CENTER FOR GLOBAL DEVELOPMENT

Climate Finance Allocations and Vulnerability

Jonathan Beynon

Abstract

The paper seeks to inform ongoing debate about the allocation of climate finance by reviewing and presenting new evidence on assessments of vulnerability and the allocation of adaptation finance. It finds that the five vulnerability indices reviewed give wildly different results, with very few countries consistently ranked in the top quartile: Least developed countries (LDCs) and low-income countries (LICs) appear to be most vulnerable to climate change, while more often than not most small island developing states (SIDS) are actually ranked in the bottom half. It also finds huge variation in adaptation finance across developing countries, with per capita levels ranging from less than a dollar to more than $2,400 each year over the period 2016–2023. Adaptation finance is concentrated in relatively few countries, with many SIDS receiving exceptionally high levels per capita. Moreover, there is virtually no correlation between adaptation finance per head and either levels of vulnerability or per capita income across all country groups. The paper concludes that more of a focus on LDCs and LICs than on SIDS is needed when it comes to prioritising adaptation finance, that further technical work on measures of vulnerability is needed, that this needs to be tied into a political process probably led by the United Nations Framework Convention on Climate Change, and that differences between adaptation and loss and damage finance need to be more clearly recognised when talking about the allocation of funds.

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Introduction

How should climate finance be allocated to meet the needs of the "particularly vulnerable"? Both multilateral and bilateral development agencies are raising that question as they consider the allocation of their climate finance commitments, and their aid resources more generally. Many of the climate-specific funds are also posing the same question, including, for example, the Fund for responding to Loss and Damage (FRLD), which is developing its operating model for raising, allocating, and disbursing funds.

This paper seeks to inform this debate by first reviewing some of the arguments and existing evidence on which countries are particularly vulnerable to climate change, second, presenting some new analysis of how specific groups of countries feature in selected vulnerability indices, third, summarising information on the actual allocations of climate finance, and finally setting out some conclusions and proposals for a way forward. I focus in particular on the situation of least developed countries (LDCs) and small island developing states (SIDS) but also consider Africa, low-income countries (LICs), and the V20 group of vulnerable countries.

The main findings are that existing vulnerability indices (whether focused on overall risk, vulnerability, or exposure to climate change) give wildly different results, with at most four countries (out of a possible 35) consistently appearing in the top quartile across the four (five in the case of exposure) indices reviewed. This poses significant challenges for identifying countries that are particularly vulnerable to climate change. The SIDS category in particular may not in fact be a good proxy for vulnerability when looking across a range of indices, notwithstanding the unique challenges that many SIDS face. LDCs and LICs appear to be the country groups most vulnerable to climate change. The paper also finds that adaptation finance varies widely across countries, with per capita levels ranging from less than a dollar to more than $2,400 each year over the period 2016–2023. Adaptation finance is concentrated in relatively few countries, with many SIDS receiving exceptionally high levels per capita. Moreover, there is virtually no correlation between adaptation finance per head and either the level of vulnerability or per capita income across all country groups.

I suggest therefore that there should be more of a focus on LDCs and LICs when it comes to prioritising adaptation finance, that further technical work on measures of vulnerability is needed, that this needs to be tied into a political process probably led by the United Nations Framework Convention on Climate Change (UNFCCC), and that differences between adaptation and loss and damage (L&D) need to be more clearly recognised when talking about the allocation of funds.

Identifying the "particularly vulnerable"

What do the climate agreements say?

Both the 1992 UNFCCC and the 2015 Paris Agreement give particular emphasis to the needs of developing countries that are "particularly vulnerable to the adverse effects of climate change" (a phrase used in both documents), but there is no agreed list of which countries that includes.[1] The UNFCCC's preamble states that "low-lying and other small island countries, countries with low-lying coastal, arid and semi-arid areas or areas liable to floods, drought and desertification, and developing countries with fragile mountainous ecosystems are particularly vulnerable to the adverse effects of climate change."

Subsequent climate Conferences of the Parties, or COPs, in Bali (2007), Copenhagen (2009), and Cancun (2010) refer to SIDS, LDCs, and Africa as being particularly vulnerable and a priority for adaptation funding, but the Paris Agreement itself highlights only SIDS and LDCs for special attention.[2] The loss and damage financing decision agreed in Dubai (2023) mentions the "particularly vulnerable" 11 times without describing or defining them, although its annexed Governing Instrument states that its resource allocation system will take into account "a minimum percentage allocation floor for the least developed countries and small island developing States" (para. 60(f)). Negotiators representing SIDS and LDCs also pushed hard[3] (though ultimately unsuccessfully) for a minimum level of finance in the New Collective Quantified Goal agreed at Baku in 2024, which just repeats Paris Agreement language on the particularly vulnerable.

Other groups have also emerged, notably the Climate Vulnerable Forum and its associated V20 group of Finance Ministers (henceforth the V20), a self-identifying global partnership of countries, currently with 74 members, that seeks to define and articulate the needs of climate vulnerable countries, and to promote the mobilisation of public and private finance to strengthen economic and financial responses to climate change.

How to measure vulnerability?

The concept of vulnerability has itself evolved over time, and there is no single agreed methodology for measuring it. The framework applied by the Intergovernmental Panel on Climate Change (IPCC) in its Third and Fourth Assessment Reports (TAR in 2001 and AR4 in 2007) conceived of vulnerability as a function of exposure, sensitivity, and adaptive capacity. But in its 2012 special report *Managing*

