the lowest as a share of GNI, just 0.17 percent. If the US alone were to meet the 0.7 percent standard, US and overall ODA would rise by roughly another \$100 billion per year.

The SDSN therefore calls on the donor countries to raise their ODA to the internationally agreed target of 0.7 percent of GNI, resulting in an additional \$200 billion per year in ODA. We conservatively assume that the increased ODA could produce an **additional \$100 billion** in SDG financing at a minimum (with other incremental ODA directed at other purposes, and some countries failing to reach their 0.7 percent of GNI commitments). It is also important to note that even with the limited ODA currently, much of it is not well directed towards the SDGs, and moving forward it should be a high priority for donors to redirect their assistance to SDG public services in the greatest need of scaling up.

F. The Giving Pledge

The Giving Pledge is a commitment by ultra-high-net-worth individuals to give at least half of their wealth through philanthropy during their lifetimes or in their bequests. Starting with just 40 US pledgers in 2010, the Giving Pledge now has 204 pledgers from 23 countries (The Giving Pledge, 2019). Their combined net worth is around \$1 trillion. **It is important to note that the number of billionaire signatories to the Giving Pledge remains below 10% of the world's billionaires.**

The Giving Pledge is not directed at any particular cause and is not subject to any self-reporting or accountability principles. For this reason, no one can be confident that it is yet having its intended effect. The SDSN believes that Giving Pledge signatories should direct at least half of their giving to the SDGs, which are, after all, the world's globally agreed international development goals to "leave no one behind."

The SDSN suggests that Giving Pledge donations, duly verified and monitored, should qualify as tax deductions from the 1% net worth tax. Individuals who therefore give more than 1% of their wealth per year would incur no wealth taxation.

The SDSN urges the Giving Pledge to mobilize SDG-directed philanthropy on the order of \$30 billion per year. The number of pledgers should rise to reach \$2 trillion of combined net worth. If the pledge disbursement from that wealth occurs between 2020-2030, and half of it is directed towards the SDGs, this would result in \$45 billion per year. Net of the deduction from the wealth tax, this would result in around **\$30 billion per year** for the SDGs in Giving Pledge philanthropy.

G. Debt Financing and its Limits

Debt financing by the central government can be an important source of public financing, but needs to be very judiciously used in order to avoid excessive debt that crowds out other public spending or leads to a sovereign debt crisis or high inflation. Countries should work closely with the IMF and World Bank to ensure that any additional debt be consistent with prudent macroeconomic frameworks consistent with meeting the SDGs. This macroeconomic prudence should be applied to the several policy proposals that would expand the level of borrowing in LDCs. ODA and blended finance can lead to higher (unsustainable) debt levels. To address this, there is ongoing work on the operationalization of the IMF Debt Limits Policy and the World Bank Non-Concessional Borrowing Policy.

Initiatives such as the Belt and Road Initiative, to build infrastructure in low-income Africa and Asia, have so far relied heavily on debt financing. The same concerns apply to financing SDG investments through borrowing from private capital markets. The SDSN warns against programs that seek to finance basic public services – notably health and education – on the basis of government borrowing rather than tax revenues and international transfers.

Indeed, the SDSN emphasizes the existing burden of public debts in many LIDCs, and the case for debt relief as called for by SDG 17.4. During the era of the Millennium Development Goals, the IMF and World Bank implemented an initiative to relieve the debts of the Heavily Indebted Poor Countries (HIPCs). The HIPC initiative is widely seen to have been successful, both in reducing the overhang of unpayable debt of the poorest countries, and in directing savings on debt servicing towards the MDG priorities.

As of today, there has been no organized initiative to evaluate current debt capacities relative to achieving the SDGs. A high priority for 2020 should therefore be to examine the potential case for debt relief as a means of redirecting scarce fiscal resources towards the SDGs. This effort should focus on the accumulated debts owed to official creditors such as the multilateral development banks, bilateral donor governments, and international commercial banks.

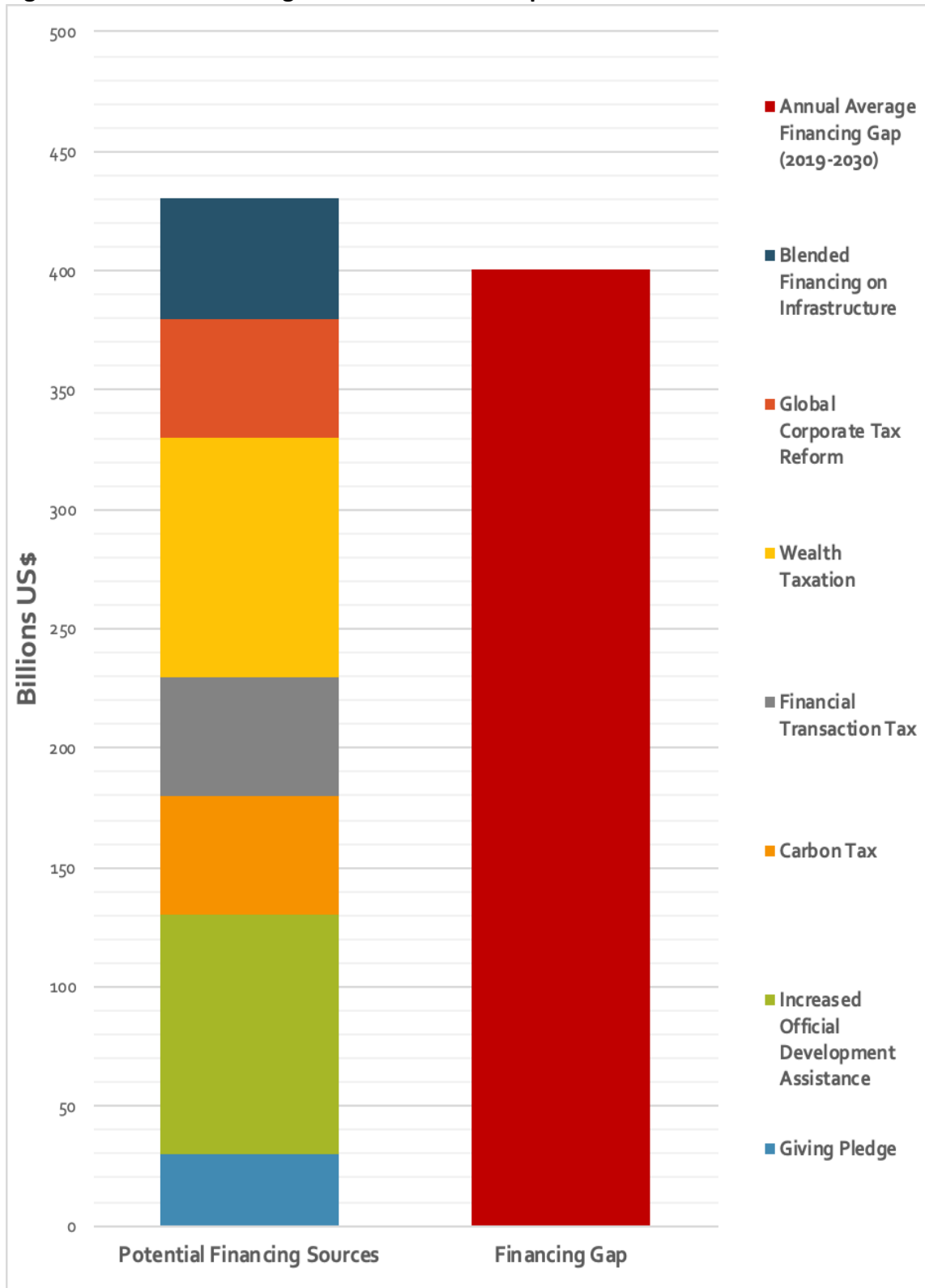
H. SDG Financing Options

This section begins with a puzzle: how to cover the \$400 billion per year SDG financing gap. The SDSN has arrived at a plausible portfolio of actions. These include:

Table 9: SDG Financing Options and their Potential Revenues

Financing Option		Potential Revenue
Blended Financing <i>Infrastructure</i>		\$50 Billion
Global Corporate Tax Reform & Higher Corporate Tax Rates		\$50 Billion
Earmarked Taxes	<i>Wealth Taxation</i>	\$100 Billion
	<i>Financial Transactions Tax</i>	\$50 Billion
	<i>Carbon Tax</i>	\$50 Billion
Increased Official Development Assistance		\$100 Billion
Giving Pledge		\$30 Billion
Debt Relief Operations		Scope Unknown
TOTAL		\$430 Billion

Figure 4: Potential Funding Sources: \$430 Billion per Year



In principle, incremental funding sources that exceed \$400 billion per year have been identified, slightly exceeding what is needed to close an SDG financing gap on the order of \$400 billion per year. Of course, collecting and distributing these incremental sources would be a huge political lift requiring many years and a reorientation of global politics. Given the urgency of the SDGs, the time is now to get the effort underway. The SDSN also underscores the obvious: these calculations are rough estimates. Nevertheless, the basic point is clear: the world is rich and can afford to enable the LIDCs to meet their fiscal requirements for the SDGs. It will nonetheless take many years to make the needed resource transfers and ensure they are effective. Yet the goal is feasible, worthy, and urgent.

V. Policy Roadmap for 2020

A. Take Concrete Steps in 2020 to Close the SDG Financing Gap

The SDSN calls for a UN General Assembly resolution calling on member states to undertake the actions needed to close the SDG financing gap, and focused on the kinds of specific approaches recommended in this report. In addition, the multilateral agencies (IMF, World Bank, UN, and others) should prioritize the mobilization of additional SDG financing.

B. More precise estimates of potential SDG revenue sources

The SDSN and partner institutions should sharpen the calculations on the SDG revenue potential of global tax reforms, new earmarked taxes (including wealth, carbon, and financial transactions), ODA, and philanthropy. Many of these areas remain little explored and require urgent new analysis. The SDSN looks forward to working with partner institutions on these calculations.

On a similar note, before now, there is no international statistical standard to measure and track resource flows to the SDGs. In response to this need, OECD has introduced a new measurement framework: total official support for sustainable development (TOSSD). Providers and recipients of development cooperation are working together to develop this new measure. TOSSD will provide greater transparency about the full array of official external support – bilateral and multilateral – towards the sustainable development of developing countries. It will also include the amounts of private finance mobilized by official interventions (e.g. through public-private partnerships) in support of sustainable development. This will be a major improvement in SDG finance monitoring.

C. Support country-level SDG planning, budgeting and implementation

Successful achievement of SDG targets requires prolonged, goal-oriented and time-bound planning. Budget planning and implementation of development goals should be preceded by

backcasting, a planning method that starts with the 2030 SDG objectives and works backwards to the present to identify the investments outlays per year needed achieve the time-bound objectives.

Costing analysis and government financing is particularly important for the LIDCs because of their urgent challenges in providing basic public goods, such as quality education, healthcare, drinking water, and sanitation. The main implication of country-level SDG costing and budgeting will be to estimate the financing gap that a country faces and to identify domestic, foreign and private resources to bridge the financing gap.

Integrated National Financing Frameworks (INFFs) will provide an important tool, serving as a guide for countries to assess the status of their overall financing frameworks and prioritize actions to help achieve the SDGs. INFFs prompt policymakers to take a holistic view of their financing strategies within the context of comprehensive planning and budgeting.

As countries strive to manage increasingly complex financing flows at the national level, as domestic public and private resources increase, and as the sources of external resources diversify, urgent and targeted solutions are needed and must be put into place.

Many governments are taking a two-phase approach to inform their holistic financing approaches: a Development Finance Assessment (DFA), followed by an Integrated National Financing Framework. The DFA process, supported by UNDP, provides an overview of the country's financing landscape and an examination of the supporting conditions for an INFF, identifying gaps and areas for further strengthening. This government-led assessment is tailored to the country's own context and priorities, and brings together diverse actors around a collective assessment of financing challenges and opportunities.

Following the DFA, INFFs can prompt governments to take a closer look at their budgetary frameworks and can initiate thinking around policy or institutional reforms. This approach underscores the need for an integrated vision of fiscal planning and management that goes beyond the status quo of traditional public financial management.

D. Step up the Role of International Partners

Multilateral international institutions, notably the IMF, World Bank, OECD, regional development banks, UN regional commissions, and the UN Country Teams, should play a significant role in building a better system for the standardization of methodologies for national needs assessments, particularly for countries in special circumstances and critical need of assistance. These institutions should take the lead and better collaborate in getting their members countries, staff, experts, academic partners, and others to focus on compiling more accurate fiscal profiles of countries and assessments to meet the SDGs. This process must be streamlined, with particular focus on the harmonization of methods across institutions.

