



# Investment Needs to Achieve the Sustainable Development Goals

## Understanding the Billions and Trillions

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**Abstract:** In September 2015, governments adopted the Sustainable Development Goals (SDGs) to be achieved by 2030 in order to guide international cooperation in pursuit of ambitious quantitative goals. This paper reviews the role that global needs assessments play in supporting the SDGs and discusses common criticisms. The paper proposes an analytical framework for SDG needs assessments that translates the 17 SDGs into eight investment areas. It also integrates investment needs for climate change adaptation and mitigation with the development needs for each investment area and introduces a preliminary score to assess the quality and suitability of needs assessment studies. Using this framework, published sector needs assessments are harmonized and consolidated, paying careful attention to differences in methodologies and assumptions. The share of private financing is estimated for each investment area, and overall investment needs are aggregated. The paper then explores the implications of economy-wide studies on synergies and trade-offs in financing the SDGs and outlines priorities and directions for future research. This preliminary analysis of available sector studies shows that incremental spending needs in low- and lower-middle-income countries may amount to at least \$<sub>2013</sub>1.4 trillion per year (\$343-360 billion for low-income countries and \$900-944 billion for lower-middle-income countries). Over the period this corresponds to some 4% of these countries' GDP measured in \$ PPP and 11.5% of GDP in US dollars at market exchange rates. Approximately half of these investments in the SDGs can be privately financed. Domestic resource mobilization can increase significantly leaving an external financing gap of perhaps \$152-163 billion per year (equivalent to 0.22-0.26% of high-income countries' GDP) that must be met through international public finance, including Official Development Assistance. Globally an incremental 1.5-2.5% of world GDP needs to be invested each year by the public and private sectors to achieve the SDGs in every country. These results are preliminary and meant for discussion and improvement.

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\*\* This version replaces the first version (28 September 2015), based on comments received. Additional comments are welcome and should be sent to [info@unsdsn.org](mailto:info@unsdsn.org). Full supporting data is available online at:

<http://unsdsn.org/resources/publications/sdg-investment-needs/>.

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The findings and views expressed in this paper may not necessarily reflect the views of the SDSN, its Leadership Council, the Government of Norway, or the United Nations.

## *Changes made since version 1*

This revised version incorporates comments and suggestions for improvement received on the first version published on 28 September 2015. *Inter alia* this version comprises a more detailed and revised discussion of energy investment needs with a particular focus on climate change mitigation; a new suitability score to allow for a direct comparison of different needs assessment studies and their methodologies; a more detailed methodology discussion and comparison with alternative approaches; and revised public-private shares of SDG investments. Projected investment needs have changed slightly since the previous version, but without changing the overall conclusions of the paper.

We welcome comments on this revised version, which should be sent to [info@unsdsn.org](mailto:info@unsdsn.org).

## Summary for policymakers

**To achieve the Sustainable Development Goals (SDGs) by 2030, countries will need to develop long-term strategies that take the goals seriously as time-bound, quantitative objectives.** On current trends the world will miss the goals by a wide margin unless policies are improved, international cooperation is enhanced, and more public and private resources are brought to bear on financing the investments needed to achieve the SDGs. Focusing on the marginal expansion of government services will not be sufficient to reach the SDGs. Instead it will be essential to work backwards from the SDGs to map out the required interventions, policies, and associated investments. This paper analyses the financing implications of taking the SDGs seriously as quantitative objectives to be achieved by 2030.

**SDG strategies must include methodologies for working backwards from the goals to operationalize them and to determine how they can be met (“back-castings”), and for estimating associated investment needs (“needs assessments”).** These were pioneered in the early 2000s for the health sector and later applied to the Millennium Development Goals (MDGs), and now have been developed for most MDG investment areas. Today, each investment area covered by the SDGs has one or more needs assessments. Such sector needs assessments are important (1) to show how the SDGs can be achieved and to identify knowledge gaps in our understanding of implementation strategies or “production functions;” (2) to understand opportunities for private financing and policies needed to support private investments in the SDGs; (3) to estimate domestic public financing and residual international co-financing needs; and (4) to support resource mobilization and provide an accountability framework. SDG needs assessments complement other wealth-based methodologies that focus on genuine savings or inclusive wealth.