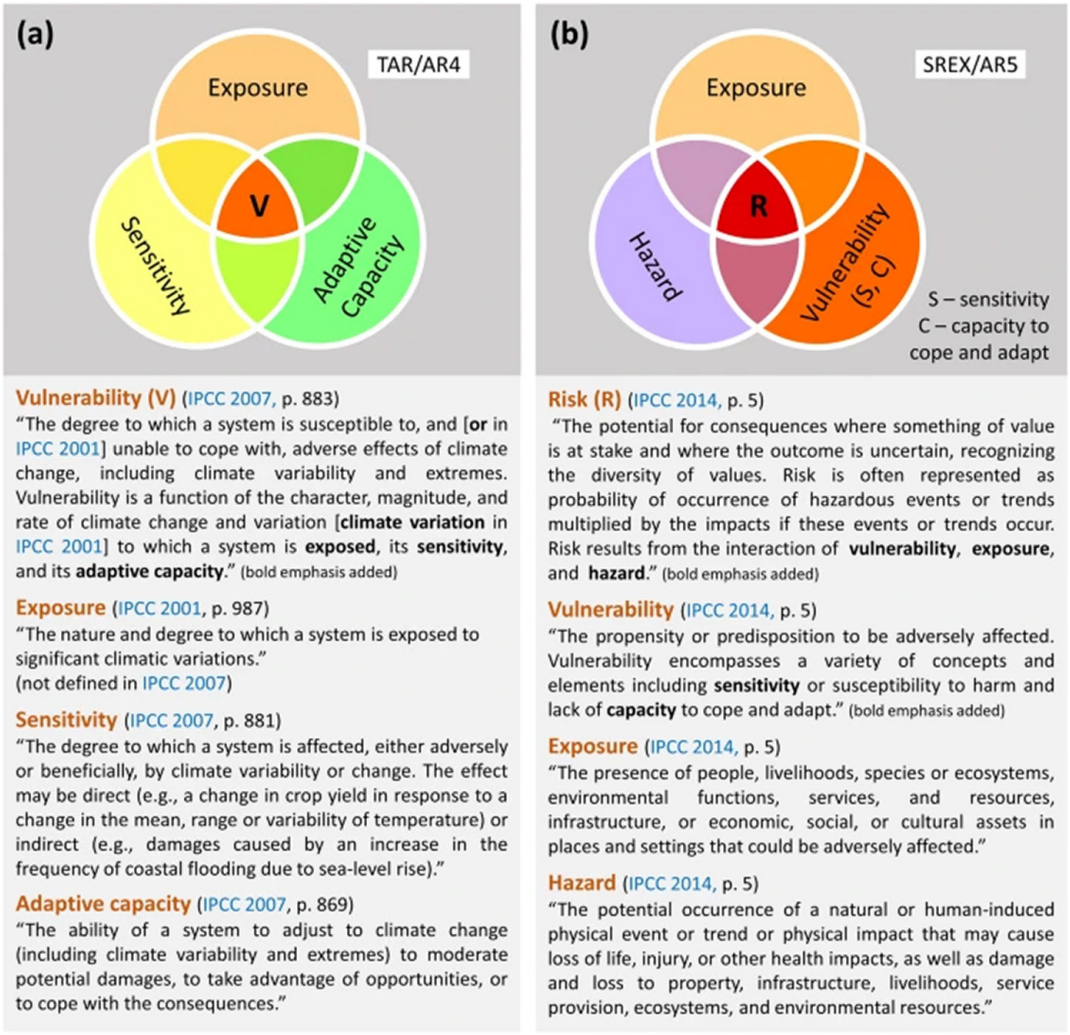
1 See Robinson et al. (2023) for a fuller commentary.

2 Article 9 says, "The provision of scaled-up financial resources should aim to achieve a balance between adaptation and mitigation, taking into account country-driven strategies, and the priorities and needs of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change and have significant capacity constraints, such as the least developed countries and small island developing States, considering the need for public and grant-based resources for adaptation."

3 See for example the written submissions from the Alliance of Small Island Developing States and the Least Developed Countries Group, available here.

the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) and its Fifth Assessment Report (AR5 in 2014), the IPCC reframed vulnerability as a function of sensitivity and capacity to cope and adapt, with exposure redefined and incorporated as a dimension of risk (Figure 1). Estoque et al. (2023) review those changes and suggest that the IPCC's revised vulnerability concept has not been well adopted, with the TAR/AR4 vulnerability concept retained for stand-alone vulnerability assessments, whereas the SREX/AR5 vulnerability concept has been used for vulnerability assessments in the context of risk.

FIGURE 1. The IPCC's changing concept of vulnerability



Source: Estoque et al. (2023, figure 1).

Previous analysis of climate vulnerability

Various approaches to assessing vulnerability[4] have been explored. Some construct composite indices that use a wide range of indicators to assess each country's risk and vulnerability to climate change. Others apply modelling approaches to estimate welfare losses or populations exposed to climate hazards.

Climate risk and vulnerability indices

A number of indices have been developed to try and assess risk and vulnerability to climate change, but they differ in design and composition and yield significantly different results. One early review (Füssel, 2009) found that many such studies are seriously flawed, and that vulnerability rankings are largely determined by normative choices in the selection and aggregation of diverse information across time, affected systems and regions, and impact metrics.[5] More recently, Garschagen et al.'s (2021) analysis of four of the leading global climate and disaster risk indices—the World Risk Index (WRI), the INFORM Risk Index (INFORM), the ND-GAIN Index (ND-GAIN), and the Climate Risk Index (CRI)—shows considerable variation in countries' risk levels and comparative ranks. Only two countries (Bangladesh and Haiti) appear in the top 25 countries across all four risk indices, which may limit their usefulness in resource allocation models.

However, they find stronger correlations when focusing more narrowly on "vulnerability," with 11 countries (10 in sub-Saharan Africa [Burundi, Chad, the Central African Republic, DRC, Ethiopia, Liberia, Mali, Niger, Sudan, and Uganda] plus Afghanistan) featuring in the top 25 across the three indices (WRI, INFORM, and ND-GAIN) that measured vulnerability.[6] But for exposure (a component of vulnerability in ND-GAIN but a separate component of risk in WRI and INFORM), *no* countries appeared in the top 25 in all three indices.

Much of the explanation for this lies in the different composition and structure of each index (Figure 2), and the considerable variation in indicator selection at each level across all indices. Indeed, only four indicators (out of a combined total of 100 different indicators) are common to the WRI, INFORM, and ND-GAIN overall risk indices, with none at all for vulnerability (out of 66), exposure

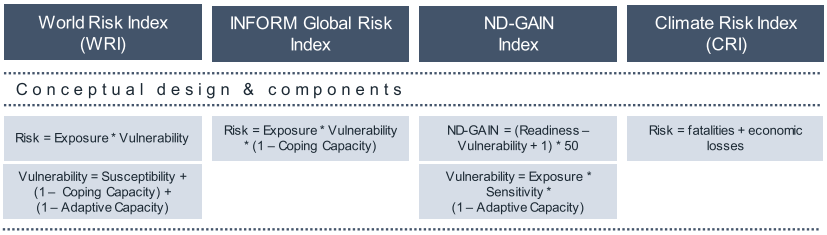
4 Later in this paper I distinguish between overall risk, vulnerability, and exposure, but unless clearly specified I generally use the term "vulnerability" more broadly to reflect all three levels.

5 Though an index can be determined by normative choices without necessarily being flawed (the poverty headcount indicator, for example), the problem arises when an indicator is based on normative choices on which there is no consensus or agreement.

6 Unpublished analysis by this author for the Department for International Development in 2016 found that only two countries (Guinea-Bissau and Niger) out of a possible 32 appeared in the top quartile of four different vulnerability indices focusing on physical vulnerability to climate change.