UN Regional Commissions and Regional Needs Assessments

The SDSN strongly encourages fiscal needs assessments as a fundamental and imperative process in the effort to pursue sustainable development in all developing countries.

The United Nations Regional Commissions are beginning to prioritize their assistance in this regard, in efforts to better serve their respective regions. The United Nations Economic and Social Commission for the Asia-Pacific (UNESCAP) conducted a flagship survey published in 2019 presenting a comprehensive assessment of the investment needed to reach the SDGs in the region by 2030. They estimated an additional \$1.5 trillion per year to end poverty and hunger, provide basic health care, ensure quality education, enable infrastructure and clean energy for all, and address climate action and living in harmony with nature. These “ambitions beyond growth” as they coined it, are largely affordable for most countries in the region, given available public and private resources, although countries with special needs will require additional assistance (UNESCAP, 2019).

Drawing on this and other studies, ESCAP plans to develop a guidebook for national policy makers on SDG investment needs and financing strategies, again with a focus on the Asia-Pacific region. Each UN Regional Commission can follow-suit with a regional needs assessment and regionally-specific financing options, focusing especially on countries with critical needs.

E. Expand the Role of Global Funds

Pooled financing mechanisms have proven to be more effective than fragmented efforts for delivering results at scale. Achieving education, health and climate adaptation outcomes in LIDCs require well-designed aid programs that embrace innovative models of financing.

Private funding should be directed largely towards pooled SDG funds that support national SDG strategies and that ensure rigorous monitoring and evaluation of all funding. The Global Fund to Fight AIDS, TB, and Malaria, and the Global Alliance for Vaccines and Immunizations have been exemplary in this regard.

Effective pooled financing mechanisms can be a powerful instrument for global cooperation for the SDGs. The SDSN suggests the following eight core strengths of pooled SDG funding. Global funds can:

- Deploy independent experts to judge the technical soundness of programs and their compliance with best practices.

- Disburse funds directly to government agencies as well as civil society organizations, or the private sector, allowing for flexible approaches that are highly innovative and disbursement channels which are competitive.
- Work closely with business to harness innovation and ensure well-functioning markets, which can in-turn result in rapid cost reductions for major commodities.
- Facilitate the systematic review and independent evaluation of their core operations.
- Make financing decisions on the basis of clear country-by-country assessments, using per-capita income levels and total national income as guidelines. This data enables the funds to make financing decisions that are fair and effective.
- Act as global voices and advocates for mobilizing resources at scale and meeting the SDGs.
- Offer predictable funding over several years.
- Co-finance technology transfer, either as part of their program funding or through dedicated financing windows that are adapted to the types of technologies and applications financed by the pooled financing mechanism.

Pooled financing mechanisms should be a central component for channeling international funding to national budgets.

Some notable pooled funds to support the SDGs include:

- Global Fund to Fight AIDS, TB, and Malaria (GFATM)
- Global Alliance for Vaccines and Immunizations (GAVI)
- Global Environment Facility (GEF)
- Green Climate Fund (GCF)
- Fund for African Secondary Education (FASE) (under review by the African Union)
- Fund for African Health Delivery (FAHD) (under review by the African Union)
- Caritas Internationalis
- Islamic Development Bank Partnership for the SDGs

Of course, the mere existence of Global Funds is not a guarantee of success. Each mechanism must be well-resourced and well-designed. The inception and replenishment of global funds must start from the true problem of what is needed, not what is feasible. During the series of major development fund replenishments such as IDA, African Development Fund, Global Fund, GAVI, Green Climate Fund, discussions have revolved around what is feasible rather than what is needed. The international community must acknowledge the actual scale of inadequate finance and ask the question “How much would actually be needed to achieve the SDGs?” versus “How much can realistically be received to put towards the SDGs?”

It is important to identify the criteria that can help guide the public discussion on whether one or more pooled financing mechanisms are needed in a particular investment area and how such mechanisms should ideally be designed. Pooled global financing mechanisms appear necessary and appropriate when some of the following requirements are met:

- **Program- or system-based financing needs (as opposed to project-based financing):** Pooled financing mechanisms are ideally suited for co-financing government programs, such as national malaria-control programs or health systems. Helped by their ability to make macroeconomically significant funding available, they are an effective mechanism for focusing attention on the design and implementation of such programs, promoting the necessary learning, and supporting domestic revenue mobilization. Examples of areas where global financing mechanisms are well suited are health, education, smallholder farmers, nutrition, and so forth.
- **Substantial ODA needs, particularly for operating expenditure:** The purpose of pooled financing mechanisms is to pool concessional and, where possible, non-concessional finance. Therefore, they work well in areas and countries where substantial international co-financing is required around national programs.
- **Need to mobilize different types of stakeholders, including the private sector:** Pooled financing mechanisms have a tremendous ability to support multi-stakeholder partnerships in support of ambitious objectives.
- **Need to harmonize the international development finance architecture:** In some areas the world not only has too many bilateral but also too many multilateral financing mechanisms. For example, there are dozens of international climate funds. Such arrangements are inefficient and counterproductive. In such cases, pooled financing mechanisms can help bring greater coherence to the international development finance architecture.

Each global fund is unique, but key design features for effective pooled financing mechanisms might include the following:

- **Independent multilateral organization with a multi-stakeholder board:** Pooled financing mechanisms are particularly effective when they are an independent organization with its own voice, instead of dedicated trust funds, and have a link to the UN system (though the mechanisms do not need to be a dedicated UN organization). They should have a multi-stakeholder board comprising provider governments, recipient governments, civil society institutions, and the private sector. It is critical that they start with strong support from several member states.
- **System-based investment windows:** Pooled financing mechanisms should provide systems-based support (e.g. for health or education systems). In order to promote learning and an outcome focus it may be advisable to establish funding windows for specific needs, such as early childhood development, primary education, and lower-secondary education. Well-designed and adequately financed funding windows are fully consistent with system-based approaches.

- **Demand discovery around clearly defined program windows:** Each pooled financing mechanism should endeavor to make available macroeconomically significant volumes of funding in key areas (e.g. health systems, infectious diseases, etc.). Countries are then invited to submit their own proposals that compete for the available funds. Only the best ones that meet stringent technical and operational standards should be funded. Reasons for approving and rejecting proposals should be made explicit so that other countries can learn quickly how to improve their programs. Such ‘demand discovery’ will help drive innovation and results focus in each sector.
- **Independent technical review of country proposals and rigorous M&E:** Like the GFATM and Gavi and to ensure technical integrity, all funding requests to pooled financing mechanisms should be appraised by an independent technical board comprised of leading technical experts. Likewise, every program and the pooled financing mechanism itself must be subject to rigorous monitoring and evaluation (M&E) to identify lessons learnt, ensure sound use of public resources, and track results achieved. Outside CSOs can play an important role in promoting transparency and results focus of pooled financing mechanisms.
- **Multi-annual replenishment:** To ensure predictable resource flows, pooled financing mechanisms require multi-annual replenishment cycles, perhaps once every four years. Such replenishment cycles should be coordinated as efficiently as possible with the replenishment rounds for other pooled financing mechanisms.
- **Innovation in delivery:** Global financing mechanisms should allow for funds to be disbursed and managed by a broad range of partners, including national and local governments, civil society organizations, and possibly businesses. Such flexibility can help ensure effective use of scarce resources and encourages maximum innovation.

VI. Conclusion

The scale of financing the SDGs in the 59 LIDCs included in this paper is around \$1 trillion per year on average from 2019-2030. After taking account for increased domestic resource mobilization by countries, and assuming business-as-usual growth in official development assistance and philanthropy, an SDG financing gap on the order of \$400 billion per year remains. This exercise has highlighted the importance of national needs assessments for prompting governments to take a closer look at their budgetary frameworks and to initiate thinking around policy or institutional reforms to mobilize greater finance, both domestically and internationally. This approach underscores the need for an integrated vision of fiscal planning and management that goes beyond traditional public financial management in order to truly plan for meeting the Sustainable Development Goals.

Even with significant growth in domestic revenues in the LIDCs over the next 10 years, these countries will still require development assistance in order to achieve the SDGs. Several financing

options exist, including mobilizing private investment where appropriate; closing international tax loopholes; introducing globally harmonized taxes earmarked to the SDGs; increasing and better targeting official development assistance; and re-invigorating private philanthropy. Findings have demonstrated the scale of revenue potential from these options, equaling over \$400 billion per year. In combination, this potential revenue exceeds the financing needs of LIDCs and could become an important source of support.

The SDSN calls for a work program in 2020 to close the SDG financing gap. This entails considerable planning and budgeting at the country level; an increased effort of multilateral institutions; and the political mobilization of support for the vital increased transfer of resources domestically and internationally towards SDG priorities.

Time is short. The global community has 10 years remaining to achieve the SDGs, to promote prosperity, social justice, environmental sustainability, and most crucially, to ensure that no one is left behind. In a very rich world, aiming for anything less would be reckless and irresponsible.

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Appendix I. The Working Group on SDG Costing & Financing

In order to build a community of practice that can support country-level and global SDG costing and financial planning, SDSN convened the Working Group on SDG Costing and Financing co-chaired with colleagues at the IMF, World Bank and OECD. The individuals contributing to this work are affiliated with institutions and universities around the world and do so as independent advisors. Their names and primary affiliations are listed below.

Co-Chairs

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Naotaka Sugawara, World Bank
Jos Verbeek, World Bank
Dana Vorisek, World Bank
David Watkins, University of Washington
Paul Watkiss, Paul Watkiss Associates
Alasdair Mc William, UNESCO
Sarah Wyatt, The GEF
Shu Yu, World Bank

The overarching mandate for this group was to mobilize best costing practices and costing tools to support lower-income countries with the preparation of budgetary frameworks, revenue strategies, and development assistance strategies to achieve the SDGs. The findings of the group will facilitate the work of the IMF, World Bank, other UN agencies, UN country teams, academia, and most importantly national governments. The work will also inform the UN General Assembly on its mandates under the Addis Ababa Plan of Action for SDG Financing and the OECD-DAC on its advice to donor governments on supporting the SDGs.

This ongoing collaboration aligns with the growing momentum within the United Nations system behind generating needs assessments as part of the development planning process, including the United Nations Financing for Development Office's work around Integrated National Financing Frameworks (INFFs), which were highlighted during the 2019 High-Level Political Forum and will continue to be a key pillar of financing for development discussions.

Recent Work by the SDSN, IMF, World Bank, and OECD on SDG Costing

SDSN

In 2015, the SDSN presented the first comprehensive literature review carefully assessing available sector needs assessments at the global level and particularly for low-and lower-middle-income countries. This work covered both budgetary and non-budgetary investment needs. In 2018, SDSN focused on the budgetary allocations needed to meet the SDGs in the paper *Closing the SDG Budget Gap*, carried out in collaboration with *Move Humanity*, a global initiative launched by the Human Act Foundation in Denmark.

IMF

In early 2019 the IMF's Fiscal Affairs Department presented new findings from a staff discussion note, *Fiscal Policy and Development: Human, Social, and Physical Investment for the SDGs*. The analysis estimated the additional annual private and public spending required for meaningful progress on the SDGs, focused on education, health, roads, electricity, and water and sanitation (IMF, 2019b). An innovative costing methodology was applied to a sample of 155 countries: 49 low-income developing countries, 72 emerging market economies, and 34 advanced economies. The analysis was also refined for five country studies, including: Benin, Guatemala, Indonesia, Rwanda, and Vietnam.

The methodology quantified the annual cost of achieving high performance across the five SDG areas. For each sector, it was assumed that performance is a function of a set of input variables. IMF identified the median level of inputs for countries that perform well today, with performance being measured by SDG index scores. Then, for each country calculated spending in 2030 by assigning these input levels and controlling for other factors such as demographics and the level of GDP per capita projected in 2030. The IMF's main finding was that delivering on the SDG agenda will require additional spending in 2030 of \$0.5 trillion for low-income developing countries and \$2.1 trillion for emerging market economies. IMF highlighted the sharp contrast between the two groups. For emerging market economies, the average additional spending required represents about 4 percentage points of GDP. It was noted that this is a considerable challenge, but in most cases these economies can rely on their own resources to achieve these SDGs. However, the challenge is much greater for low-income developing countries, and the IMF's findings showed average additional spending represents 15 percentage points of GDP.

The difference between the IMF's findings for total spending needs versus SDSN are due to several reasons, the variation reflects differences in: (1) country groupings (49 LIDCs vs. 59 LIC and LMICs); (2) sectoral coverage; (3) definition of spending (that is, total spending, additional spending, financing gaps); and (4) reference years. Nevertheless, when comparing specific sectors for the same country groupings and harmonizing definitions of spending, estimates are comparable.