**SDG sector needs assessments should employ similar sets of assumptions and generate results that can be compared and aggregated with ease.** Success in achieving the SDGs will require higher-quality assessments in many areas as well as a shared understanding of appropriate methodologies. Sound SDG needs assessments need to be based on a clear understanding of the nature of interventions and investments that must be delivered to achieve the SDGs (the “SDG production function”); integrate climate change mitigation and adaptation in a consistent and rigorous manner; address gaps, overlaps, and synergies across investment areas; and generate transparent results that can be reviewed by others and can form the basis for an SDG financing strategy.

**This paper proposes an analytical framework for conducting and comparing SDG needs assessments and applies it to available sector studies, presenting the first comprehensive needs assessment for the SDGs.** The framework translates the 17 SDGs into eight “SDG investment areas”: (1) health, (2) education, (3) social protection, (4) food security and sustainable agriculture, (5) infrastructure – including (a) energy access and low-carbon energy infrastructure, (b) water and sanitation, (c) transport infrastructure, and (d) telecommunications infrastructure – (6) ecosystem services and biodiversity, (7) data for the SDGs, and (8) emergency response and humanitarian work. Investment needs for climate change adaptation and mitigation are integrated into each SDG investment area in a preliminary manner

that may understate true needs. The framework identifies appropriate needs assessment methodologies and explains how SDG needs assessments can address other cross-cutting issues, such as ending poverty, gender equality, inequalities, cities and human settlements, sustainable consumption and production, and government functions. The paper then harmonizes assumptions across the sector needs assessments and – to the extent possible – addresses overlaps, gaps, and synergies across SDG investment areas. Implications of economy-wide effects, such as shifts in real wages or real exchange rates across an economy, on SDG needs assessments are discussed, though not modeled quantitatively. All underlying data and calculations are available for download: <http://unsdsn.org/resources/publications/sdg-investment-needs/>.

**The quality and usefulness of available needs assessments for programming public and private expenditure is assessed through a new suitability score.** The score assesses available needs assessments against nine questions that must be addressed in order to inform the programming of public and private expenditure for the SDGs: (1) Is the needs assessment intervention-based? (2) Are inputs clearly identified to address gaps and overlaps with other needs assessments? (3) Are interventions required to achieve respective outcome goals addressed comprehensively? (4) Is the analysis goal-based? (5) Has the assessment been peer reviewed? (6) Are operating and capital expenditure included? (7) Can results be disaggregated by LICs and LMICs? (8); Are investment needs for climate change adaptation and mitigation considered (if applicable)? (9) Have results from dynamic economy-wide models been considered in the sector assessment? Table A summarizes the suitability scores for the major studies reviewed in this paper.

*Table A. Suitability scores of major needs assessments used in this study*

Investment Area	Study	Type of methodology	Suitability score (out of 10)
Health	Jamison <i>et al.</i> (2013)	Intervention-based needs assessment	8.8
Health	WHO (2011)	Intervention-based needs assessment	6.3
Education	UNESCO (2015a, 2015b)	Intervention-based needs assessment	7.5
Food security & agriculture	FAO <i>et al.</i> (2015)	Incremental Capital-Output Ratio (ICOR) estimate	4.4
Energy access & low-carbon power infrastructure	Pachauri <i>et al.</i> (2013)	Integrated Assessment Modeling	7.8
Energy access & low-carbon power infrastructure	World Bank (2013)	Simple unit cost estimates	2.2
Water and sanitation	Hutton (2015)	Intervention-based needs assessment	6.7
Water and sanitation	World Bank (2013)	Simple unit cost estimates	2.2
Transport infrastructure	World Bank (2013)	Simple unit cost estimates	2.2
Telecommunications infrastructure	World Bank (2013)	Simple unit cost estimates	2.2
Ecosystems & biodiversity	CBD (2012b)	Intervention-based needs assessment	4.4
Data	Espey <i>et al.</i> (2015)	Intervention-based needs assessment	7.5

Source: Author's analysis

**The quality and robustness of available needs assessments varies considerably across the eight SDG investment areas.** Needs assessments in the social sectors – particularly health, but also education – tend to be strongest, while needs assessments for the environment, infrastructure, agriculture, and food security are weakest. Investment needs for social protection remain to be estimated and constitute an important gap in this analysis. Since estimates of financing needs for infrastructure account for the vast majority of total investment needs, their lack of robustness is particularly problematic. The analytical framework also underscores that SDG needs assessments do not systematically integrate climate change adaptation and mitigation.

