Vulnerability and SDG Financing Gaps

Research Paper

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The Sustainable Development Solutions Network (SDSN) mobilizes global scientific and technological expertise to promote practical problem solving for the Sustainable Development Goals (SDGs) and the Paris Climate Agreement. It works under the auspices of the UN Secretary-General and supports the implementation of the SDGs at local, national, and global scales, in collaboration with UN agencies, multilateral financing institutions, the private sector, governments, and civil society.

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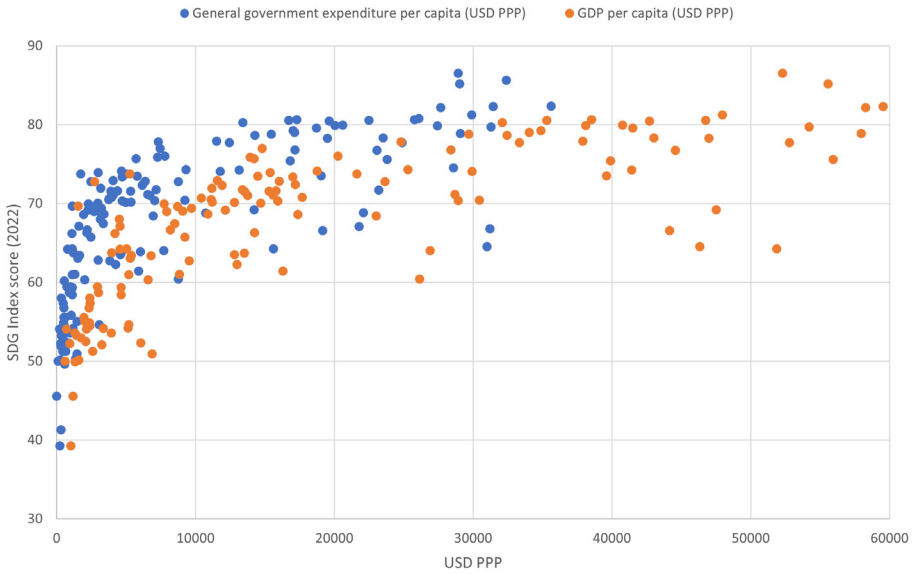
Keywords:
sustainable development, structural vulnerability, SDG financing

THE LACK OF PUBLIC SPENDING IS PREVENTING THE WORLD FROM ACHIEVING THE SDGs BY 2030.

At this mid-point on the way to 2030, the Sustainable Development Goals (SDGs) are not being achieved, and for the second year in a row, the world is no longer making progress on the SDGs (Sachs et al., 2022). Poorer and vulnerable countries, including Small Island Developing States (SIDS), face the largest SDG gaps due to the fact that the SDGs are above all an investment agenda into physical infrastructure (access to clean water, electricity, transport, energy, digital), human capital (health, education) and the planet (life on land and under the water), and these countries face severe financing constraints that have been gravely aggravated by the still ongoing "Triple C" crisis – Covid-19, Climate Change, and Conflict.

The dire shortfall in public outlays is among the main reasons why the SDG Agenda is far off-track around the world, and especially in poor and vulnerable countries. Figure 1 shows that overall, there is a positive and statistically significant correlation between SDG performance, as measured by the Sustainable Development Solutions Network (SDSN)'s SDG Index, general government expen-

Figure 1. General Government Expenditure and GDP Per Capita Versus SDG Performance
Note: For representation purposes, outliers with GDP per capita above USD PPP 60,000 are excluded.
Source: Authors' elaboration based on Sachs et al. (2022) and World Bank (2023).



»The dire shortfall in public outlays is among the main reasons why the SDG Agenda is far off-track.«

diture and GDP per capita. Therefore, poorer countries, which also tend to have low levels of fiscal spending, experience more difficulties in achieving the SDGs. It is worth noting that for poorer countries spending relatively little (approx. less than USD PPP 10,000 per capita), including most vulnerable countries, a small increase in public spending is associated with significant progress on the implementation of the SDGs. For richer countries with high public outlays, however, the quality of spending and other factors (e.g., the quality of institutions) might matter more than the quantity of additional spending.