The IMF report summarizes its results as follows: additional spending required by 2030 is \$528 billion per year in constant 2016 dollars, or an additional 15.4 percentage points of GDP. After factoring a five-percentage point increase in tax revenues by 2030, the report estimates an overall financing gap of \$358 billion for the 49 LIDCs. In comparison, SDSN finds a financing gap of \$336 billion in 2030 for a subset of 59 Low-Income-Developing-Countries (LIDCs), or 18 percent of GDP. However, both studies have been explicit that the final figures result from a wide range of spending needs at the country level, ranging from an annual average of 16 percent of GDP to as high as 155 percent for one of the world's lowest income countries.

World Bank Group

The World Bank Group (WBG) plays a leading role in estimating investment needs targeted by the SDG framework and has recently put forth costing studies developed with the intention to minimize the drawbacks of earlier studies. The most comprehensive WBG study, 'Beyond the Gap', estimates that the average additional annual cost during 2015–2030 of meeting the infrastructure-related SDGs, plus infrastructure-related climate change mitigation, is 4.5–8.2 percent of GDP (Rozenberg and Fay, 2019). The study covers five sectors: electricity, transport, water and sanitation, flood protection, and irrigation. The largest investment needs were determined to be for infrastructure related to electricity and transport. The range of estimates is based on several key factors: the ambitiousness of the goals, the type and cost of the technologies used to achieve the goals, and assumptions about population growth and urbanization. Of these, the report finds that ambitiousness of the goals (in terms of access and quality) and spending efficiency are the most important determinants of costs.

OECD

The OECD's Development Co-operation Directorate promotes coordinated, innovative international action to accelerate progress towards the Sustainable Development Goals (SDGs) in developing countries and improve their financing. Supporting the OECD Development Assistance Committee (DAC), it helps set international principles and standards for development co-operation, and monitor how donors deliver on their commitments. Drawing upon the whole OECD expertise, the Directorate supports members and partners with data, analysis and guidance. Some recent work on SDG financing include the following topics.

The OECD Global Outlook on Financing for Sustainable Development 2019 warns against the growing SDG financing gap, and our insufficient understanding of the opportunities and risks faced by the various actors in an increasingly complex global financing system. To fulfil the commitments of the 2030 Agenda, and lift hundreds of millions of people out of extreme poverty, the international community needs to maximise the development footprint of existing and future resources, thereby "shifting the trillions" towards the SDGs. The first in a series, this report charts a forward path for the changes required in measurement, policies, and operations to achieve these ambitious objectives (OECD, 2019c).

The OECD publishes comprehensive statistics on development finance from DAC donors, other bilateral donors, philanthropic institutions. Data include both ODA and Other Official Flows. Starting with the 2019 data collection, reporters can indicate the SDG goal(s) or target(s) the activity aims to directly contribute to.

Total Official Support for Sustainable Development (TOSSD) is a new statistical measure for the SDG era. It aims to provide greater transparency about the full array of official external support – bilateral and multilateral – towards the sustainable development of developing countries and support for sustainable development at regional and global levels i.e. International Public Goods. It will also include the amounts of private finance mobilised by official interventions (e.g. through public-private partnerships) in support of sustainable development.

The Private Finance for Sustainable Development (PF4SD) Platform is a collective tool for all DAC members and partnering OECD committees to help mobilise additional and enhance private finance for the SDGs – “going from billions to trillions” – and to explore alternative forms of partnerships to help increase the development footprint of the private sector.

The work on SDG sector financing follows a dual track:

- The SDG Tracker applies artificial intelligence to better assess the alignment of Official Development Finance (ODF) with the 2030 Agenda, and explore interactions among SDGs.
- A series of sector studies explores the structure of financing (actors and instruments) in individual sectors, and assess the specific role of ODF as it articulates with other sources of financing. These studies also serve to build evidence linking sector-based analysis of development finance with research on financing for SDGs.

Appendix II. List of 59 Countries Included

Country	Region	Country classification	Country	Region	Country classification
Afghanistan	South Asia	LIC	Malawi	Sub-Saharan Africa	LIC
Bangladesh	South Asia	LMIC	Mali	Sub-Saharan Africa	LIC
Benin	Sub-Saharan Africa	LIC	Mauritania	Sub-Saharan Africa	LMIC
Bhutan	South Asia	LMIC	Moldova	Europe and Central Asia	LMIC
Burkina Faso	Sub-Saharan Africa	LIC	Mozambique	Sub-Saharan Africa	LIC
Burundi	Sub-Saharan Africa	LIC	Myanmar	East Asia and Pacific	LMIC
Cambodia	East Asia and Pacific	LMIC	Nepal	South Asia	LIC
Cameroon	Sub-Saharan Africa	LMIC	Nicaragua	Latin America and the Caribbean	LMIC
Central African Republic	Sub-Saharan Africa	LIC	Niger	Sub-Saharan Africa	LIC
Chad	Sub-Saharan Africa	LIC	Nigeria	Sub-Saharan Africa	LMIC
Comoros	Sub-Saharan Africa	LIC	Papua New Guinea	East Asia and Pacific	LMIC
Congo, Dem. Rep.	Sub-Saharan Africa	LMIC	Rwanda	Sub-Saharan Africa	LIC
Cote d'Ivoire	Sub-Saharan Africa	LMIC	Sao Tome and Principe	Sub-Saharan Africa	LMIC
Congo, Rep.	Sub-Saharan Africa	LIC	Senegal	Sub-Saharan Africa	LIC
Djibouti	Middle East and North Africa	LMIC	Sierra Leone	Sub-Saharan Africa	LIC
Eritrea	Sub-Saharan Africa	LIC	Solomon Islands	East Asia and Pacific	LMIC
Ethiopia	Sub-Saharan Africa	LIC	Somalia	Sub-Saharan Africa	LIC
Gambia, The	Sub-Saharan Africa	LIC	South Sudan	Sub-Saharan Africa	LIC
Ghana	Sub-Saharan Africa	LMIC	Sudan	Sub-Saharan Africa	LMIC
Guinea	Sub-Saharan Africa	LIC	Tajikistan	Europe and Central Asia	LIC
Guinea-Bissau	Sub-Saharan Africa	LIC	Tanzania	Sub-Saharan Africa	LIC
Haiti	Latin America and the Caribbean	LIC	Timor-Leste	East Asia and Pacific	LMIC
Honduras	Latin America and the Caribbean	LMIC	Togo	Sub-Saharan Africa	LIC
Kenya	Sub-Saharan Africa	LMIC	Uganda	Sub-Saharan Africa	LIC
Kiribati	East Asia and Pacific	LMIC	Uzbekistan	Europe and Central Asia	LMIC
Kyrgyz Republic	Europe and Central Asia	LMIC	Vietnam	East Asia and Pacific	LMIC
Lao PDR	East Asia and Pacific	LMIC	Yemen, Rep.	Middle East and North Africa	LIC
Lesotho	Sub-Saharan Africa	LMIC	Zambia	Sub-Saharan Africa	LMIC
Liberia	Sub-Saharan Africa	LIC	Zimbabwe	Sub-Saharan Africa	LIC
Madagascar	Sub-Saharan Africa	LIC			

Appendix III. Literature Review

Below is a literature review of the needs assessment studies that have provided the basis for SDSN estimates of SDG budget needs for Low-Income-Developing-Countries (LIDCs) in this paper. These chosen needs assessments align most closely, although not always exactly, to achieving the respective SDGs.

Health & Well-being

SDG 3 calls for ensuring healthy lives and promoting well-being for all at all ages. The associated targets for SDG 3 focus on tackling the major infectious diseases, non-communicable diseases (NCDs), child and maternal mortality, sexual and reproductive health, as well as providing universal health coverage (UHC). Major progress has been made in improving the health of millions of people, increasing life expectancy, reducing maternal and child mortality and fighting against leading communicable diseases. However, progress has stalled with regard to addressing major diseases, such as malaria and tuberculosis, while at least half the global population does not have access to essential health services and many of those who do suffer undue financial hardship, potentially pushing them into extreme poverty. Concerted efforts are required to achieve universal health coverage and sustainable financing for health, to address the growing burden of non-communicable diseases, including mental health, and to tackle antimicrobial resistance and health risks such as air pollution and inadequate water and sanitation.

Good health outcomes depend on sound policies and investments that address the clinical, environmental, and social dimensions of health, including healthy diets and healthy behaviors. This in turn requires improved policies and investments in many areas outside the health system, including education, gender equality, water and sanitation, clean energy, and environmental management.

Source

Disease Control Priorities is an initiative of the University of Washington's Department of Global Health and provides a periodic review of the most up-to-date evidence on cost-effective interventions to address the burden of disease in low-resource settings. The 3rd edition (DCP3) brought together over 500 scholars, policymakers, and technical experts across 9 volumes published between 2015 and 2018, each tackling a different topic area. DCP3 also introduced a new 'extended cost-effectiveness analysis' method for assessing the equity and financial protection considerations of extending coverage of proven effective interventions.

Disease Control Priorities in Developing Countries, Third Edition (DCP3) is a needs assessment that was published in 2017 and proposed a concrete notion of Universal Health Coverage (UHC)

that is based on a focused set of health interventions that provide very good value for money, address a significant disease burden, and are feasible to implement in low-income countries.

The analysis in DCP3 is built around 21 essential packages addressing the concerns of a major professional community (e.g., child health or surgery) and contains a mix of intersectoral policies and health-sector interventions. 71 intersectoral prevention policies were identified in total, 29 of which are priorities for early introduction. Interventions within the health sector were grouped into five platforms (population based, community level, health centre, first-level hospital, and referral hospital). DCP3 defines a model concept of essential universal health coverage (EUHC) with 218 interventions that provide a starting point for country-specific analysis of priorities. Assuming steady-state implementation by 2030, EUHC in lower-middle-income countries would reduce premature deaths by an estimated 4.2 million per year. Estimated total costs prove substantial: about 9.1% of (current) gross national income (GNI) in low-income countries and 5.2% of GNI in lower-middle-income countries.

Findings from the study concluded that financing the provision of continuing interventions against chronic conditions accounts for about half of the estimated incremental costs. For lower-middle-income countries, the mortality reduction from implementing the EUHC can only reach about half the mortality reduction in non-communicable diseases called for by the Sustainable Development Goals. The study acknowledges that full achievement will require increased investment or sustained intersectoral action, and actions by finance ministries to tax smoking and polluting emissions and to reduce or eliminate subsidies on fossil fuels appears of central importance. DCP3 is intended to be a model starting point for analyses at the country level, but country-specific cost structures, epidemiological needs, and national priorities will generally lead to definitions of EUHC that differ from country to country and from the model in this Review. DCP3 is particularly relevant as achievement of EUHC relies increasingly on greater domestic finance, with global developmental assistance in health focusing more on global public goods. In addition to assessing effects on mortality, DCP3 looked at outcomes of EUHC not encompassed by the disability-adjusted life-year metric and related cost-effectiveness analyses. The other objectives included financial protection (potentially better provided upstream by keeping people out of the hospital rather than downstream by paying their hospital bills for them), stillbirths averted, palliative care, contraception, and child physical and intellectual growth.

Source	Watkins, D., J. Qi, and S. Horton, 2017. Costing Universal Health Coverage: the DCP3 Model: DCP3 Working Paper Series. Vol. 20. Working Paper.
Coverage, development outcomes and key gaps	21 packages of essential health interventions that create a model health benefits package, termed “essential UHC” (EUHC). Assumes a target coverage of 80% for all interventions (adjusted to 100% for this report).
Clear identification of inputs to address overlaps/gaps with other sectors	Yes

Methodology	<p>The team identified 289 priority interventions, 218 of which were delivered through the health sector (and considered part of what DCP3 defined as “essential UHC”), and 71 of which (e.g., water and sanitation infrastructure, alcohol and tobacco taxes, food regulations, etc) were delivered through other sectors.</p> <p>The costing approach was informed by the “comparative statics” approach that is commonly used in economic analysis. Such an approach would treat population coverage of a specified set of interventions as an exogenous parameter and hold constant all other variables – such population size and structure and prices and quantities of goods and services – constant. The resulting cost estimate is interpreted as a counterfactual estimate of the change in cost due to an instantaneous shift in the exogenous parameter (in this case, coverage).</p>
Expenditure Type	Total and incremental (counterfactual) costs in 2015 assuming instantaneous shift in coverage to 80% (adjusted to 100% for this report)
Geographical scope and disaggregation	34 low-income and 49 lower-middle-income countries (World Bank 2014 classification); 83 countries in total
Consideration of climate change mitigation and adaptation	No
Relationship to SDGs	Addresses SDG3, reduce the burden of RMNCH disorders and communicable diseases (3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.A, 3.B, 3.C, 3.D)
Year (s) Covered	2019-2030
Investment Needs	<p>Per capita annual cost:</p> <p>LICs: US\$ 76 total and US\$ 53 incremental</p> <p>LMICs: US\$ 110 total and US\$ 61 incremental</p>
Adjustments made	Figures were updated to 2019 and increased to reflect 100% coverage of interventions by 2030. DCP3 (2017) estimates the per capita cost for LICs and LMCs. These were converted into 2019 prices using the World Bank GDP deflator for the United States ⁷ .