**On the basis of available needs assessments the study concludes that low- and lower-middle-income countries may need to increase public and private expenditure by some \$<sub>2013</sub>1.4 trillion per year (\$343-360 billion for LICs and \$900-944 billion for LMICs) in order to reach the SDGs.<sup>1</sup>** This corresponds to 4% of these countries' estimated GDP over the period measured in purchasing power parity (PPP) and 11.5% of GDP in international dollars, or 0.8-1.3% of world GDP. Table A summarizes preliminary investment needs by sector and describes the share of investments that can likely be financed through private resources (39-45% on average). At the global level an incremental 1.5-2.5% of world GDP may be required to finance the achievement of the SDGs in all countries.

**This paper outlines an indicative financing strategy for the SDGs, recognizing the complementarity and limited substitutability between public and private resources for development.** While trillions of dollars will be required in incremental investments to achieve all SDGs public financing needs for health, education, and other services are in the order of tens of billions. It is important not to confound these investment needs since each sector will require a different resource mobilization strategy. This paper aims to disentangle the different types of financing needs by presenting tentative estimates of the public and private shares in investments across the different SDG investment areas. It is the first to consider domestic resource mobilization and other financing strategies in the context of the overall SDG investment needs.

**The analysis suggests that the SDGs are affordable globally.** Financing needs for the SDGs are manageable given the extent of available global savings. Meeting the goals is therefore – first – a moral challenge of re-directing resources towards the societal objectives enshrined in the SDGs and – second – a practical challenge of organization, sound implementation frameworks, and careful implementation.

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<sup>1</sup> These estimates do not include incremental investment needs for social protection systems, large-scale water infrastructure, climate change adaptation and mitigation measures associated with the improved management of ecosystems, and changes to the composition and volume of current expenditure, particularly on climate change mitigation. Note also that this paper employs a broad definition of “SDG investments” that includes operating expenditure for social services and infrastructure. So the investment shares of GDP cannot be compared with traditional macroeconomic investment ratios that including only expenditure on fixed capital.

Table B. Summary of incremental SDG investment needs in low- and lower-middle-income countries (average for 2015-2030 in \$<sub>2013</sub> billion)

Investment area	"Development" investment needs	Incremental climate mitigation and adaptation investment needs	Total investment needs	Private, commercial financing (%)	Private, commercial financing	Public financing
<b>Health</b>	68 - 87	1.0 - 1.4	69 - 89	0%	0	69 - 89
<b>Education</b>	194	0	194	0%	0	194
<b>Social protection</b>	?	?	?	?	?	?
<b>Agriculture and food security</b>	[125]	[22]	[148]	[51%]	[76]	[72]
<b>Access to modern energy</b>	[265 - 289]	[55 - 57]	[321 - 347]	[49 - 50%]	[158 - 175]	[163 - 172]
<i>Access to electricity and clean cooking fuels</i>	62 - 83	3 - 5	66 - 87	[11 - 16%]	[7 - 14]	[59 - 73]
<i>Power infrastructure</i>	[203 - 207]	[52 - 53]	[255 - 259]	[59 - 62%]	[151 - 161]	[99 - 104]
<b>Access to water and sanitation</b>	[28]	[14 - 17]	[42 - 45]	[0 - 20%]	[0 - 9]	[36 - 42]
<i>Basic water supply &amp; adequate sanitation</i>	28	14 - 17	42 - 45	[0 - 20%]	[0 - 9]	[36 - 42]
<i>Water and sanitation infrastructure</i>	?	?	?	?	?	?
<b>Telecommunications infrastructure</b>	[361]	[35]	[396]	[52 - 57%]	[205 - 228]	[169 - 192]
<b>Transport infrastructure</b>	[189]	[0]	[189]	[54 - 86%]	[102 - 163]	[26 - 87]
<b>Ecosystems, incl. biodiversity</b>	[11 - 28]	?	[11 - 28]	[15%]	[2 - 4]	[9 - 24]
<b>Data for the SDGs</b>	0.5	0	0.5	0%	0	0.5
<b>Emergency response and humanitarian work*</b>	[8 - 23]	?	[8 - 23]	[0%]	[0]	[8 - 23]
<b>All SDG investment areas**</b>	<b>[1251 - 1327]</b>	<b>[128 - 133]</b>	<b>[1378 - 1459]</b>	<b>[39 - 45%]</b>	<b>[543 - 654]</b>	<b>[805 - 836]</b>