HIGHLY VULNERABLE COUNTRIES MOBILIZE SMALLER AMOUNTS OF PUBLIC SPENDING AND HAVE LOWER LEVELS OF SDG PERFORMANCE.

Countries' capacity to mobilize large amounts of public spending to show progress on the SDGs is linked to their degree of structural vulnerability. Figure 2 shows that countries with low levels of structural vulnerability – as measured by the SDSN's pilot Multidimensional Vulnerability Index (MVI)[1], may mobilize more than USD PPP 14,000 per capita on average, while countries with high and medium structural vulnerability levels can only spend half of this amount (around USD PPP 7,000 per capita). On average, countries with a high and medium level of vulnerability attain lower scores on the SDG Index (65 and 68, respectively) compared to countries with a low level of vulnerability, which reach an average score of more than 10 points higher (Figure 2).

TO MAKE THE SAME PROGRESS ON THE SDGs, COUNTRIES WITH HIGH STRUCTURAL VULNERABILITY NEED TO MOBILIZE TWICE THE AMOUNT OF PUBLIC EXPENDITURE SPENT BY COUNTRIES WITH LOW VULNERABILITY.

A key issue for policy makers is to assess the incremental financing needed by countries to achieve the SDGs (i.e., SDG financing gap), considering their level of structural vulnerability. By using a simple linear regression model controlling for GDP per capita (which filters out the effect of richer countries having higher initial amounts of spending per capita, as shown in Figure 1), we show that – for a given initial level of development (GDP per capita) – countries with high structural vulnerability need to mobilize larger amounts of public expenditure to make progress on the SDGs compared to countries with low levels of vulnerability (Table 1). On average, in countries with low vulnerability, spending one additional percentage point (pp) of GDP helps to raise the SDG Index by 0.22 points. On the other hand, in countries with high vulnerability, raising public expenditure by the same amount leads to an increase of only 0.10 points in the SDG Index. In other words, to increase the SDG Index by one point, countries with low vulnerability need to spend an additional 4.5 pp of GDP, while highly vulnerable countries need to spend an additional 10 pp of GDP.

Therefore, to make the same progress on the SDGs, highly vulnerable countries need to spend double the amount spent by countries with low vulnerability. Such additional effort is due to the fact that highly vulnerable countries are more susceptible to climate hazards and other exogenous shocks that threaten and sometimes even reverse their progress towards achieving the SDGs.

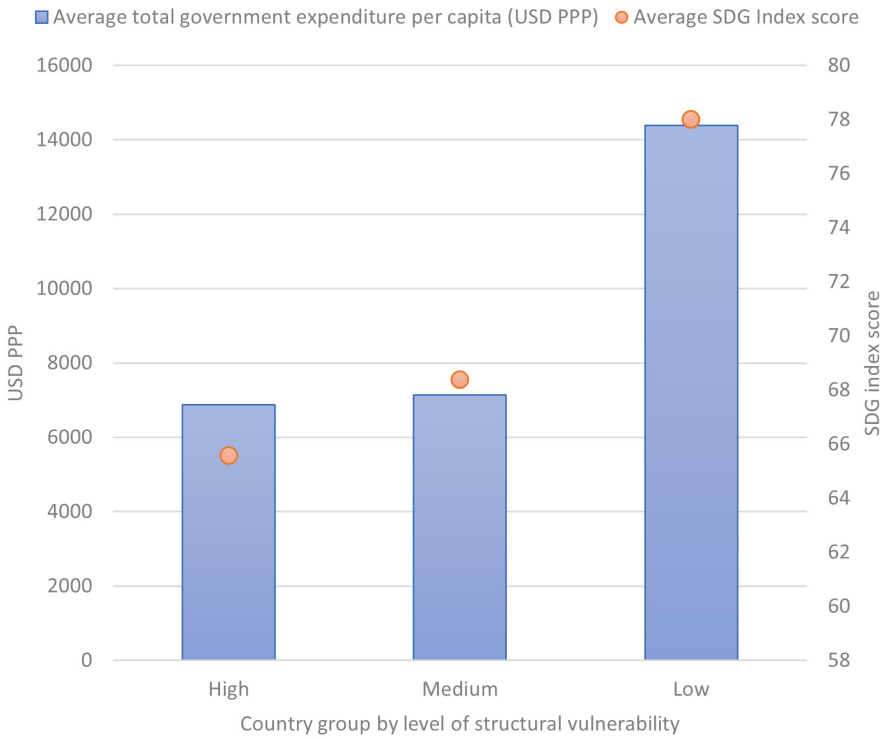


Figure 2. Government Expenditure and SDG Performance, by Level of Structural Vulnerability