Education

SDG 4 calls for universal access to inclusive and equitable quality education for all from pre-primary through post-secondary level of schooling, including adult literacy. Education is the foundation for achieving the other 16 SDGs. Globally, there has not been significant progress on access to education, as 262 million children ages 6 to 17 were still out of school in 2017 (United Nations, 2019b). While millions are deprived of schooling, more than half of children and adolescents in both developing and developed economies are not meeting minimum proficiency standards in reading and mathematics. One of the major obstacles for the governments of LICs and LMICs to provide standard education for their citizens is the shortage of spending in the

⁷ World Bank, National Accounts Data

education sector. Many developing countries still lack basic infrastructure and facilities to strengthen their education system and meet the ambitious goal of education for all by 2030. It is important to analyze the total cost of education in order to allocate adequate resources and conduct financial planning for achieving SDG 4 targets.

Source

Recently, the International Commission on Financing Global Education Opportunity (Education Commission) expanded upon its 2016 flagship report *The Learning Generation: Investing in Education for a Changing World*. The forthcoming paper, “Costing the Learning Generation. 2019 Update,” conducts an extensive empirical analysis of financial needs projections for providing quality education for 135 low and middle-income countries. The costing assessment was undertaken at the country-level and projects the cost of education for preschool, primary, secondary, and post-secondary levels of schooling plus additional interventions to support learning and marginalized populations up to 2050. The Commission’s projections are based on an analysis of the past performance of the fastest improving countries’ education development as well as expectations around increased efficiency of spending. The Commission concluded with an estimation that an annual average investment close to \$200 billion from domestic governments and households and \$55 billion from external sources will be required to meet the SDG 4 targets from pre-primary through post-secondary in LIDCs by 2030, starting from when the SDGs were adopted in 2015. Of this, an estimated \$165 billion is the average annual cost to attain universal access and completion from pre-primary through secondary.

The Education Commission conducted a ‘bottom-up’ analysis by projecting the number of students from pre-school to post-secondary, and then forecasted the unit costs of recurring expenses plus non-recurrent capital costs. To estimate the cost of achieving basic quality education through secondary schooling by 2030, the cost of each schooling level was divided into four components: pupil-teacher ratio, teacher’s salaries, the aggregate of non-salary recurrent supporting expenditure, and construction of and furnishing of new buildings. Acknowledging the trend of diminishing returns to reducing class size after a certain threshold and higher cost associated with an increasing number of classrooms, the Education Commission assumed a pupil-teacher ratio of 20 for preschool, 40 for primary school, and 35 for secondary school for resource-constrained countries. While teachers’ salaries are the largest component of unit costs, non-salary recurrent costs, such as additional subsidies for marginalized students and interventions to support learning, equal between 20 and 40 percent of recurrent costs. Lastly, the model assumes that the number of classrooms needed is equal to the number of teachers and that schools should be replaced based on a 30-year lifespan. The analysis follows conservative unit cost estimates assuming efficient use of all provided resources without being lost to corruption.

<p>Source(s)</p>	<p>Education Commission (2019). Costing the Learning Generation. 2019 Update. Forthcoming.</p> <p>B. Wils (2019). The Learning Generation Costing Model. Methodology and Assumptions. Education Commission. Forthcoming.</p>
<p>Coverage, development outcomes and key gaps</p>	<p>Coverage: Achieving universal pre-primary, primary, lower and upper secondary, and post-secondary education.</p> <p>The Commission interprets the goal 4 of universal education by 2030 as meaning that by 2030 all children who reach school age will have equal access to free, quality primary and secondary education, and all those who start school will be on track to complete pre-primary, primary, and secondary schooling, and achieve learning levels and access to post-secondary education on par with children in rich countries today.</p>
<p>Clear identification of inputs to address overlaps/gaps with other sectors</p>	<p>Yes</p>
<p>Methodology</p>	<p>Intervention-based needs assessment: Conducted a ‘bottom-up’ analysis by projecting the number of students from pre-school to post-secondary, and then forecasted the unit costs of recurring expenses plus the non-recurrent capital cost.</p> <p>Four components were utilized to calculate the unit cost for each level of schooling up to secondary level: (1) pupil-teacher ratio, (2) teacher salaries, (3) non-salary recurrent costs, (4) capital costs.</p> <p>Post-secondary education costing was estimated as a lump sum rather than by the above four components. The unit cost for both tertiary and non-tertiary post-secondary education is assumed to be the same, while virtual post-secondary is assumed to cost 25 percent of GDP per capita</p> <p>The primary difference in the SDG model scenario versus the Vision pathway presented in the Learning Generation report is that all countries in the SDG model adhere to a linear path toward the externally defined target of universal enrollment in pre-primary, primary and secondary by 2030 rather than following a pathway based on the trajectories of the top improvers. Parameters were also set for countries to reach universal primary and secondary completion, although secondary completion rates do not reach 100 percent for all countries until after 2030 due to the way the model calculates the progression of students through the grade levels. The SDG model captures an additional focus on learning outcomes than what is already found in the Vision pathway by introducing higher levels of non-salary recurrent costs in support of spending on targeted interventions to promote learning.</p>
<p>Expenditure type</p>	<p>Total Costs</p> <p>CAPEX + OPEX</p>

Geographical scope and disaggregation	Country-level LICs: Economies with a Gross National Income (GNI) per capita of \$1,045 or less in 2014 LMICs: Economies with a GNI per capita between \$1,045 and \$4,125 in 2014 UMICs: Economies with a GNI per capita between \$4,125 and \$12,736 in 2014
Consideration of climate change, mitigation, and adaptation	No
Relationship to SDGs	SDGs 4.1, 4.3, 4.4, 4.5, 4.6, 4.7, 4.A, 4.C
Year (s) Covered	2015-2030
Investment needs	Total Cumulative Costs in LIDCs** for years 2019-2030 (**Pre-Primary to Secondary): \$2,076 billion Average annual cost in LIDCs for year 2019-2030 (Pre-Primary to Secondary): \$180.25 billion
Adjustments made	Averaged the estimates for LICs and a subset of 27 LMICs in 2019

*The Education Commission provided SDSN with totals for the 59 LIDCs, while in the report used LIC, LMIC and UMIC country groupings.

** This analysis was done for the purposes of this paper, however the Learning Generation model allows for projections of education progress for pre-primary through post-secondary and calculations of costs based on different parameters up to 2050.

Social Protections

SDG 1.3 commits all countries to “implement nationally appropriate social protection systems and measures for all, including floors” as part of Goal 1: End Poverty in All its Forms Everywhere, (United Nations, 2015). SDG 10.4 commits all countries to “adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality” as part of Goal 10: Reduce Inequality Within and Among Countries (United Nations, 2015).

Access to social services will be critical for achieving the SDGs, and tackling the socio-economic dimensions of extreme poverty. Social protections have emerged as one of the most important policy instruments for reducing poverty, promoting human capital, creating political stability, and generating inclusive development.

Disabled persons, mothers with newborns, pensioners, and orphans, are considered to be some of the most marginalized and vulnerable groups in society, particularly in low-income countries.

These countries tend to have a lower GDP, large populations of children, mothers with newborns, and lower levels of access to basic infrastructure and social services, such as health and education. While the GDP within some of these developing countries are growing, the most vulnerable groups tend to benefit the least from overall economic growth, as too often the advantages of growth fail to trickle down into their communities. Their inability to access important services such as health and education makes them particularly vulnerable to disease, isolation, economic shock, and more recently, environmental disasters.

Source

In 2017, the International Labor Organization (ILO), published a report which explores the costs of social protection floors in 57 developing countries, including 23 low-income-countries and 34 lower-middle-income-countries (LMICs).

The report looks at the costs of providing critical services, such as access to essential healthcare and basic income security for four groups, including children and orphans, women with newborns, persons with severe disabilities, and old-age pensioners.

Universal Child and orphan benefits

According to the ILO report, 'universal child and orphan benefits' covers all children 0-14 years of age, based on three distinct age brackets, 0-4, 5-9, and 10-14. The level of benefits is fixed at 25 percent of the national poverty line for the respective country, which across the 57 sample countries, adds up to 3.9% of GDP. In other words, it would cost on average 3.9% of GDP to implement 'universal child and orphan benefits' within each of the 57 LICs and LMICs identified in the study. Across the three age categories, it is estimated at 1.4 percent for ages 0-4, 1.3 percent for ages 5-9, and 1.2 percent for ages 10-14. These benefits have shown to improve primary and secondary school enrollment rates and health outcomes, while also reducing child poverty.

Universal maternity benefits

The report estimates the total average costs of providing universal maternity benefits for the 57 countries at 0.43 percent of GDP. This would provide coverage to mothers with newborns, which was estimated to be 3 percent of total population, a figure that was calculated based on country-specific fertility rates. It is assumed that a maternity cash benefit of 100 percent of the national poverty line would be provided to all mothers during four months around childbirth, in order to cover as a matter of priority the period when mothers and newborns are most vulnerable. Such cash benefits should help to reduce financial pressures on mothers, encourage them to take

adequate rest after childbirth, and facilitate access to health care services, including with regard to out-of-pocket costs and transport costs.

Universal disability benefits

According to global estimates, persons with disabilities constitute approximately 15 percent of the world’s population many of them live in developing countries. The average cost of providing universal disability benefits for the 57 sampled countries is estimated at 0.8 percent of GDP. This estimate is based on the proportion of persons with severe disabilities, which on average represents 3.4 percent of the total population in the 57 countries (WHO Estimated Years Living with Disability Database). The estimations are only for cases of severe disabilities, for which it is assumed that participation in employment may be challenging and may require additional support. The benefit level is set at 100 % of the national poverty line.

Universal pension benefits

The costing is based on the assumption that old-age pension benefits are provided to all persons aged 65 and older. The level of the benefit is fixed at 100 % of the national poverty line. Average cost of providing universal old-age pension for the 57 countries is 1.6 % of GDP. The estimated proportion of persons over 65 years on average represents 3.4 % of the population.

The ILO report does not outline current expenditures, focusing instead on total investment needs. This is because data on current expenditure is not available for many of the 57 countries listed in the report. Additionally, each of the benefits outlined come with an average 3 percent administrative cost, which have been integrated into the overall costs. Finally, it’s important to note that while the average costs cited in the report provide an overall estimate for the 57 countries, there can be significant variations at the country level. For example, in the 0-4 age category, the total cost for Mongolia would amount to 0.1 percent of GDP, whereas for Niger, it would cost 4.1 percent of GDP. Finally, the report only calculates the costs on a per-capita basis, without consideration of economies of scale for larger households. The estimates exhibit a high degree of variation across countries.

<p>Source</p>	<p>ILO, 2017. Universal Social Protection Floors: Costing Estimates and Affordability in 57 Lower Income Countries. An assessment by the Social Protection Department. Geneva: International Labour Office</p>
<p>Coverage, development outcomes and key gaps</p>	<p>Four components of the basic social security floor, including universal child and orphan benefits, universal maternity benefits, universal disability benefits, and universal pension benefits. Social protection includes both cash transfers and social insurance.</p> <p><u>Universal child benefits</u></p>

	<p>The level of benefits is fixed at 25 percent of the national poverty line for the respective country.</p> <p><u>Universal orphan benefits</u> Allowances for all orphans at 100 percent of the national poverty line.</p> <p><u>Universal maternity benefits</u> It is assumed that a maternity cash benefit of 100 percent of the national poverty line would be provided to all mothers during four months after childbirth, in order to cover as a matter of priority the period when mothers and newborns are most vulnerable.</p> <p><u>Universal disability benefits</u> The benefit level is set at 100 percent of the national poverty line.</p> <p><u>Universal pension benefits</u> The costing is based on the assumption that old-age pension benefits are provided to all persons aged 65 and older. The level of the benefit is fixed at 100 percent of the national poverty line.</p>
Clear identification of inputs to address overlaps/gaps with other sectors	Yes
Methodology	<p>The annual cost for a given benefit category is generally the product of the estimated beneficiary population and the unit cost of the benefit.</p> <p>The beneficiary population is determined by the eligibility criteria. Eligibility is decided categorically – that is, by belonging to a certain group, e.g. an orphan – and not determined by a means-test. The unit benefit level is set at the national poverty line, or a percentage of it. Higher benefit levels are encouraged for more adequate income security.</p> <p>One of the main concerns stemming from the costing results is the fact that countries with similar demographic structure and similar level of development show very different costs for the comparable set of benefits. This can be traced back to the use of the poverty line as the basis for the calculation of the benefit level.</p>
Expenditure Type	Total
Geographical scope and disaggregation	57 of the lowest-income countries
Consideration of climate change mitigation and adaptation	No
Relationship to SDGs	SDG 1.3, SDG 10.4
Year (s) Covered	2017-2030
Investment Needs	An average of 6.7 percent of GDP for all sampled countries per year (57 of the lowest-income countries) to provide universal social protections, including age-old pension, disability benefits, maternity benefits and child/orphan benefits.