(out of 28), or susceptibility (out of 40), and only one for lack of coping capacity (out of 26) and lack of adaptive capacity (out of 19, just covering WRI and ND-GAIN).[7]

FIGURE 2. Comparing design and components of four global multi-hazard risk indices



Sources: From Garschagen et al. (2021). Their supplementary notes provide fuller detail on individual indicators. Note that the formulae for the WRI's risk and vulnerability indices have since been amended, although risk is still a function of exposure and vulnerability, and vulnerability is still a function of susceptibility, coping capacity, and adaptive capacity (both now based on geometric averages).

One other notable finding was that the correlation between the CRI (based exclusively on past damages/impacts) and the other indices (which address risk in the future) was particularly weak. This may simply reflect differences in index composition and measurement, but it also suggests that we need to think carefully about our use of vulnerability indices when considering allocations of adaptation finance (which might be thought of as "ex ante" support to increase resilience to future events) and loss and damage finance (which might be thought of as "ex post" support to address the costs of actual events). I return to this question later.

These disparities are clearly problematic as such indices are increasingly used to inform international climate policy and finance decisions. Garschagen et al. (2021) conclude that a solid understanding of index-based assessment tools, and their conceptual and methodological underpinnings, is necessary to navigate and interpret them properly. Others have argued that there is no objective "truth" in vulnerability assessments, with Robinson et al. (2023) suggesting that while the idea of vulnerability-based allocations should not be sidelined altogether, the identification of the "particularly vulnerable" will remain an inherently political process.

Modelling approaches to assessing climate risk and impacts

Others have used modelling approaches to estimate the impacts of climate change and natural disasters on poverty and welfare, or to quantify populations exposed to climate hazards and vulnerable to their impacts.

7 In a separate analysis (forthcoming), my colleague Sam Hughes has also shown that not only are there significant differences in the choice of different indicators *within* the various components of vulnerability, but there are also significant differences in individual indicator scores and rankings *even when* they purport to be measuring the same thing.

For example, the World Bank's *Unbreakable* report generates estimates of welfare losses due to extreme weather events in a probabilistic framework covering 117 countries (Bangalore et al., 2017). This model also produces a "socio-economic resilience" metric that measures an economy's ability to minimize the impact of asset losses on well-being, and is defined as the ratio of asset losses to well-being losses (the higher the impact of disaster-related asset losses on well-being, the lower the country's resilience). This work is currently being updated with new estimates of socio-economic resilience and asset and welfare losses, covering 132 developed and developing countries (Middelanis et al., 2025).

The World Bank has also developed country-level estimates of the percentage of people at high risk from climate-related hazards, defined as the percentage of people who are both exposed to a set of key climate-related hazards (floods, droughts, cyclones, and heatwaves) and highly vulnerable (based on a set of seven indicators assessing people's propensity to be adversely affected or unable to cope with the impacts).[8] People are counted as at high risk from climate-related hazards if they are exposed to at least one hazard and are identified as highly vulnerable on at least one dimension of vulnerability.[9] The data currently cover 103 individual countries (both developed and developing). A global value of this indicator has recently been adopted as one of the World Bank's eight vision indicators in its new scorecard for measuring impact and results.

Some new analysis: LDCs, SIDS, and vulnerability

In this section I present some new comparative analysis of a number of prominent risk and vulnerability indices. I focus on the ND-GAIN, WRI, and INFORM Climate Change (a variant of their more general Risk Index) indices but also consider the UN's Multidimensional Vulnerability Index (MVI), which seeks to recognize the particular vulnerabilities of SIDS and their needs for concessional support that are not captured by measures of gross national income per capita (GNI/hd), as well as FERDI's Physical Vulnerability to Climate Change Index (PVCCI), which primarily measures exposure to climate change and was used by the Organisation for Economic Co-operation and Development (OECD) (alongside ND-GAIN) in its analysis of the allocation of adaptation finance over the period 2016–2020.[10] It is worth noting that each index was created with a particular focus or objective that informs its construction and choice of sub-indicators. Summary details are shown in Table 1.

8 These seven indicators measure (i) the physical propensity to experience severe losses (proxied by the lack of mobility and access to basic infrastructure services, such as water and electricity) and (ii) the inability to cope with and recover from losses (proxied by low income, not having education, not having access to financial services, and not having access to social protection).

9 It doesn't therefore capture either the number or severity of hazards or vulnerabilities that people face (although the paper does present some information on shares of population facing *multiple* exposures and *multiple* vulnerabilities). It is more analogous to a simple "poverty headcount" measure than a more complex "poverty gap" measure.

10 We do not include the CRI (which focuses on the impact of extreme weather events like storms, floods, and temperature extremes in terms of economic losses, fatalities, and numbers affected [each measured in both absolute and relative terms] for both the latest year [2022] and the 1993–2022 period), as the full dataset is not currently publicly available. It's worth noting, however, that seven of the top 10 countries in 2022 were high-income countries, with relative fatalities being the main culprit in five of those seven.

TABLE 1. Selected vulnerability indicators

Climate Vulnerability Index	Notes
Notre Dame Global Adaptation Initiative (ND-GAIN) Country Index	The ND-GAIN Country Index is composed of two key dimensions of adaptation: vulnerability and readiness. Vulnerability captures the propensity of countries to be negatively affected by climate hazards and is assessed for three cross-cutting components (exposure, sensitivity, and adaptive capacity as per the IPCC's original definitions) across six sectors (food, water, health, ecosystem services, human habitat, and infrastructure). The readiness dimension captures a country's ability to facilitate and make effective use of investments for climate adaptation, measured using a range of economic, governance, and social indicators. Objective: "It aims to help governments, businesses and communities better prioritize investments for a more efficient response to the immediate global challenges ahead." 187 countries. Formula: *GAIN* = (*Readiness – Vulnerability + 1*) * *50* (*0–100 scale, higher scores are better*)
WorldRiskIndex (WRI) by Bündnis Entwicklung Hilft and the Institute for International Law of Peace and Armed Conflict (IFHV)	The WRI captures the disaster risk from extreme natural events and the negative impacts of climate change. It combines exposure (the extent to which populations are exposed to and burdened by the impacts of earthquakes, tsunamis, coastal and riverine floodings, cyclones, droughts, and sea-level rise) with vulnerability (itself a function of susceptibility [characteristics that increase the overall likelihood that populations will suffer damage from extreme natural events], short-term coping capacities, and longer-term adaptive capacities). Objective: "The WorldRiskIndex serves as a guidance for decision makers and identifies fields of action for disaster risk reduction." 193 countries. Formulae: $WRI = (Exposure \times Vulnerability)^{1/2}$ $Vulnerability = (Susceptibility \times Lack\ of\ Coping\ Capacities \times Lack\ of\ Adaptive\ Capacities)^{1/3}$
INFORM Climate Change Index by the Euro-Mediterranean Center on Climate Change and the Joint Research Centre of the European Commission	The INFORM Climate Change Index (INFORM CC) adapts the INFORM Risk Index (which uses indicators for hazard and exposure [natural and human/conflict], vulnerability [socio-economic and vulnerable groups], and lack of coping capacity [institutions and infrastructure] to measure the risk of humanitarian crises that could require international assistance). It is essentially a future projection of the INFORM Risk Index, modifying its *hazard* and *exposure* indicators based on projected climate and socio-economic trends under different representative concentration pathways and shared socio-economic pathways, focusing on a pessimistic scenario (RCP8.5 & SSP3) and an optimistic scenario (RCP4.5 & SSP1). It estimates the current (baseline) risk as well as future risks in 2050 and 2080. Objective: "The results are intended to inform policy choices across climate mitigation, climate adaptation, disaster risk reduction, sustainable development and humanitarian assistance." 190 countries. Formula: $Risk = Hazard\&Exposure^{1/3} \times Vulnerability^{1/3} \times Lack\ of\ coping\ capacity^{1/3}$