Notes: Sample of 152 countries, including 22 SIDS, of which 17 are highly vulnerable and 5 have medium-vulnerability. Reduced version of the SDG index using 74 indicators (out of 95) to maximize country coverage. According to the statistical distribution of the SDSN's pilot MVI values, countries are classified as low- (score below 19), medium- (score between 19 and 27), and high-vulnerability countries (score above 27).
Source: Authors' elaboration based on IMF (2022) and Sachs et al. (2022).

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TO REACH AN SDG INDEX SCORE OF 80, HIGHLY VULNERABLE COUNTRIES NEED TO SPEND AROUND 4 PERCENTAGE POINTS MORE OF THEIR GDP ANNUALLY COMPARED TO COUNTRIES WITH LOW VULNERABILITY.

What is the magnitude of the additional expenditure needed by high- and low-vulnerability countries to reach a level of sustainable development at which both physical infrastructure and human capital outcomes have mostly been achieved? By using the regression coefficients reported in Table 2 and controlling for levels of economic development, we estimate that the additional annual spending needed for the median highly vulnerable country to reach the SDG Index score of 80[2] (i.e., the score reached by the top one-third of best performing countries) is equivalent to about 7% of GDP[3]. On the other hand, countries with low levels of structural vulnerability only need to spend an additional 3% of their GDP. Therefore, highly vulnerable countries need to spend around 4 percentage points more of their GDP annually compared to countries with low vulnerability to reach the SDG Index score of 80 (Figure 3). Compared to the global median, highly vulnerable countries need to spend 1.6 pp of GDP more to reach the SDG Index score of 80, while countries with medium vulnerability need to spend only 0.3 pp more. Countries with low vulnerability, meanwhile, have lower financing needs than the median country in the world, as

Table 1. Public Expenditure Versus SDG Index Score, by Level of Structural Vulnerability

Notes: The regression we run is: sdg score$_i$ = c+ß$_1$ expenditure$_i$ + ß$_2$log(GDP per capita$_i$) + ε$_i$
Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001. Low-vulnerability countries are defined as those with a MVI value below the median value of the whole sample (median MVI = 23), while high-vulnerability countries are defined as those with a MVI value above the median value of the whole sample. High MVI countries include 21 SIDS, while Low MVI countries include 1 SIDS. Reduced version of the SDG Index using 74 indicators (out of 95) to maximize country coverage.
Source: Authors' elaboration based on IMF (2022), Sachs et al. (2021), and Sachs et al. (2022).

	Low MVI countries	**High MVI countries**
	Reduced SDG Index score	Reduced SDG Index score
Public expenditure (% GDP)	0.22***	0.10*
	-0,03	-0,04
Log of GDP per capita (USD PPP)	6.28***	4.85***
	-0,3	-0,7
Constant	4,45	18.0**
	-3,4	-6,1
Number of observations	85	67
R^2	0,82	0,47
Adjusted R^2	0,82	0,45

Table 2. The Role of Public Expenditure and Structural Vulnerability in Reaching the SDGs

Notes: The regression we run is: sdg score$_i$ = c+ß$_1$ expenditure$_i$ + ß$_2$log(GDP per capita$_i$) + ß$_3$ MVI$_i$ + ε$_i$
Standard errors in parentheses; * p < 0.05, ** p < 0.01, *** p < 0.001. Reduced version of the SDG index using 74 indicators (out of 95) to maximize country coverage.
Source: Authors' elaboration based on IMF (2022), Sachs et al. (2021), and Sachs et al. (2022).