Adjustments made	Using the list of social protection estimates for 59 low-income countries, these were then categorized as LICs and LMICs and the averages of the respective groupings were used.
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Agriculture & Food Security

SDG 2 calls for ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture. Addressing systemic and sustained hunger as part of SDG 2 is an incredibly pressing development need. The global proportion of undernourished people increased from 10.6 percent in 2015 to 11 percent in 2016, which translates to an increase of 38 million hungry people (United Nations, 2019b). To combat this rise in global hunger, there are necessary investments to be made, which include developing responses to emergencies; improving nutrition outcomes; meeting the unique needs of small and medium-sized farms and fisheries; maintaining soil quality; increasing the sustainability of commercial agriculture; reducing agricultural GHG emissions; adapting agriculture in the face of climate change; and providing research and development (R&D) for optimal technologies and solutions for agriculture and food security. Adequate funding towards these investments will set the world on track to achieve the goal of zero hunger by 2030.

Source

The report “Ending Hunger: What would it cost?” produced by the International Food Policy Research Institute (IFPRI) and the International Institute for Sustainable Development (IISD) addresses much of the costing needs for agriculture and food security sector as covered by SDG 2.

The authors of the report organize various interventions into five categories: Social Safety Nets, including cash transfers and food stamps; Farm Support, including subsidies for fertilizer, seeds and capital, R&D and improved technology; Rural Development, including infrastructure, education, storage, market access and value chains; Enabling Policies; and Nutrition.

The authors reserved their analysis to the first three categories -- Social Safety Nets, Farm Support, and Rural Development -- and omitted Enabling Policies and Nutrition due to lack of data and concerns about overlap with other sectors, including governance. The gaps from these omissions include investments related to legal and policy needs for structural change, micro-nutritional needs, climate change mitigation and adaptation, and emergency preparedness. In parallel to these omissions, the report includes some infrastructure costing as part of Rural Development (the third costing category) which overlaps with existing costing estimates used by SDSN in this analysis.

The authors combined the MIRAGRODEP economic model -- a dynamic computable general equilibrium (CGE), multi-country, multi-sector model -- with household surveys. This allowed the integration of analyses of national and international markets with socioeconomic trends, changes in consumption and production of certain products, and the complex dynamics of income sources based on precise characteristics of households. This created an estimate based on more targeted, efficient, and comprehensive needs assessments.

The report estimates a required incremental spending of \$1billion for seven developing countries (Ghana, Malawi, Nigeria, Senegal, Tanzania, Uganda and Zambia) to reach the targets set out under SDG 2. The authors then modelled this \$1billion to 56 countries and arrived at an incremental estimate of an additional \$11 billion needed for agriculture and food security investment.

Source	Laborde, D., Bizikova, L., Lallemand T., & Smaller, C. 2016. <i>Ending Hunger: What would it cost?</i> Winnipeg & Washington, D.C.: International Institute for Sustainable Development (IISD) & International Food Policy Research Institute (IFPRI).
Coverage, development outcomes and key gaps	Reaching SDG 2, “zero hunger”; as defined as hungry people comprising less than 5% of the population. Costing includes rural infrastructure expenditure; agriculture and food security R&D; and social spending, including food stamps and cash transfer programs. Gaps: Legal and policy needs for structural change; micro-nutritional needs; climate change mitigation and adaptation; emergency preparedness; and reducing GHG emissions of commercial agriculture.
Clear identification of inputs to address overlaps/gaps with other sectors	No
Methodology	Combined the MIRAGRODEP economic model -- a dynamic computable general equilibrium (CGE), multi-country, multi-sector model -- with household surveys. The report focuses mainly on seven African countries, selected for the availability and reliability of data, diversity of socioeconomic and agricultural situations, and the relevance to donors. With this data, the authors then extrapolated the cost of achieving the target and donor contributions at a global scale.
Expenditure Type	Incremental
Geographical scope and disaggregation	The full extrapolated scope includes 56 countries with diverse geographical, socioeconomic, and agricultural situations.
Consideration of climate change mitigation and adaptation	No
Relationship to SDGs	SDG 2, targets 2.1, 2.3, 2.A, 2.B.
Year (s) Covered	2009 - 2013 analysis, needs projected from 2016 through 2030
Investment Needs	Annual needs for the 7 preliminary countries: \$1 billion Global annual average cost: \$11 billion
Adjustments made	IFPRI (2016) estimates a required incremental spending of US\$1bn for 7 developing countries (Ghana, Malawi, Nigeria, Senegal, Tanzania, Uganda and Zambia) to reach the targets set out under SDG 2. This figure was converted into per capita terms and added to government

	expenditure on agriculture ⁸ to get from incremental to total spending needs. It was assumed that 35% of expenditures related to agriculture are already covered by the infrastructure and social protection estimates (for interventions such as irrigation and cash transfer programs). This is based on donor spending categories in agriculture in 2013 as shown in IFPRI (2016).
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Infrastructure ***(Including Decarbonization & Adaptation)***

SDG 9 calls for building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation. The importance of infrastructure is widely recognized and well researched, but there have been relatively few attempts to track and monitor infrastructure investments across countries. Recent studies have shown that achieving the SDGs will require significant increases in infrastructure investments, including for energy, water supply and sanitation, transport, and telecommunications. A particular focus of infrastructure investments must be on ensuring universal access to electricity, modern cooking fuels, water supply, and sanitation facilities. In addition to increasing the level of infrastructure investments, the composition of capital investments must shift away from unsustainable technologies (e.g. high greenhouse-gas emitting energy technologies or inefficient water use) towards sustainable infrastructure.

In developing countries, infrastructure disruptions are an everyday concern. They affect people’s well-being, economic prospects, and quality of life, and they undermine businesses, job creation, and economic development (Hallegatte et al, 2019). Resilient infrastructure, on the other hand, can be a lifeline to better health, better education and better livelihoods. There is a significant economic opportunity from investing in resilient infrastructure: the overall net benefit of doing so in developing countries would be \$4.2 trillion over the lifetime of new infrastructure, with \$4 benefit for each \$1 invested (Hallegatte et al, 2019).

The World Bank Group’s (WBG) most comprehensive study, “Beyond the Gap- How Countries Can Afford the Infrastructure They Need while Protecting the Planet”, suggests that reaching infrastructure-related SDGs will require investment of \$1.5–\$2.7 trillion per year in low- and middle-income countries (4.5-8.2 percent of these countries’ combined GDP) during 2015–30, depending on the policy choices and spending efficiency, among other factors (Rozenberg and Fay, 2019; Fay et al., 2019). This study complements a large body of work by the WBG on SDG costing at the regional and sectoral levels.

The Beyond the Gap report was particularly useful as their methodology included: numerous scenarios to explore uncertainty as well as consequences of policy; estimates for new investment

⁸ FAO, FAOSTAT. From the 7 countries 5 had data on government expenditure on agriculture, namely Ghana, Malawi, Nigeria, Uganda and Zambia.

costs as well as maintenance considerations; and estimates for access and climate goals, thus mapping this analysis even more squarely with countries’ actual investment needs for the SDGs.

Despite the comprehensive nature of this report in regards to adapting and maintaining the built environment in the face of climate change, it does not include telecommunications infrastructure costs. Telecommunications costs are directly linked to SDG 9.C and therefore need to be included in SDSN’s analysis attempting to cost estimates for the entire 2030 Agenda. As a result, inclusion of another report was necessary for this needs-illuminating exercise.

The Infrastructure Outlook released by Global Infrastructure Hub (GIH) in 2017 includes telecommunications as one of its seven sectors, making it simple to isolate this specific estimate and integrate it with the existing analysis of the previously mentioned WBG report.

The study by the GIH seeks to address this knowledge gap. It asks how much the world needs to spend on infrastructure in the years to 2040, and in which countries and sectors this investment will be required. It identifies the countries that appear to be on the right track, and by contrast, the countries that may wish to do more. It assesses future infrastructure investment requirements under two main scenarios. Firstly, examining how investment would develop if current trends continue, to understand how much countries are likely to spend in the years ahead. Secondly, it estimates an ‘investment need’ forecast based on the investment that would occur if countries were to match the performance of their best performing peers. This is after controlling for differences in the economic and demographic characteristics of each country, and considering the current quality of infrastructure. Peers are identified as other countries within the same income group, enabling GIH to benchmark countries’ infrastructure needs against the observed performance of other countries at a similar stage of development.

Though the information and analysis in the Outlook is incredibly useful, for the purposes of this exercise and the need to isolate telecommunications costing in the 59 LIDCs in this report, raw data from GIH’s website was used.

Source	Rozenberg, Julie, and Marianne Fay, eds. 2019. Beyond the Gap: How Countries Can Afford the Infrastructure They Need while Protecting the Planet. Sustainable Infrastructure Series. Washington, DC: World Bank. doi:10.1596/978-1-4648-1363-4. License: Creative Commons Attribution CC BY 3.0 IGO	Global Infrastructure Hub, Global Infrastructure Outlook- Infrastructure investment needs. 50 countries, 7 sectors to 2040. July 2017
Coverage, development outcomes and key gaps	Universal access to electricity; Best possible, but not universal, access to paved roads and expanded transport; Universal water supply and sanitation access; Flood protection; Irrigation. It does not include telecommunications costs.	Roads, including bridges; Railways, including all fixed aspects of robust rail networks, including tracks, signalling stations, and urban networks; Airports, including terminals, runways, etc; Sea ports; Electricity, including generation, transmission and distribution; Water, including infrastructure for treatment, collection, processing and distribution of both water and sewage; and Telecommunications, which includes physical infrastructure necessary for fixed line, mobile and broadband services.

Clear identification of inputs to address overlaps/gaps with other sectors	Yes	Yes
Methodology	<p><i>Water and sanitation:</i> The report used a World Bank costing model from Hutton and Varughese (2016). The policy scenarios costed were basic water and sanitation needs to directly and indirectly attain SDG targets 6.1 and 6.2.</p> <p><i>Irrigation:</i> The report used the GLOBIOM partial equilibrium model with irrigation module from Palazzo et al (2019). They analyzed moderate and high public support for irrigation through different subsidies.</p> <p><i>Power:</i> The report used six integrated assessment models to analyze global power investment needs in order to meet all electricity demands as well as mitigate climate change. The authors also introduced two specific modelling systems to analyze the costs of achieving SDG 13 in South America and SDG 7 in Sub-Saharan Africa as examples of both infrastructure and access needs.</p> <p><i>Transportation:</i> For rural access, the report used a World Bank rural investments model from Mikou and others (2019) to increase rural access to all season roads. For urban passengers' mobility demands as well as integrated climate change considerations, the authors used the ITF urban passenger model (2018) to cover robust governance, higher investment, fuel standards, land-use planning, and shared-mobility scenarios. Lastly, for global freight and passengers' needs, the authors used the Energy-economy-environment IMACLIM-R model to consider global mobility demand as well as mitigating climate change.</p> <p><i>Flood protection:</i> For coastal flood protection under SDG 13, the authors used the DIVA model to minimize total costs and risk associated with flooding. For river flood protection, the authors used the</p>	<p>Central to the approach is the identification of a benchmark country, or set of countries to act as the 'best performer' for each sector and income group. These best performers were defined as the countries which have the highest (quality adjusted) value of infrastructure stock relative to what they would be expected to have given their characteristics. Best performers were identified within three income groups based on World Bank definitions: low and lower-middle income; upper middle income; and high income. The econometric framework was motivated by the infrastructure research undertaken by Fay⁹ and Fay and Yepes¹⁰ This was the starting point for identifying the determinants of the per capita stock of infrastructure in each sector. The approach was therefore similar to Bogetic and Fedderke¹¹, Battacharya¹² and Chatterton and Puerto¹³ amongst others who follow the functional form used to forecast the per capita stock of infrastructure originally established by Fay and Yepes.</p> <p>The key innovation of the study was to combine the approaches used by these authors to model infrastructure needs, with the stochastic frontier modelling techniques undertaken by, for example, Bhattacharyya¹⁴, and the inefficiency modelling exercise in Khumbhakar et al¹⁵.</p>

⁹ Marianne Fay, Financing the future: infrastructure needs in Latin America, 2000-2005 (Washington DC: World Bank, 2001).
¹⁰ Marianne Fay and Tito Yepes, Investment in infrastructure: what is needed from 2000 to 2010 (Washington DC: World Bank, 2003).
¹¹ Johannes Fedderke and Zeljko Bogetic, Infrastructure and growth in South Africa: Benchmarking productivity and investment needs (Presentation to Economic Society of South Africa Conference, 2005).
¹² Biswa Nath Bhattacharyay, Estimating demand for infrastructure in energy, transport, telecommunications, water and sanitation in Asia and the Pacific: 2010-2020 (Tokyo: Asian Development Bank, 2010).
¹³ Isabel Chatterton and Olga Susana Puerto, Estimation of infrastructure investment needs in South Asia region: executive summary (Washington DC: World Bank, 2011).
¹⁴ Bhattacharyya, "Adjustment of Inputs and Measurement of Technical Efficiency: A Dynamic Panel Data Analysis of Egyptian manufacturing sectors", Empirical economics, 42(3) (2012): 863-80.
¹⁵ Hung-Jen Wang and Alan P. Horncastle Subal C. Kumbhakar, A practitioner's guide to stochastic frontier analysis using Stata (New York: Cambridge University Press, 2015).