TABLE 1. (Continued)

Climate Vulnerability Index	Notes
Physical Vulnerability to Climate Change Index (PVCCI) by the Foundation for Studies and Research on International Development (FERDI)	The PVCCI is based exclusively on the physical characteristics of climate change (i.e., independent of country policies or socio-economic factors) and aims to guide the international allocation of adaptation finance. It measures exposure to and size of shocks, capturing risks related to both progressive shocks (flooding from sea-level rise or melting glaciers, increasing aridity) and the intensification of recurrent shocks (rainfall, temperature, storms). Objective: "It can be used as a criterion for guiding the international allocation of concessional resources (in particular those devoted to adaptation), as well as for the identification of the countries that are most vulnerable for structural or physical reasons." 191 countries. Formula: $PPVCI = ((Flooding^2+Aridity^2+Rainfall^2+Temp^2+Storms^2)/5)^{1/2}$
Multidimensional Vulnerability Index (MVI) by the United Nations	The MVI measures the risk of developing countries being affected by external shocks (beyond just climate). It is divided into two components (*structural vulnerability* and *lack of structural resilience*), each of which has three dimensions (economic, environmental, and social). Objective: "It is a vital tool to help small island nations gain access to the concessional financing that they need to survive the climate catastrophe, to improve their long-term national planning, service their debts, and sign up to insurance and compensation schemes that may be their last hope when the waters rise." 142 countries. Formula: $MVI = ((Vulnerability^2 + Lack\ of\ Resilience^2)/2)^{1/2}$

I initially assess correlations[11] for the 140 countries (these are all developing countries, as the MVI excludes more developed countries from its coverage) that are common to all the indices at three levels:

- the *overall index* (ND-GAIN, WRI, INFORM CC, MVI)[12];
- the components within each that measure *vulnerability* (ND-GAIN vulnerability, WRI vulnerability, INFORM CC vulnerability, MVI structural vulnerability); and
- the components within each that measure *exposure* (ND-GAIN exposure, WRI exposure, INFORM CC hazard and exposure, MVI environmental vulnerability,[13] PVCCI[14]).

11 These use Pearson's correlation coefficients, but Spearman's rank correlation coefficients are very similar.

12 ND-GAIN is on a 0–100 scale with higher scores better. To be consistent with other indices (where higher scores are worse, i.e., higher risk), ND-GAIN scores are inverted (by subtracting from 100). This analysis also uses the baseline (2022) figures for INFORM CC, rather than its 2050 projections, although these are highly correlated and choice makes little difference to our analysis.

13 MVI uses the term *vulnerability,* but the index components cover *exposure* to natural hazards, extreme weather events, and ecosystem pressure.

14 The PVCCI is a composite indicator that measures both exposure to shocks and size of shocks, but is judged to correspond most closely to measures of exposure for the purposes of this analysis.

Terminology and composition differ across indices (see Box 1 for an illustration on exposure), and it may be that isolating or removing individual components to ensure greater comparability would improve correlations at each level.[15] However, this is not straightforward, and policymakers are more likely to focus on the overall indices and their main headings than delve into the weeds of their individual components.

I also assess (for the 135 countries that also have per capita income data) the extent to which each index is correlated with per capita income. Further analysis compares these indices with the World Bank measures of socio-economic resilience and the percentage of people at high risk from climate-related hazards.

I then go on to calculate the number of countries that feature in the top quartile, and also the top half, of all four indices (five in the case of our exposure indices) to provide a more tangible illustration of how (dis)similar are the rankings provided by each index.

Given the prominence of LDCs and SIDS in the climate change agreements, I repeat this analysis just for LDCs and SIDS, as well as for a combined group that are either LDCs or SIDS,[16] in order to assess how well these categories approximate for the "particularly vulnerable." But I also consider other country groupings that are widely recognized as being poor and/or vulnerable to climate change, specifically the V20 group, Africa, and low-income countries, noting that there are considerable overlaps in membership of some groups (for example, all but two of the 26 LICs are also among the 46 LDCs, and 24 of the 37 SIDS are also in the V20, though only eight countries are both a SIDS and an LDC; see details in Annex 1). I also calculate the proportion of each group of countries that falls in each quartile, as well as the proportion of each quartile that is made up of each country group, both by number of countries and by their populations. The same figures for the top decile are also reported.

Given the limited correlation across the different indices, I also construct an average index for each of the three groups (overall, vulnerability, and exposure). This is a somewhat artificial measure, but it is intended to smooth out some of the variation across indices to shed light on whether any of the country groups serve as an adequate proxy for the "particularly vulnerable." This entailed converting each index to a 0–1 scale using the min-max normalisation procedure,[17] then taking the average of each index for those countries common to each group of indices. I also assess how well these average indices correlate with per capita income.

15 Garschagen et al. (2021), for example, exclude the human hazard elements of INFORM's "hazard and exposure" component, and focus only on natural hazard elements.

16 Comoros, Guinea-Bissau, Haiti, Kiribati, Sao Tome and Principe, Solomon Islands, Timor-Leste, and Tuvalu are in both groups.

17 This was done *after* the sample was reduced to cover only those countries common to each index (and with GNI/hd data) in order to ensure that the minimum and maximum normalised values in each index are indeed 0 and 1, respectively (an alternative approach in which each index is normalised across its full set of countries to capture the full variability of each index produced similar results). An alternative normalisation procedure using standardised z-scores (such that each index has the same mean of 0 and standard deviation of 1) was also explored, but it yielded very similar results, which are not reported here.