	Whole sample
	Reduced SDG Index score
Public expenditure (% GDP)	0.17***
	-0,03
Log of GDP per capita (USD PPP)	5.71***
	-0,5
MVI	-0.25**
	-0,08
Constant	15.9**
	-5,2
Number of observations	152
R^2	0,7
Adjusted R^2	0,7

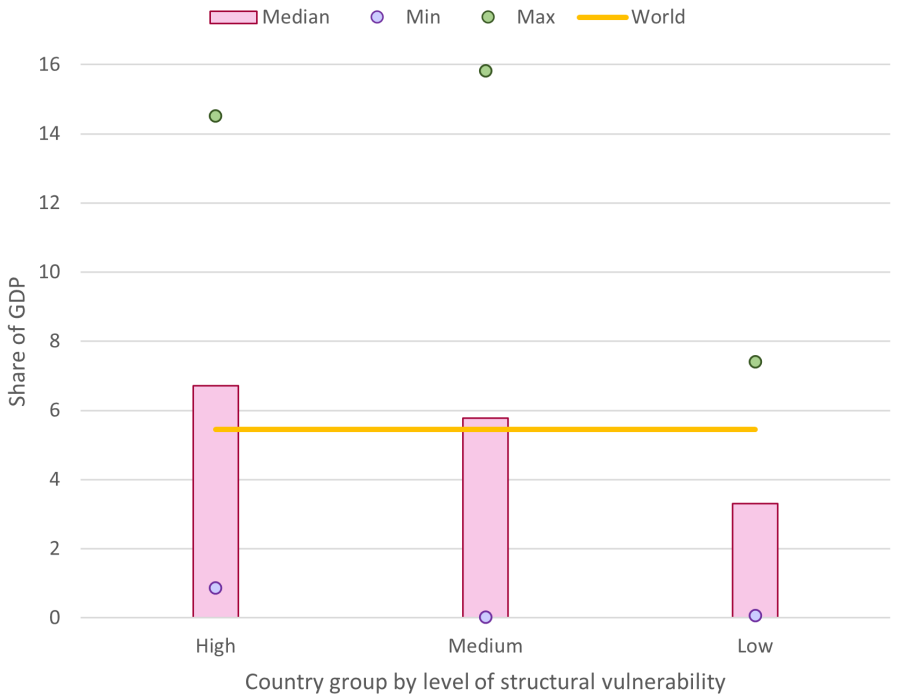

Figure 3. Median Annual Additional Expenditure to Reach an SDG Index Score of 80, by Level of Structural Vulnerability and Compared with the World's Median
Note: Sample of 129 countries, including 22 SIDS of which 17 are highly vulnerable and 5 have medium-vulnerability.
Source: Authors' elaboration.

their median annual additional expenditure is lower by almost 2.5 pp of GDP (Figure 3).

HIGHLY VULNERABLE COUNTRIES STRUGGLE MORE TO CLOSE THEIR SDG FINANCING GAP ON THEIR OWN. TRADITIONAL AND INNOVATIVE TARGETED FINANCING MECHANISMS CONSIDERING COUNTRIES' VULNERABILITIES SHOULD BE FACILITATED.

How can countries close their SDG financing gaps? Figure 4 shows that, on average, all vulnerable country groups require financial resources far beyond what they can generate from their own domestic resources to cover the total financing needed to achieve the SDGs (i.e., current expenditure plus SDG financing gap). However, the difference between government revenue and total SDG financing needed is even greater in highly vulnerable countries (Figure 4). Indeed, among countries with low levels of vulnerability, the difference between total