	GLOFRIS global food risk model to also identify needs to minimize total cost and risk associated with river flooding.	
Expenditure Type	Total costs, CAPEX + OPEX + Maintenance	Total costs, CAPEX + OPEX + Maintenance
Geographical scope and disaggregation	Regional level	50 countries, selected to ensure coverage across regions and income groups
Consideration of climate change mitigation and adaptation	Yes	No
Relationship to SDGs	SDG 9.1, SDG 9.4,	SDG 9.1, SDG 9.4, SDG 9.C
Period Covered	2015 - 2030	2016 - 2040
Investment Needs	Average annual cost to develop infrastructure for the preferred scenario, 2015-2030 in low- and middle-income countries: US\$1.5 trillion, 4.5% of GDP (2015 constant prices)	Average annual global infrastructure spending requirement, 2016-2040 for 50 countries: \$3.7 trillion (2015 constant prices)
Adjustments made	World Bank (2018) provides regional average estimates. SDSN calculated the per capita cost for each region and applied them to each of the 59 countries according to region.	14 countries from the study were categorized as LICs and LMICs and the averages of the respective groupings were used. It was assumed that the government will only pay for 25% of the costs associated with telecommunication. The private sector investment component is not included in the estimate.

Infrastructure Costs by Region (Reflecting SDSN per capita adjustments)

INFRASTRUCTURE	Middle East and North		Sub-Saharan Africa		South Asia		East Asia and Pacific		Latin America and		Europe and Central Asia	
	Per capita cost (2019 prices)	% of GDP	Per capita cost (2019 prices)	% of GDP	Per capita cost (2019 prices)	% of GDP	Per capita cost (2019 prices)	% of GDP	Per capita cost (2019 prices)	% of GDP	Per capita cost (2019 prices)	% of GDP
Energy	\$ 15.61	1.60%	\$ 18.46	1.60%	\$ 47.57	3.10%	\$ 67.13	3.10%	\$ 24.15	1.40%	\$ 87.30	6.40%
Flood protection	\$ 2.34	0.24%	\$ 10.50	0.91%	\$ 8.75	0.57%	\$ 8.23	0.38%	\$ 4.83	0.28%	\$ 0.94	0.07%
Irrigation	\$ 0.98	0.10%	\$ 4.62	0.40%	\$ 4.60	0.30%	\$ 2.17	0.10%	\$ 1.72	0.10%	\$ 0.55	0.04%
Transport	\$ 40.96	4.20%	\$ 48.47	4.20%	\$ 36.83	2.40%	\$ 51.97	2.40%	\$ 34.50	2.00%	\$ 24.55	1.80%
WASH	\$ 11.70	1.20%	\$ 25.39	2.20%	\$ 16.88	1.10%	\$ 8.66	0.40%	\$ 12.07	0.70%	\$ 6.82	0.50%
Total	\$ 71.59	7.34%	\$ 107.44	9.31%	\$ 114.64	7.47%	\$ 138.16	6.38%	\$ 77.27	4.48%	\$ 120.15	8.81%

Ecosystem Services & Biodiversity

SDG 14 calls for the conservation and sustainable use of the oceans, seas and marine resources for sustainable development. SDG 15 calls for the protection, restoration and promotion of the sustainable use of terrestrial ecosystems, while sustainably managing forests, combating desertification, and halting and reversing land degradation and halting biodiversity loss.

Biological diversity is essential to sustainable development and acts as a critical engine for food security, water access, clean air, economic growth, reduction in disaster risk, and climate change mitigation and adaptation. Biodiversity ensures the effective functioning of ecosystem services, which are often essential for human wellbeing and communities. In 2010, world leaders came together to adopt the Strategic Plan for Biodiversity, including the Aichi Biodiversity Targets, for the 2011-2020 period. These 20 targets, to be achieved by 2020, provide a framework for global action on the preservation, sustainable use and fair and equitable sharing of biodiversity resources, including biodiversity management. They also create benchmarks for policy development and financing. They enhance synergies and promote alignments across all key sectors. To achieve the targets, policymakers and key stakeholders need to create appropriate policies and allocate adequate investments towards key interventions. It is increasingly clear that the targets are far from close to being met by 2020, in fact behavior is trending in the opposite direction and the current global impact on biodiversity is catastrophic.

Source

Creating a comprehensive needs-assessment for achieving the Aichi Biodiversity Targets can be incredibly difficult. While a number of needs-assessment studies have been conducted, most tend to outline very different interventions for achieving these targets. In other words, there seems to be some disagreement on what needs to be done, and as a result, the needs-assessment and costs tend to be quite different.

A global assessment of the investment and ongoing expenditure required to meet the Aichi Biodiversity Targets is a challenging undertaking. This is because the Aichi targets are very broad, which makes cost-analysis difficult; different interventions are needed in different countries and regions, which again makes uniform costing and adjustments difficult; and, finally, there are considerable gaps in the data.

However, since 2012, there have been two comprehensive and extensive needs-assessments reports that have been published on biodiversity, specifically focused on the achievement of the Aichi Biodiversity Targets. These reports are “Resourcing the Aichi Biodiversity Targets: A First Assessment of the Resources Required for Implementing the Strategic Plan for Biodiversity 2011-2020” (CBD, 2012a) and the “Needs Assessments for the 6th Replenishment of the Global Environment Facility” (CBD, 2012b). While both assessments were conducted in parallel, and are often complementary, nevertheless, they produced vastly different costs. There are a few reasons for this.

The Resourcing the Aichi Biodiversity Targets report outlines a global level needs-assessment, which also includes high-income countries. The assessment covers expenditure for a comprehensive set of biodiversity actions, administrative and transaction costs, and opportunity costs of inaction for each of the Aichi Biodiversity Targets. While the report conducts a comprehensive assessment costing across all Aichi targets, it does not take into consideration climate mitigation, adaptation and desertification.

In contrast, the GEF needs-assessment report present very different costs for achieving the Aichi Biodiversity targets. Firstly, the GEF report only looks at the 155 GEF designated developing countries. Secondly, the assessment only covers activities of “strategic importance”, which need to be publicly funded. Additionally, while the Resourcing the Aichi Biodiversity Targets assessment includes administrative, transaction, and opportunity costs, the GEF assessment does not. It only looks at expenditures for labour, materials, equipment and energy used in delivering biodiversity conservation activities. Thirdly, the GEF assessment outlines total needs for the 2014-2018 period, which is almost half the time-frame that the other accounts for. Finally, the GEF’s incremental reasoning and co-financing scenarios reduce the overall cost of the needs, resulting in a much lower figure. For example, the GEF cites the total expenditure needs as \$74-191 billion for the 2014-2018 period. However, once Incremental Reasoning (IR) is applied to this figure, the actual costs will amount to \$35-87 billion over 4 years. If the median co-financing option 1:4 is also considered, this figure drops to \$7-17 billion.

<p>Source</p>	<p>CBD, 2012. Full Assessment of the Amount of Funds Needed for the Implementation of the Convention for the Sixth Replenishment Period of the Trust Fund of the Global Environment Facility. An Assessment by the CBD Expert Team Members. Hyderabad: Convention on Biological Diversity. Montreal: Convention on Biological Diversity.</p>
<p>Coverage, development outcomes and key gaps</p>	<p>Achieving a subset of GEF-eligible activities of “strategic importance” to the Aichi Goals and Targets. These interventions include awareness programs such as CEPA, national biodiversity value assessments, creating incentive measures for ecosystem services, SPC programs, deforestation prevention programs, certification of fisheries and recovery plans for depleted resources, forest management programs, implementation of the Invasive Alien Species Management Frameworks, expansion of the Marine PA system (MPA), implementation of the Critically Endangered Species Conservation Action Plans, implementation of the in situ genetic diversity conservation, developing sub-national plans, implementing the Global Forest Restoration Programme, implementing the Coral Reef Restoration Programme, acceleration of the Nagoya Protocol ratification, NBSAP, capacity building and utilization of traditional knowledge, strengthening of the Clearing House Mechanism, science and technology transfer programs, and developing country-specific resource-mobilization strategies and plans.</p>

	Gaps: Analysis focuses only on sub-set of activities of “strategic importance, and no activity highlighted for Aichi Target 8 “Pollution Reduction”.
Clear identification of inputs to address overlaps/gaps with other sectors	Yes
Methodology	Estimated funding needs, target-by target, for selected activities that need to be publicly funded. Estimates of funding needs for each activity were derived from literature, examples of funding from similar GEF projects, and expert opinion. Incremental reasoning was then applied to establish how much funding would be needed for each activity (percentages ranging between 10 and 100%), from which three co-financing scenarios were derived (based on co-financing ratios of 1:2, 1:4 and 1:6).
Expenditure Type	The report covers both incremental and total needs. Incremental: to baseline investment needs for actions already undertaken in countries to achieve targets. Total needs: for GEF-eligible activities to achieve each target considered.
Geographical scope and disaggregation	All developing countries (155 GEF-eligible countries)
Consideration of climate change mitigation and adaptation	No
Relationship to SDGs	SDG14, SDG 15
Year (s) Covered	2014-2018
Investment Needs	Total needs of \$74-191 billion over 4 years (2014-2018)
Adjustments made	Rebased to US 2013 dollars. Investment needs were scaled down to LICs and LMICs on a per capita basis, yielding total investment needs of \$11-28 billion per year (\$3-7 billion in LICs, \$8-21 billion in LMICs). In the absence of data, investment needs for climate change adaptation and mitigation are not taken into account.

Data for the SDGs

The SDG targets to be met by 2030 are unattainable without collecting and referencing reliable data throughout policy planning and implementation processes. Timely, relevant, and disaggregated data utilization is crucial for better information about the needs, progress, and projections of development work. Data spans across all of the SDGs. Data-based planning and decision making is the most effective measure to maintain the momentum of sustainable development work by understanding environmental changes, social conditions, economic fluctuations, and financing gaps. It is essential for a collaborative effort of stakeholders from the

government-level to businesses, academia, international organizations, and non-profit organizations to contribute towards high-quality, timely data.

One of the major barriers to inclusive and sustainable development in developing economies is the lack of access to quality and reliable data that measures the progress of efforts towards SDGs. Low and lower-middle-income economies lack infrastructure, skilled-manpower, and resources that are needed in the process of collection and utilization of statistical data. Therefore, the governments of these developing countries should prioritize investing and finding investment sources towards quality data collection, secure digital data storage, and efficient mechanisms of data distribution. Investing in data will result in generating higher economic, social, and environmental returns. Government and policymakers can make better decisions of resource allocation on public goods by understanding the true needs and areas where the needs are most urgent and effective. Data can also help in the projection of the performance of current investments which provides security and motivation for private investors to put money in the developing economies.