BOX 1. A comparison of exposure components of selected indices

There are significant differences in the selection, measurement, and aggregation of individual components in the indices under review. This box illustrates this with regard to the measures of exposure.

- **ND-GAIN** covers projected changes in cereal yields, population change, annual run-off, annual groundwater recharge, deaths from climate-induced diseases, vector-borne diseases, biome distribution, marine biodiversity, warm periods, flood hazards, hydropower generation capacity, and sea-level rise impacts. Each is converted to a 0–1 scale, and combined using the arithmetic mean (equal weights).
- **WRI** considers the numbers and shares of population affected (and the severity of impact) by earthquakes, tsunamis, coastal and riverine floodings, cyclones, droughts, and sea-level rise.
- **INFORM** captures the numbers of people affected by projected changes in earthquakes, tsunamis, river floods, coastal floods, cyclones, drought, malaria and dengue epidemics, and conflict. It combines both hazard and exposure dimensions (noting that there is no risk if there is no physical exposure, no matter how severe the hazard event is). Components are equally weighted.
- **PVCCI** measures both exposure to shocks and the size of shocks, covering the risks of flooding, aridity, temperature shocks, rainfall shocks, and cyclones. Components are normalized on a scale of 0–100 using a standard min-max formula, and aggregated by combining an equal weighting scheme with a quadratic formula that amplifies the weight or impact of components with the highest value.
- **MVI** measures the impact of natural hazards (victims and damages), the increased frequency and intensity of extreme climatic events (rainfall and temperature shocks), and increased stress due to ecosystem pressures (covering both low coastal zones and drylands), and uses quadratic means to construct each composite component (which gives more weight to countries that are highly exposed to just one of each pair of indicators).

Correlation analysis

Correlation coefficients are presented in Table 2, which includes correlations with and between our average index and GNI/hd.[18] Shading denotes strength of correlation (with a coefficient of at least 0.5 required to be shaded); asterisks indicate levels of significance. Note these key points:

- *Overall risk indices.* Correlation coefficients are generally low, with that between ND-GAIN and INFORM CC the only one to exceed 0.5. MVI is even *negatively* correlated with WRI and INFORM CC (though its coefficient with INFORM CC is not significant), which is not altogether surprising given its much broader scope. Each index is more strongly correlated

18 Analysis therefore covers only the 135 countries that also have GNI/hd data, although results for the 140 countries common to all indices are very similar.

with the normalised average than with any of the other individual indices. As expected, all are negatively correlated with per capita income (though moderately so at best), except for MVI (not significant), which was largely designed to make the case for concessional support to SIDS that would ordinarily be disqualified from it by their higher per capita incomes.

- *Vulnerability indices.* A similar pattern emerges, with correlations marginally stronger but still pretty weak overall. The strongest correlation this time is between WRI and INFORM CC vulnerability measures. Correlations with per capita income are now negative for all indices (but still insignificantly so in the case of MVI).
- *Exposure indices.* Correlations are very weak almost across the board (MVI–PVCCI the one exception). This is perhaps the more surprising result given the narrower focus of each exposure index, although Garschagen et al.'s (2021) results were similar. The explanation lies largely in the significant differences in the selection and measurement of specific hazards and events in the various indices (Box 1). Each index is again more strongly correlated with the normalised average than with any of the other individual indices, but correlations with per capita income are universally weak.

TABLE 2. Correlation coefficients (for 135 countries common to all indices, with GNI/hd data)

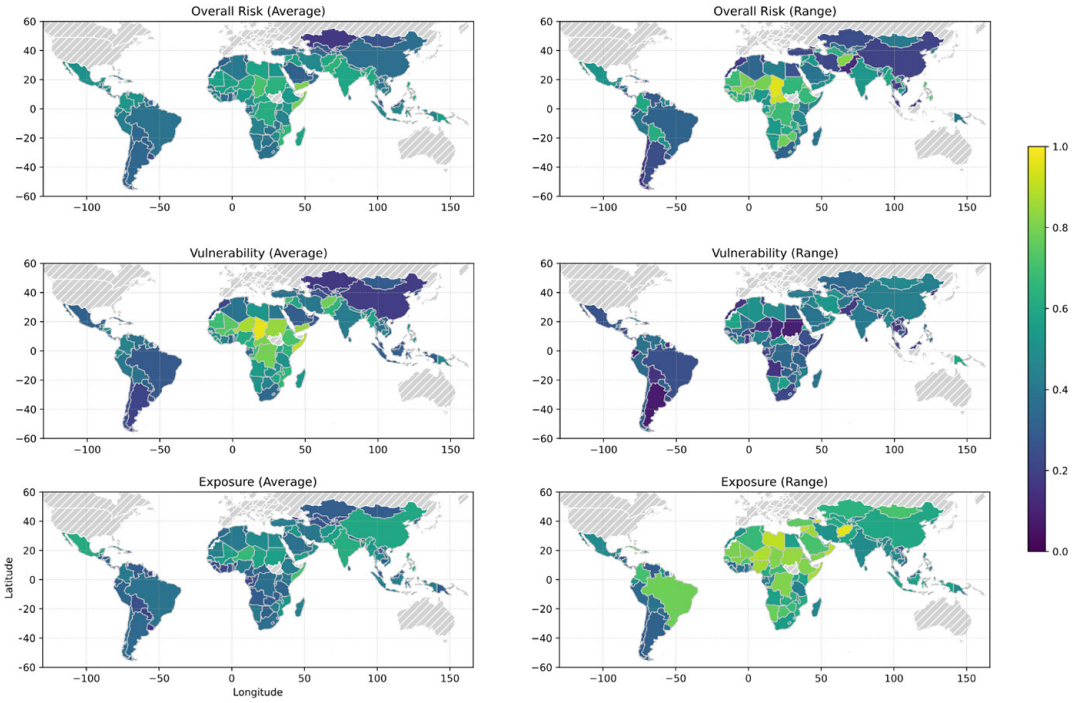
Overall Risk Indices	WRI	INFORM CC	MVI		Avg (min-max normalised)	GNI/hd (2022)
NDGAIN (inverted)	0.08	0.70***	0.20*		0.80***	−0.65***
WRI		0.40***	−0.40***		0.47***	−0.16
INFORM CC			−0.03		0.85***	−0.57***
MVI					0.31***	0.09
Avg (min-max normalised)						−0.52***
Vulnerability Indices	**WRI vuln**	**INFORM CC vuln**	**MVI struct vuln**		**Avg (min-max normalised)**	**GNI/hd (2022)**
NDGAIN vuln	0.42***	0.55***	0.30***		0.78***	−0.40***
WRI vuln		0.82***	0.07		0.80***	−0.50***
INFORM CC vuln			0.17		0.87***	−0.61***
MVI struct vuln					0.49***	−0.08
Avg (min-max normalised)						−0.55***
Exposure Indices	**WRI exp**	**INFORM CC H&E**	**MVI env vuln**	**PVCCI**	**Avg (min-max normalised)**	**GNI/hd (2022)**
NDGAIN exp	0.12	0.10	−0.15	0.02	0.33***	−0.12
WRI exp		0.45***	−0.11	−0.08	0.45***	−0.04
INFORM CC H&E			0.00	0.03	0.64***	−0.33***
MVI env vuln				0.69***	0.58***	0.01
PVCCI					0.65***	0.00
Avg (min-max normalised)						−0.20***