Source: Author's calculations and sources identified in the paper. Data and calculations are available online: <http://unsdsn.org/resources/publications/sdg-investment-needs/>.

Note: Numbers have been rounded and may not add up exactly.

\* Emergency response and humanitarian work will be entirely funded by concessional public international financing and cannot be disaggregated by income group.

\*\* This excludes several SDG investment needs identified in the paper, including social protection, large-scale water supply and sanitation infrastructure, incremental investment needs for climate change mitigation and adaptation for ecosystems, and changes to the composition and scale of current infrastructure investments. The total does not equal sum of LICs and LMICs since the cost of emergency response and humanitarian work is allocated to total only.

**Low-income countries will require substantial international co-financing to achieve the SDGs, and lower-middle-income countries may need some financial support during the initial SDG period.** Major increases in domestic resource mobilization are possible in developing countries. Lower-middle-income countries have the potential to self-finance the achievement of the SDGs, perhaps requiring some international public co-financing during the early years of SDG implementation. Low-income countries cannot meet the investment needs on their own and may require some \$152-163 billion in international public co-financing. This corresponds to 0.1-0.16% of estimated average world GDP over the period or 0.22-0.26% of high-income countries' estimated GDP averaged over the period. Further analysis is required to confirm these preliminary estimates, which depend heavily on assumptions about future economic growth, and to specify the type of international co-financing required. It is plausible, though, that this financing gap can be met through concessional international public finance, including promised volumes of Official Development Assistance.

**The health sector demonstrates how SDG needs assessments can play an important role in addressing both the moral and operational challenges of SDG implementation.** Health has successfully used needs assessments and back-castings to operationalize ambitious global health goals and to demonstrate the feasibility of rapid progress in reducing preventable causes of deaths. The sector has been using needs assessments to find answers to the practical challenges of implementation, set global policy standards, and help propagate this learning throughout developing and developed countries. In this process, needs assessments have become increasingly robust, and their findings have been buttressed by implementation lessons. The leading financing institutions in health, including the Global Fund to Fight AIDS, Tuberculosis and Malaria, Gavi, and the recently launched Global Finance Facility have all used needs assessments to make a strong case for investments in health and to mobilize vast increases in domestic and international resources for the sector. A key question for SDG implementation is therefore how lessons from the successes in health can be applied to other SDG priorities.

**Four priorities for future research emerge from the analysis presented in this paper.** First, sector needs assessments must be strengthened for most SDG investment areas, but particularly for food security and agriculture, infrastructure, and ecosystem services. Remaining gaps, such as investment needs for social protection, must be filled. Second, countries need to develop national SDG needs assessments, which offer a critical opportunity to better understand the impacts of synergies and economy-wide effects. Third, a more robust financing strategy is needed to distinguish between different types of financial flows, their sequencing, opportunities for public and private debt financing, and the role of multilateral development banks and other financing institutions. Finally, the international system should systematically track public and private investments in the SDGs and compare these flows against projected investments needs from SDG needs assessments. This will help refine our understanding of how the SDGs can be achieved, whether the world is on track towards achieving the Goals, and what changes might be needed in implementing the global partnership for the SDGs.

**We underscore the preliminary and incomplete nature of this analysis and welcome comments and suggestions for improvement.** Such comments should be addressed to [info@unsdsn.org](mailto:info@unsdsn.org) and will be reflected in subsequent iterations of this work.