Source

In April 2015, SDSN, in collaboration with other development experts from academic institutions and organizations, published a report 'Data for Development: A Needs Assessment for SDG Monitoring and Statistical Capacity Development' which highlighted the costing needs to monitor SDG progress through high-quality statistical data collection. The report concludes that a total of approximately \$902 to \$941 million per annum is required to set-up a statistical system capable of supporting and measuring SDGs in 77 lower-income countries that qualify for concessional borrowing through the International Development Association (IDA). It also emphasizes that more than 50 percent of the required cost should come from foreign aid and external borrowings to boost the capacity of 77 countries' statistical systems.

Acknowledging the wide coverage of the SDG agenda and the importance of statistical data to monitor progress on the 17 SDGs and their accompanying targets, the costing assessment for national statistical systems is derived from data of 8 different sources which are complementary and codependent on each other. These 8 sources of data instruments are: (1) census data; (2) household data; (3) agricultural surveys; (4) administrative data; (5) civil registration and vital statistics; (6) economic statistics including labor force and establishment surveys and trade statistics; (7) geospatial data; and (8) other environmental data. The report highlights the issue of overlaps of production methods for any given indicators, for example, data on malnutrition could be deprived from household surveys or from health administrative data such as hospital records. To overcome this issue, SDSN identified the most commonly applied production method for 77 sample countries.

The cost analysis is based on 2010 to 2015 average price levels and does not attempt to control for future macroeconomic changes. The estimation is predominantly focused on direct data collection expenses, including staff training and the cost of hardware and software equipment.

However, the analysis doesn't include costs related to administrative function and office infrastructure.

While the report focuses on the core components of an effective national monitoring system in low and lower-middle income countries, it excludes the cost associated with technology modernization that may increase or reduce the traditional cost for effective statistical program design. The authors claim that the cost estimations were fragmented or out-of-date since there was a lack of comprehensive data to conduct the ideal needs assessment. Nevertheless, the published cost estimation for the statistical system is a helpful mechanism to understand the scale of finance needed to strengthen and modernize national statistical systems to effectively measure and monitor progress towards the SDGs.

Source	Espey, J., Swanson, E., Badiie, S., Christensen, Z., Fischer, A., Levy, M., Yetman, G., de Sherbinin, A., Chen, R., Qiu, Y., Greenwell, G., Klein, T., Jutting, J., Jerven, M., Cameron, G., Aguilar Rivera, A.M., Arias, V.C., Lantei Mills, S. and Motivans, A. 2015. Data for Development: A Needs Assessment for SDG Monitoring and Statistical Capacity Development. Paris and New York: Sustainable Development Solutions Network.
Coverage, Development Outcomes, and Key Gaps	<p>Production and dissemination of data to monitor progress towards operationalizing and achieving the SDGs.</p> <p>Concentrates on data that are required to monitor progress on the 17 SDGs and their accompanying targets. The data was driven from 8 sources: (1) census data, (2) household data, (3) agricultural surveys, (4) administrative data, (5) civil registration and vital statistics, (6) economic statistics including labor force and establishment surveys and trade statistics, (7) geospatial data, and (8) other environmental data.</p> <p>Gaps: Data literacy; communication; long-term programs for the modernization of data systems.</p>
Clear identification of inputs to address overlaps/gaps with other sectors	Yes
Methodology	<p>Intervention-based needs assessment: The total operational cost of each statistical production method is estimated using average unit costs and then scaled-up to a global estimate.</p> <p>Estimated the total cost of collecting the key statistical tools over the period of 2015-2030 and then calculated the cost per annum.</p> <p>All estimations were based on 2010 to 2015 average price levels and were not controlled for future inflation or deflation.</p>
Expenditure Type	<p>Incremental (to current investment levels).</p> <p>Capex + Opex</p>
Geographical scope and disaggregation	Country-level (77 IDA-eligible countries – investment needs extrapolated from a subset of countries: 30 for the household survey component and 26 for the census component).
Consideration of climate change, mitigation, and adaptation	No
Relationship to SDGs	The 8 statistical instruments that were costed align with most all of the SDG indicators, as they function as means of implementation for monitoring progress toward the Goals.

Year (s) Covered	2016-2030
Investment Needs	Total costs for the production of SDG-relevant Data, per annum annual costs for 77 IDA and blend countries: \$902 to \$941 million. Total cost over the period of 15 years: \$13.5 to \$14.2 billion (2010 - 2015 price average, not attempting to control for inflation)
Adjustments made	The average and IDA country population was used to convert the figure into per capita terms. The World Bank GDP deflator for the United States was used to convert this figure into 2019 prices.

Humanitarian Response & Emergency Services

The SDGs’ central call to leave no one behind extends also to the victims of war, civil strife, and natural disasters who receive support in the form of humanitarian assistance. SDG 16 focuses on peace and security, which in turn requires investments in humanitarian assistance, emergency response, security, and peacekeeping. This paper, however, does not consider investment needs in security and peacekeeping, which are traditionally separated from development expenditure. This leaves emergency response and humanitarian work. Most so-called humanitarian spending goes towards long-term humanitarian situations, such as countries affected by civil war or instability. Emergency responses to natural disasters or the outbreak of a pandemic make up the remainder. SDSN is focused on emergency response work under SDG investment area 11.

Source

Currently there are no publicly available forward-looking needs assessment for incremental spending needs for humanitarian work in conflict zones through 2030, since the nature and scale of such events remains unpredictable. Natural disasters are stochastic, and insurance companies forecast them over a relatively short period of time, but their data is not publicly available. Much investment in climate change adaptation is slated to reduce the need for humanitarian responses to climate-related disasters, which further complicates any attempts to forecast investment needs for humanitarian work. So, there are substantial investment needs that cannot be forecasted quantitatively. The methods of SDG needs assessments do not apply to this important “line item” for financing the SDGs.

However, an attempt at forecasting these needs was made in the 2015 report “Investment Needs to Achieve the Sustainable Development Goals”, an SDSN working paper authored by Guido Schmidt-Traub. As part of broader estimates, Schmidt-Traub aimed to get a sense of possible

incremental funding needs for humanitarian assistance and emergency work by considering the scale of unfunded needs. At the very least, today's funding gap for humanitarian work and emergency assistance corresponds to the unfunded gap in inter-agency appeals. However, inter-agency humanitarian appeals cover only areas where United Nations organizations can operate effectively and in relative security, so they tend to underestimate total needs significantly.

Nevertheless, it was estimated that the annual development investment needs for the humanitarian and emergency services sectors in low- and lower-middle-income countries ranges from \$8-23 billion through 2030. This breaks down to an average per capita cost of \$2-7.

Incremental funding needs for humanitarian work and emergency response of \$8-23 billion do not constitute a needs assessment and should only be an indication of what the needs might be. This estimate does not consider spending needs for peacekeeping. A promising way forward is to integrate humanitarian investment needs under each SDG investment area and to forecast spending needs on emergency response using stochastic simulations of the incidence of weather and non-weather-related emergency situations.

Methodology and Adjustments Made

SDSN used the average of the incremental cost in the 2015 report which was estimated at \$8-23bn for LIC and LMCs. The existing spending on humanitarian assistance was estimated at \$9.3bn & \$24.5bn respectively. These figures also include other agencies and the private sector. Final figures were inflated to 2019.

Access to Justice

SDG 16 calls for the promotion of peaceful and inclusive societies for sustainable development, providing access to justice for all and building effective, accountable and inclusive institutions at all levels. At the heart of the 2030 Agenda for Sustainable Development lies a vision of a just, equitable, tolerant, open and socially inclusive world in which the needs of the most vulnerable are met. However, the Task Force on Justice estimates that a quarter of a billion people live in extreme conditions of injustice, deprived of any meaningful legal protections. At any one time, 1.5 billion people have justice problems they cannot solve and 4.5 billion people are excluded from the social, economic, and political opportunities the law provides. When viewed in the aggregate, these figures amount to 5.1 billion people – or approximately two-thirds of the world's population – who face at least one of these justice issues, with many confronted by multiple injustices. The Task Force argues that without increased justice, world leaders will be unable to end poverty and reduce inequality. Nor will they be able to reach the furthest behind, create conditions for shared and sustainable prosperity, or promote peace and inclusion.

Source

In 2019, the Task Force on Justice published a report ‘Justice for All’ which explores the costs of providing justice for all globally. The report calculates the costs of having a justice system at the local level, both relatively informal mechanisms (traditional, religious and civil society), and front-line formal organizations such as the police and local courts. The justice costings are made for a basic level of service provision and they are based on standard delivery models, while acknowledging that improved systems can be more efficient. The cost drivers are frontline staff, with assumptions made for staff numbers and salary levels.

The analysis on the size and scope of the justice gap was conducted by the World Justice Project, in collaboration with other partners who took part in the Justice Gap Working Group. The estimate of the global justice gap is based on a conceptual framework that is people-centered and comprehensive. Over 600 potential data sources were audited, including global and national-level datasets and administrative, survey-based, and qualitative sources of data.

The analysis draws on methodologies used to calculate the cost of providing basic frontline health and education services during the Millennium Development Goal (MDG) era. The following components of basic frontline justice provision, include:

- Legal advice, assistance and empowerment, provided in communities by paralegals, lawyers, legal advice centers, unions or advocacy groups.
- Formal justice institutions that play a frontline role in resolving conflicts, disputes and grievances, including lower-tier courts, community police, and the criminal justice chain.
- Alternative mechanisms to resolve legal problems, conflicts, disputes and grievances, such as community mediation, traditional courts, and ombudsmen.
- Mechanisms that improve the accountability of the justice system for the services they provide to people and communities, and that tackle corruption and abuse.

The report estimates that in low-income countries, it would cost \$20 per year to provide each person with access to basic justice services. Formal justice institutions account for most of these costs.

Literature	Justice for All, 2019. The report of the Task Force on Justice. An assessment by The Task Force on Justice. New York: Pathfinders for Peaceful, Just and Inclusive Societies.
Coverage, development outcomes and key gaps	The cost of front-line staff in providing justice at the local level, both informal and formal scenarios. Including:

	<ul style="list-style-type: none"> • Legal advice, assistance and empowerment provided in communities by paralegals, lawyers, legal advice centers, unions or advocacy groups. • Formal justice institutions that play a frontline role in resolving conflicts, disputes and grievances, including lower-tier courts, community police, and the criminal justice chain. • Alternative mechanisms to resolve legal problems, conflicts, disputes and grievances, such as community mediation, traditional courts, and ombudsmen. • Mechanisms that improve the accountability of the justice system for the services they provide to people and communities, and that tackle corruption and abuse.
Clear identification of inputs to address overlaps/gaps with other sectors	No
Methodology	<p>The analysis on the size and scope of the justice gap was conducted by the World Justice Project (WJP).</p> <p>Over 600 potential data sources were audited, including global and national-level datasets and administrative, survey-based, and qualitative sources of data.</p> <p>Data sources used to produce justice gap estimates were ultimately chosen based on their country coverage and methodological rigor.</p> <p>The WJP used the UN's geographic classifications and the World Bank's income classifications to establish regional and income peer groupings for extrapolating estimates to countries not covered by a particular data source. The resulting global justice gap estimates were adjusted to take into account the double counting of people who fall into multiple dimensions of the justice gap (e.g. victims of violence who also lack legal identity, or people who cannot obtain justice for both criminal and civil justice problems). To determine the most common justice problems that people face, data were used from 78 different surveys, namely 63 national crime victimization surveys, the WJP's global legal needs survey data for 101 countries, and 14 national legal needs surveys.</p> <p>Drawing on the costing analyses prepared by the education and health sectors, the justice costings are made for a basic level of service provision and they are based on standard delivery models, while acknowledging that improved systems can be more efficient. The cost drivers are frontline staff and assumptions had to be made about staff numbers and salary levels. Where available, the Overseas Development Institute based these assumptions on internationally agreed targets. The analysis covers the costs of the justice system at the local level, both relatively informal mechanisms (traditional, religious and civil society), and front-line formal organizations such as the police and local courts.</p>
Expenditure Type	Total per capita
Geographical scope and disaggregation	56 low-income and lower-middle-income countries

Consideration of climate change mitigation and adaptation	No
Relationship to SDGs	SDG 16, targets 16.3, 16.4, 16.5, 16.6, 16.9, 16.10A and B.
Yea (s) Covered	2019-2030
Investment Needs	In low-income countries, it would cost \$20 per year to provide each person with access to basic justice services. In middle-income countries it would cost \$64 per person, and in high-income countries \$190 per person annually.
Adjustments made	As the report does not differentiate between LICs and LMICs, \$20 was used.

Non-SDG public expenditure

To estimate the needs for other sector spending, primarily costs of national governance, SDSN referred to the IMF 2019 staff paper “Fiscal Policy and Development : Human, Social, and Physical Investments for the SDGs” (Gasper et al., 2019). In this paper the IMF lists low-income developing-country (LIDC) spending by category for 2016. To approximate an estimate for spending needs on governance, SDSN referred to IMF’s ‘Other Primary Spending’ category.