Notes: Avg (min-max normalised) is the average value of the four indices (five for exposure) calculated after first normalising each index using the min-max method (see footnote 17). Asterisks denote significance: *** significant at 0.1% level, ** at 1% level, * at 5% level.

Removing the MVI from the analysis (which increases the sample with data in all indices to more than 180 countries) generally increases the pairwise correlations between the other indices, and the significance of those coefficients, but the changes are small and the key points above still stand.

Figure 3 uses the normalised values of each index to display both the average (left-hand panel) and the range (maximum less minimum value, in right-hand panel) in map form for the 140 countries common to all indices. The left-hand maps show that levels of overall risk are highest throughout the tropics, levels of vulnerability are particularly concentrated in Africa, and levels of exposure are highest in the zones around but also north of the equator. The right-hand maps show that variability is particularly pronounced in (tropical) Africa for the overall risk indices, but geographically slightly more even for vulnerability (uniformly moderate) and exposure (uniformly high).

FIGURE 3. Average values and min-max ranges for overall risk, vulnerability, and exposure indices (140 countries)



Further analysis of how well correlated these indices are with the World Bank measures of socio-economic resilience (and their underlying vulnerability and exposure indicators) and the percentage of people at high risk from climate-related hazards is set out in Annex 2. The key finding is that these are moderately correlated with many of our indices at the vulnerability level, but not at the exposure level.

Core data for different country groups

Subsequent sections summarise analysis of the number of countries (and people) that consistently feature in the top quartile (or half) of all our indices (i.e., countries that are most at risk/

vulnerable/exposed). But to put these in context, Table 3 first reports data on each country group's share of the total number of countries (and people) covered by our set of 140 countries that are common to all indices. Much of the debate about vulnerability has focused on countries, but the table clearly shows that each group represents a much smaller share of total population than of total number of countries. This is particularly the case for SIDS (which account for 26 percent of the countries but just 1 percent of their people) and highlights the importance of also taking population into account.

TABLE 3. Number of countries and people in set of 140 countries

Country Group	Number of Countries	% Share	Population (millions)	% Share
All countries	140	100%	6604	100%
LDCs	45	32%	1125	17%
SIDS	36	26%	67	1%
LDCs/SIDS	73	52%	1174	18%
V20	72	51%	1759	27%
Africa	53	38%	1434	22%
LICs	25	18%	706	11%

Top quartile/half analysis

Table 4 presents our analysis of the number of countries that consistently feature in the top quartile and top half of all four indices (five in the case of exposure[19]). It also reports numbers using our average index score for the three levels (overall risk, vulnerability, and exposure). The key points to note are as follows:

- The number of countries that feature in the top quartile (a possible 35 countries) of all indices is tiny: just two (Somalia and Yemen) for the overall risk indices, four (Chad, Niger, Somalia, and Sudan) for the vulnerability indices, and one (Somalia) for the exposure indices. They are all LDCs (and generally V20, LIC, and African). None of them are SIDS.
- The number of countries that feature in the top half is higher (18, 22, and 6, respectively) but still well below what one might expect if the indices were reasonably consistent, and hardly any are SIDS.[20] Without a clear and obvious rationale for favouring one index over another, these two points illustrate the potential pitfalls of using any individual index of risk, vulnerability, or exposure as a means of identifying particularly vulnerable countries.
- The numbers of LDCs and SIDS (and indeed of the other country groups) that feature in the top quartile or half are, however, much higher when using the average index that we have

19 Limiting analysis to the same four indices (i.e., excluding the PVCCI) makes very little difference to the results.

20 While not reported here, I also calculated the number of countries that appear in the top quartile in three out of four indices (and four out of five for our exposure indices). Results are generally very similar to results for numbers appearing in the top half.

calculated for the overall, vulnerability, and exposure indices. This suggests that these groups *may* serve as reasonable proxies for the particularly vulnerable, although this appears to be much truer for LDCs than for SIDS. Of the other groups, LICs appear to be most concentrated in the upper quartile once allowance is made for the smaller size of the LIC group relative to the others.

However, even if we can identify which *groups* of countries are particularly vulnerable, this analysis provides no guide as to which countries *within* such groups are most vulnerable.

TABLE 4. Number of countries in top quartile or half of all indices, and using average index

	All Countries	LDCs	SIDS	LDCs/ SIDS	V20	Africa	LICs
Total number of countries	140	45	36	73	72	53	25
Overall Risk Indices							
Number in top quartile of all 4 indices	2	2	0	2	2	1	2
Number in top half of all indices	18	10	3	11	10	11	7
Number in top quartile based on avg score	35	23	3	24	21	22	18
Number in top half based on avg score	70	36	13	43	21	22	18
Vulnerability Indices							
Number in top quartile of all 4 indices	4	4	0	4	4	4	4
Number in top half of all indices	22	16	2	17	15	16	12
Number in top quartile based on avg score	35	26	4	27	20	25	21
Number in top half based on avg score	70	43	16	51	20	25	21
Exposure Indices							
Number in top quartile of all 5 indices	1	1	0	1	1	1	1
Number in top half of all indices	6	2	2	4	5	2	2
Number in top quartile based on avg score	35	16	8	22	19	12	11
Number in top half based on avg score	70	25	18	39	19	12	11

Proportions of countries and populations by quartile

The three panels of Table 5 report the following proportions for our set of 140 developing countries and for each index:

i. The proportion of each group of countries that falls in the top quartile: This provides a first indication of the extent to which countries in each country group are concentrated in the top (most vulnerable) quartile. However, figures are not directly comparable due to differences in the size of each group (and 100 percent is unachievable as the number of countries in each group [bar LICs] exceeds 35, the number of countries in each quartile).

ii. The proportion of the top-quartile countries that are accounted for by each group: This provides a complementary picture of which group(s) of countries dominate the top-quartile positions.[21]
iii. The total population living in top-quartile countries: This provides a simple comparative measure of just how many people in top-quartile countries are captured by each index.
iv. The proportion of each group's population that falls in the top quartile: This is analogous to (i) but focuses on people, not countries, and allows an assessment of whether it is the more/less populous countries in each group that feature in the top quartile (as would be the case if the percentage figure is higher/lower than in (i)).
v. The proportion of the total population of top quartile countries that are accounted for by each group: this is analogous to (ii) but also focuses on people, not countries.