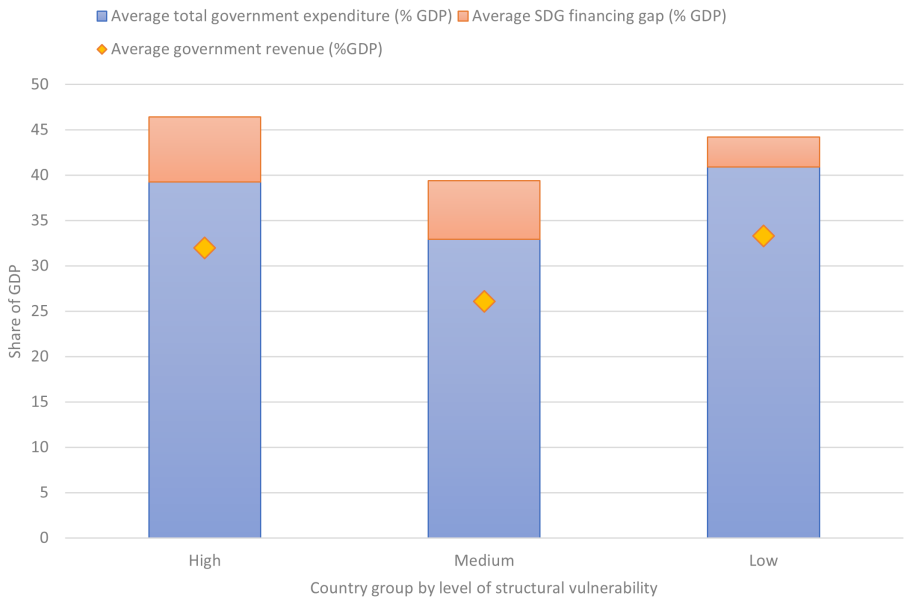

Figure 4. Average Annual Government Revenue, Government Expenditure and SDG Financing Gap
Note: Sample of 152 countries, including 22 SIDS of which 17 are highly vulnerable and 5 have medium-vulnerability.
Source: Authors' elaboration.

financing needed for achieving the SDGs and government revenue is 10 pp of GDP, while it reaches 15 pp among countries with high levels of vulnerability. So, highly vulnerable countries cannot afford to cover the total financing needed to achieve the SDGs relying only on domestic revenues. A global plan promoting the development and use of targeted financing mechanisms, addressing countries' specific vulnerabilities, is urgently needed to finance sustainable development, especially in countries such as SIDS, which are characterized by small tax bases and high levels of debt distress.

While the Official Development Assistance could be mobilized to respond to

»A global plan promoting targeted financing mechanisms addressing countries' specific vulnerabilities is urgently needed.«

SDG financing needs in countries characterized by high economic and developmental vulnerabilities, insurance mechanisms coupled with compensation funds should be created to help countries highly exposed to the adverse consequences of climate change. The costs of adapting to climate change and of recovering from loss and damage (L&D) after climate-induced disasters are massive and should be borne by countries that are historically more responsible for climate change. The COP27 that took place in November 2022 in Sharm El Sheikh marked a turning point in climate justice, as countries agreed on the creation of a specific L&D Fund. The fund will be financed by countries responsible for high greenhouse gas emissions and will provide financial compensation to the nations that are most affected by the consequences of climate change. A new report by the UN (2023) recognizes the L&D Fund as a pivotal innovative mechanism to increase global liquidity and leverage resources for sustainable development, in the context of the call for a global SDG Stimulus.

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Other innovative financing solutions could also play an important role in supporting SDG-related investments, including SDG bonds. However, according to the existing rating systems, most of vulnerable countries, including SIDS, do not have creditworthiness and so cannot have access to these financial instruments unless support is provided by International Financial Institutions to de-risk bonds and raise debt in capital markets. The IMF's Special Drawing Rights could be used to leverage additional funding to support development. Debt swaps, such as debt-to-development, debt-to-climate or debt-to-environment, are state-contingent tools that could also be used by vulnerable countries to restructure their growing debt and free up resources for SDG progress.

Beyond the scale of financing, it is essential to consider additional elements that may shape the way towards achieving the SDGs. The achievement of the SDGs also depends on the quality of governance, trust in institutions, local and national authorities' technical capacities, as well as international peace, among other aspects.

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[1] The SDSN's pilot MVI is a composite index which assesses countries' structural vulnerability across three dimensions: economic (exposure to exogenous economic and financial shocks); developmental (vulnerability due to geophysical constraints); environmental (exposure to climate change and natural hazards).

[2] The total annual additional public expenditure needed by country i (% GDP) to reach a SDG Index score of 80 is computed as follows: $annual\_add\_exp\_gdp_i = (minexp\_all_i - expenditure_i) / (2030 - 2018)$, where $minexp\_all_i = \frac{(80 - coeff\ constant - (\beta_2 * Log(GDP\ per\ capita_i)) - (\beta_3 * MVI))}{\beta_1}$ (see equation described in the note of Table 2).

[3] Despite differences in the methodology and scope, this result is in line with the SDG financing gap estimated by Tiedemann et al. (2021) for a selection of 25 small developing states, including 23 (highly vulnerable) SIDS (about 6.7% of GDP).