In this category of spending, the “interest”; “defense, order and safety”; as well as one-third of the “primary spending” category are used to estimate other sector spending or for SDSN’s purposes, governance. The ‘Other Primary Spending’ category is composed of: half general public services, and the remaining half economic affairs, housing, recreation/culture, agriculture, and environmental protection. To avoid double counting, it is assumed that two-thirds of this sub-category spending is covered in the SDG categories, and therefore eliminated in the SDSN estimate.

Appendix IV. Other Relevant SDG Needs Assessment Studies

Below is a list of other relevant needs assessments that exist from the literature on investment needs for particular development sectors. This is not an exhaustive list of all costing studies to-date, rather it includes some of the additional available resources that can be taken into consideration for these sectors, offering different methodologies, assumptions and total investment needs.

Agriculture and Food Security

FAO, IFAD and WFP. 2015. *Achieving Zero Hunger: the critical role of investments in social protection and agriculture*. Rome, FAO.

Biodiversity

McCarthy, D.P., Donald, P.F., Scharlemann, J.P.W., Buchanan, G.M., Balmford, A., Green, J.M.H., Bennun, L.A., Burgess, N.D., Fishpool, L.D.C., Garnett, S.T., Leonard, D.L., Maloney, R.F., Morling, P., Schaefer, H.M., Symes, A., Wiedenfeld, D.A., & Butchart, S.H.M. 2012. *Financial Costs of Meeting Global Biodiversity Conservation Targets: Current Spending and Unmet Needs*. Science Magazine, Volume 338, 946-949.

Smith, S., Jaques, M., Harrison, J., Rayment, M., Conway, M., Sharma, R., Cooper, D., Lehman, M., Noonan-Mooney, K. 2011. *Resourcing the Aichi Biodiversity Targets: A First Assessment of the Resources Required for Implementing the Strategic Plan for Biodiversity 2011-2020*. Montreal: Convention on Biological Diversity.

Education

UNESCO. 2015. *Education for All Global Monitoring Report: Pricing the Right to Education: The Cost of Reaching New Targets by 2030*. Paris: UNESCO.

International Commission on Financing Global Education Opportunity, 2016. "The Learning Generation: Investing in Education for a Changing World." Available at: <http://report.educationcommission.org/>

Health and Well-being

Moses, M.W., Pedroza, P., Baral, R., Bloom, S., Brown, J., Chapin, A., Compton, K., Eldrenkamp, E., Fullman, N., Mumford, J.E., Nandakumar, V., Rosettie, K., Sadat, N., Shonka, T., Flaxman, A., Vos, T., Murray, C.J.L., & Weaver, M.R. 2019. *Funding and services needed to achieve universal health coverage: applications of global, regional, and national estimates of utilisation of outpatient visits and inpatient admissions from 1990 to 2016, and unit costs from 1995 to 2016*. *Lancet Public Health* 2019; 4: e49–73.

Stenberg, K., Hanssen, O., Tan-Torres Edejer, T., Bertram, M., Brindley, C., Meshkrey, A., Rosen, J.E., Stover, J., Verboom, P., Sanders, R., and Soucat, A. 2017. *Financing transformative health systems towards achievement of the health Sustainable Development Goals: a*

model for projected resource needs in 67 low-income and middle-income countries. Lancet Glob Health 2017; 5: e875–87.

Infrastructure

Hutton, G., and M. C. Varughese. 2016. “The Costs of Meeting the 2030 Sustainable Development Goal Targets on Drinking Water, Sanitation, and Hygiene.” Technical paper, Water and Sanitation Program. World Bank, Washington, DC.

Shonali, P. et al. 2013. *Pathways to achieve universal household access to modern energy by 2030. Environ. Res. Lett.* 8 024015

Appendix V. A Note on Methodology

This paper’s estimates of financial resources to meet the SDGs reflect the total resource needs from 2019-2030. It is important to note that unlike other studies, no ramp-up to full coverage of interventions and services is modeled. Instead, this report outlines what an ambitious effort to fully cover relevant populations with SDG investments would imply, thus providing order-of-magnitude estimates for countries as they engage in more detailed country-specific costing and financial planning analyses.

Available needs assessments differ in methodologies, coverage of countries, and assumptions, which makes them difficult to compare. Some are robust and based on years of iterative, peer-reviewed work involving entire epistemic communities, while others remain “back-of-the-envelope” calculations whose results should be treated with caution. Some needs assessments are goal-based (i.e. they work backwards from quantified, time-bound goals) and consistent with the SDGs, while others extrapolate current trends into the future without regard to whether this will be sufficient to achieve quantified and time-bound goals. Some consider economy-wide effects or the impact of climate change while others do not. Very few distinguish between public and private investments.

The needs assessments used to construct the estimates in this report are not an exhaustive list of published SDG needs assessments. In sectors where multiple studies exist, the one most similar in spirit to this report’s exercise was selected. Criteria included the transparency of the methodology, whether the study disaggregates unit costs by country or by income categories (so that unit costs can be assigned to the 59 LICs and LMICs in this report), and whether the investments are ambitious enough to reach the SDGs. Appendix III lists other SDG needs assessments that were not employed in the calculations for this report.

Where available, the spending estimate as a percentage of GDP was used as an input and converted into per capita terms using the United Nations World Population projections and IMF Gross Domestic Product projections. All numbers were converted to 2019 U.S. dollars. Appendix II describes the studies used for each sector estimate of unit costs, as well as what method was applied where spending needs were not readily available for LICs and LMICs, or where additional steps were taken to avoid double counting.

Appendix VI. Global Efforts to Support Domestic Revenue Mobilization

Low-Income-Developing-Countries (LIDCs) face unique taxation issues, including high levels of informality, corruption in tax administrations, low effective tax rates, shrinking import/export duties, and base erosion and profit shifting (BEPS). Resource-rich Low-Income-Developing-Countries (LIDCs) face additional problems beyond BEPS due to the reliance of their tax revenues on shifting commodity prices and thus vulnerable to price shocks. Commodities in the extractive sector, such as oil, gas, and minerals like gold, diamonds, and cobalt face losses from tax evasion that are particularly notable. Countries rich in these resources often fail to capture a fair share of their natural resource wealth. Reliable data is scarce on the scale of potential revenue loss from extractive sector tax evasion, though the estimates suggest that the lost taxes are many billions of dollars per year (PWYP, 2018). Revenue losses to governments from this sector occur through three main paths: 1) under-reporting of project revenues; 2) over-reporting of project costs; and 3) shifting profits through transfer pricing.

Currently, two-fifths of the 59 countries reviewed in this analysis raise a tax-to-GDP ratio below the 15% “tipping point” needed for development (IMF, 2019b; OECD, 2019c). Lower-income countries have the capacity to generate significantly more from taxes than the current rate in order to fund and accelerate their SDG progress (IMF, 2016). There are several ways that these countries can increase their domestic tax revenues even before raising tax rates or expanding their tax bases. Governments stand to mobilize hundreds of billions of dollars by addressing key failures in tax policy implementation and enforcement both domestically and at a global scale.

One of the proposed and increasingly implemented reform possibilities for revenue agencies is the introduction of a Semi-Autonomous Revenue Authority (SARA) to collect taxes and perform audits (IMF, 2015). Possible benefits include insulation from political interference, more secure financing, and decreased corruption/nepotism outcomes due to isolated hiring and human resources practices (IMF, 2015). SARAs are only effective when paired with other reforms, such as introducing a Value Added Tax or closing loopholes in the existing tax regime.

In another effort to make tax schemes more progressive, Large Taxpayer Offices (LTOs) have also been endorsed to Low-Income-Developing-Countries (LIDCs) as a method of increasing control over and compliance by the largest contributors to countries’ revenues (IMF, 2002). Increasing oversight and specific, targeted compliance initiatives for these high-income individuals and groups could increase receipts without widening the tax base or placing additional burdens on lower-income groups. LTOs have been implemented in multiple developing countries as part of IMF recommendations for tax reform with some early success in increasing revenues.

In an effort to help countries increase compliance and improve tax administration, the Addis Tax Initiative was launched in 2015 at the Financing for Development 3 Conference. This initiative aims to build local capacity to implement relevant reforms, improve domestic governance to enforce them, and catalyze greater political will to pass them. The initiative was launched in recognition that domestic budget revenue mobilization is a critical pillar for development financing and one with which Low-Income-Developing-Countries (LIDCs) face particular challenges.

In addition to the Addis Tax Initiative, several other international initiatives have been launched to assist countries in improving their tax collections, including the Standard for Automatic Exchange of Financial Account Information in Tax Matters (AEOI); the UN Tax Committee; and the Base Erosion and Profit Shifting (BEPS) program of the OECD. Several OECD initiatives have been directly focused on the extractive industries in particular. The OECD program Tax Inspectors Without Borders (TIWB) increased tax revenues in select developing countries from \$278 million in April 2017 to \$470 million in April 2019 (OECD 2019a). Furthermore, the IMF, OECD, UN and World Bank have joined together in a collective effort known as the Platform for Collaboration on Tax (PCT) in order to better support governments in addressing the tax challenges they face.

Due in part to the success of new initiatives and the growing interest in DRM programs, the volume of technical assistance for tax system strengthening initiatives was 46 percent higher in 2018 than in 2015 (IMF, 2019b). This increased volume of assistance, when paired effectively with existing domestic revenue reform goals, creates opportunities for the development of Low-Income-Developing-Countries' (LIDCs) fiscal space to achieve the SDGs.

The continued success of the above DRM initiatives depends on building trust in order to create a stronger social contract, reduce non-compliance, and increase tax morale. Taxed citizens in developing countries want to benefit from returns on their taxes that are roughly commensurate with their contributions in order to perpetuate a willingness to pay. However, it is often the case that tax revenue-reliant social services and strong and reliable infrastructure that could be funded through taxes are nowhere to be seen or extremely limited in the least developed countries. Exacerbating this issue is poor governance, corruption and misdirected use of revenues, of which the above reform programs seek to address.

Appendix VII. List of Acronyms

AEOI: Automatic Exchange of Financial Account Information
ATI: Addis Tax Initiative
BEPS: Base Erosion and Profit Shifting
BAU: Business-as-Usual
CAPEX: Capital Expenditure
CD: Capacity Development
DRM: Domestic Revenue Mobilisation
DSA: Debt Sustainability Analysis
FAD: IMF Fiscal Affairs Department
FTT: Financial Transaction Tax
GAVI: Global Alliance on Vaccines and Immunizations
GFATM: Global Fund to Fight AIDS, TB, and Malaria
GCF: Green Climate Fund
GOVEX: Government Budgetary Expenditures Required to Reach the Goals
GNI: Gross National Income
HICs: High-Income Countries
HIPCs: Heavily Indebted Poor Countries
IATI: International Aid Transparency Initiative
IDA: International Development Association
HLPF: UN High-Level Political Forum
IFFed: International Financing Facility for Education
IFPRI: International Food Policy Research Institute
IMF: International Monetary Fund
INFF: Integrated National Financing Framework
LIDCs: Low-Income Developing Countries
LMICs: Lower Middle-Income Countries
LTO: Large Taxpayers Office
MDB: Multilateral Development Bank
MDFC: Multilateral Development Finance Committee
M&E: Monitoring & Evaluation
MNE: Multinational Enterprise
MTO: Medium Taxpayer Office
MTRS: Medium Term Revenue Strategy
NCD: Non-communicable diseases
OECD: Organization for Economic Co-operation and Development
OPEX: Operational Expenditure
ODA: Official Development Assistance
PCT: Platform for Collaboration on Tax
PDA: Private Development Assistance
PPAs: Power Purchase Agreements
PPPs: Public-Private Partnerships
SARA: Semi-Autonomous Revenue Authority
SCD: Systematic Country Diagnostic
SDGs: Sustainable Development Goals
SOC: Social Cost of Carbon
SDSN: UN Sustainable Development Solutions Network
TIWB: Tax Inspectors Without Borders
TOSSD: Total Official Support for Sustainable Development
UHC: Universal Health Coverage
UMIC: Upper-Middle Income Countries
UNCT: United Nations Country Teams
UNCTAD: United Nations Conference on Trade and Development
UNDP: United Nations Development Programme
UNDG: United Nations Development Group
UNCDF: United Nations Capital Development Fund
UNESCAP: United Nations Economic and Social Commission for the Asia-Pacific
USAID: United States Agency for International Development
VAT: Value Added Tax
WBG: World Bank Group