These figures need to be viewed in the light of each group's share of total countries and population in Table 3. Three separate panels cover each of the overall risk, vulnerability, and exposure indices. The penultimate column in each panel reports the difference between the highest and lowest values reported by the different indices, with the final column reporting figures according to the average index we've calculated. Full tables with data for all four quartiles, as well as the top decile, are in Annex 3. The key points to note are these:

- *Overall risk indices.* There is enormous variation in results across the different indices, with the proportion of top-quartile countries accounted for by LDCs or SIDS ranging from 29 percent (WRI) to 89 percent (ND-GAIN) for example. Differences between indices are even more extreme when looking at populations rather than numbers of countries, with the share of LIC populations living in top-ranked countries, for example, ranging from 17 to 93 percent. Moreover, the total numbers of people living in top-quartile countries range from around 500 million (MVI) to 5 billion (WRI), with the different quartile rankings of China and India being significant (but by no means the only) determinants of this variation. Not surprisingly, the MVI suggests that SIDS are most at risk (in terms of countries, but not populations), though this index is very much the outlier in this regard. Our *average* index suggests that LDCs and LICs are disproportionately vulnerable, with 51 and 72 percent, respectively, of LDC and LIC countries, and 75 and 88 percent, respectively, of their populations, in the top quartile. But only 8 percent of SIDS and 34 percent of SIDS' populations appear in the top quartile. Indeed, the majority—65 percent of SIDS and 57 percent of their populations—actually fall in the bottom half (see detailed results in Annex 3).

21 Figures are equivalent to a calculation of the percentage share of each country group ranked in the top quartile as a percentage of the maximum percentage possible for each group, and so complements (i) by allowing for the fact that the number of countries in each group may exceed the total number of countries per quartile.

TABLE 5A. Proportion of countries and populations in top quartile, and accounted for by each country group (overall indices)

Overall Risk Indices	NDGAIN (inverted)	WRI	INFORM CC	MVI	Maximum Difference	Avg (min-max normalised)
% share of countries in top quartile						
All countries	25%	25%	25%	25%	0%	25%
LDCs	64%	18%	42%	33%	47%	51%
SIDS	17%	8%	6%	39%	33%	8%
LDCs/SIDS	42%	14%	27%	34%	29%	33%
V20	31%	22%	28%	26%	8%	29%
Africa	49%	13%	34%	28%	36%	42%
LICs	84%	16%	68%	32%	68%	72%
% share of top quartile accounted for by						
LDCs	83%	23%	54%	43%	60%	66%
SIDS	17%	9%	6%	40%	34%	9%
LDCs/SIDS	89%	29%	57%	71%	60%	69%
V20	63%	46%	57%	54%	17%	60%
Africa	74%	20%	51%	43%	54%	63%
LICs	60%	11%	49%	23%	49%	51%
Population in top quartile (million)	1019	5021	3377	526	4495	3157
% share of population in top quartile						
All countries	15%	76%	51%	8%	68%	48%
LDCs	83%	36%	74%	17%	66%	75%
SIDS	38%	33%	33%	22%	16%	34%
LDCs/SIDS	81%	37%	72%	17%	64%	73%
V20	46%	54%	67%	24%	42%	69%
Africa	47%	22%	55%	11%	44%	65%
LICs	93%	17%	88%	24%	76%	88%
% share of top quartile's pop accounted for by						
LDCs	92%	8%	25%	37%	84%	27%
SIDS	3%	0%	1%	3%	2%	1%
LDCs/SIDS	93%	9%	25%	37%	84%	27%
V20	79%	19%	35%	82%	63%	38%
Africa	66%	6%	23%	30%	60%	29%
LICs	64%	2%	18%	33%	62%	20%

Note: Maximum difference is the share reported in the highest index less the share reported in the lowest index.

- *Vulnerability indices.* Differences between the vulnerability indices are slightly more muted than for the overall risk indices in LDCs (as well as Africa and LICs, though similar in SIDS and somewhat higher for V20 countries), but these indices still give very disparate results overall. Differences are again even more extreme when looking at population (with a maximum difference of 62 percentage points) rather than the number of countries (maximum difference of 36 percentage points), although the number of people living in top-quartile countries has a slightly narrower range of 600 million to 3.4 billion. The average index suggests that LDCs and

LICs are even more heavily concentrated in the top quartile (58 and 84 percent, respectively, of their countries, and 75 and 88 percent, respectively, of their populations), while the majority of SIDS still fall in the bottom half on both measures. Three-quarters of the most vulnerable countries (ranging from 37 to 83 percent across the four indices), and 57 percent of the most vulnerable populations (range 25 to 98 percent), are LDCs. The figures for SIDS are 11 (range 3 to 37 percent) and 1 percent (range 0 to 3 percent), respectively.

TABLE 5B. Proportion of countries and populations in top quartile, and accounted for by each country group (vulnerability indices)

Vulnerability Indices	NDGAIN vuln	WRI vuln	INFORM CC vuln	MVI struct vuln	Maximum Difference	Avg (min-max normalised)
% share of countries in top quartile						
All countries	25%	25%	26%	25%	1%	25%
LDCs	64%	42%	51%	29%	36%	58%
SIDS	36%	3%	6%	36%	33%	11%
LDCs/SIDS	48%	27%	33%	33%	21%	37%
V20	38%	28%	36%	26%	11%	28%
Africa	42%	38%	47%	32%	15%	47%
LICs	68%	64%	76%	40%	36%	84%
% share of top quartile accounted for by						
LDCs	83%	54%	62%	37%	46%	74%
SIDS	37%	3%	5%	37%	34%	11%
LDCs/SIDS	100%	57%	65%	69%	43%	77%
V20	77%	57%	70%	54%	23%	57%
Africa	63%	57%	68%	49%	19%	71%
LICs	49%	46%	51%	29%	23%	60%
Population in top quartile (million)	617	3426	1584	636	2809	1476
% share of population in top quartile						
All countries	9%	52%	24%	10%	43%	22%
LDCs	54%	77%	77%	16%	60%	75%
SIDS	25%	15%	33%	24%	17%	22%
LDCs/SIDS	53%	74%	74%	16%	58%	71%
V20	32%	69%	67%	25%	44%	59%
Africa	27%	61%	63%	12%	52%	59%
LICs	54%	79%	89%	26%	62%	88%
% share of top quartile's pop accounted for by						
LDCs	98%	25%	54%	29%	73%	57%
SIDS	3%	0%	1%	3%	2%	1%
LDCs/SIDS	100%	25%	55%	29%	75%	57%
V20	92%	35%	74%	68%	56%	70%
Africa	64%	26%	57%	26%	38%	58%
LICs	62%	16%	40%	29%	46%	42%

Note: Maximum difference is the share reported in the highest index less the share reported in the lowest index.

- *Exposure indices.* Variation across exposure indices is equally large (similar in scale to that for vulnerability indices, somewhat smaller for LDCs and V20 countries but larger for SIDS and Africa). There is, however, greater consistency across indices in the share of the top quartile's population accounted for by the various country groups (the maximum difference being "only" 48 percentage points, in this case for V20 countries), although the numbers of people living in top-quartile countries have an even larger range of 660 million to 5.4 billion. That aside, a similar pattern emerges as for the other indices. Once again, the average index suggests that LDCs and LICs are the most exposed, although figures are not as extreme as for the broader vulnerability indices, with 36 and 44 percent, respectively, of their countries, and 48 and 45 percent, respectively, of their populations, in the top quartile (cf. 22 percent of SIDS and 41 percent of SIDS populations). Forty-six percent of the most vulnerable countries (ranging from 20 to 57 percent across the five indices) are LDCs, though only 12 percent of the most vulnerable populations (range 7 to 33 percent) are LDCs, the latter figures partly suppressed by the more widespread inclusion of both India and China among the most exposed countries. The figures for SIDS are 23 (range 0 to 46 percent) and 1 percent (range 0 to 4 percent), respectively.

TABLE 5C. Proportion of countries and populations in top quartile, and accounted for by each country group (exposure indices)

Exposure Indices	NDGAIN exp	WRI exp	INFORM CC H&E	MVI env vuln	PVCCI	Maximum Difference	Avg (min-max normalised)
% share of countries in top quartile							
All countries	25%	25%	25%	25%	25%	0%	25%
LDCs	44%	16%	33%	24%	33%	29%	36%
SIDS	36%	8%	0%	44%	28%	44%	22%
LDCs/SIDS	38%	12%	21%	36%	32%	26%	30%
V20	28%	23%	23%	25%	27%	6%	27%
Africa	32%	9%	30%	23%	36%	26%	23%
LICs	48%	20%	56%	32%	40%	36%	44%
% share of top quartile accounted for by							
LDCs	57%	20%	43%	31%	43%	37%	46%
SIDS	37%	9%	0%	46%	29%	46%	23%
LDCs/SIDS	80%	26%	43%	74%	66%	54%	63%
V20	57%	46%	46%	51%	54%	11%	54%
Africa	49%	14%	46%	34%	54%	40%	34%
LICs	34%	14%	40%	23%	29%	26%	31%

TABLE 5C. (Continued)

Exposure Indices	NDGAIN exp	WRI exp	INFORM CC H&E	MVI env vuln	PVCCI	Maximum Difference	Avg (min-max normalised)
Population in top quartile (million)	2693	4758	5388	661	801	4727	4520
% share of population in top quartile							
All countries	41%	72%	82%	10%	12%	72%	68%
LDCs	58%	31%	69%	19%	23%	49%	48%
SIDS	16%	33%	0%	40%	26%	40%	41%
LDCs/SIDS	57%	31%	66%	20%	23%	46%	47%
V20	32%	50%	68%	25%	28%	43%	52%
Africa	35%	16%	62%	16%	28%	46%	24%
LICs	54%	21%	81%	28%	33%	60%	45%
% share of top quartile's pop accounted for by							
LDCs	24%	7%	14%	33%	32%	25%	12%
SIDS	0%	0%	0%	4%	2%	4%	1%
LDCs/SIDS	25%	8%	14%	35%	34%	27%	12%
V20	21%	18%	22%	66%	62%	48%	20%
Africa	19%	5%	16%	35%	50%	45%	8%
LICs	14%	3%	11%	30%	29%	27%	7%

Note: Maximum difference is the share reported in the highest index less the share reported in the lowest index.

An alternative way of looking at this is to consider the average rank of countries in each country group in each index and at each level. These are reported in Table 6 below. This shows that LDCs are more vulnerable than SIDS at all three levels using ranks based on the average of the normalised index scores, and in virtually every case when analysing individual indices (with some exposure indices and the MVI again being the key exceptions). As a group, LICs appear to be even more vulnerable than LDCs in pretty much every scenario.

TABLE 6. Average vulnerability rank of countries in each country group

Overall Risk Indices	NDGAIN (inverted)	WRI	INFORM CC	MVI	Normalised Average
LDCs	31	74	43	58	43
SIDS	79	88	99	51	85
V20	60	72	64	67	64
Africa	45	77	53	60	53
LICs	21	71	26	49	28
Vulnerability Indices	**NDGAIN vuln**	**WRI vuln**	**INFORM CC vuln**	**MVI struct vuln**	**Normalised Average**
LDCs	29	46	37	62	33
SIDS	58	103	93	54	76
V20	56	65	60	68	59
Africa	50	49	47	62	46
LICs	27	31	22	53	22

TABLE 6. (Continued)

Exposure Indices	NDGAIN exp	WRI exp	INFORM CC H&E	MVI env vuln	PVCCI	Normalised Average
LDCs	49	83	61	71	67	63
SIDS	57	79	99	64	61	74
V20	62	74	69	72	69	71
Africa	64	84	67	71	66	71
LICs	44	85	43	66	61	51

Note: Average rank out of 140 countries included in all indices. The lower the rank, the more vulnerable.

Summary

In *summary,* here are the main findings:

- The indices are generally only weakly correlated with each other at all levels (overall risk, vulnerability, and exposure).
- Most indices (bar the MVI) are moderately correlated with GNI/hd at the "vulnerability" level (poorer countries are more vulnerable), but less so when considering overall risk or exposure.
- The number of countries that consistently feature in the top quartile is extremely small at all three levels. Only two (out of a possible 35) are top quartile for all overall risk indices, four for vulnerability and one for exposure. All are LDCs, and none of them are SIDS.
- The numbers of people living in top-quartile countries vary hugely across all indices, particularly at the levels of overall risk and exposure, with numbers ranging from half a billion to more than 5 billion.
- The proportion of LDCs and SIDS (both by number of countries and especially by population) that appear in the top quartile of each set of indices varies enormously.
- LDCs (and LICs) are clearly disproportionately concentrated in the top quartile of most vulnerable countries at all levels. But this is not true of SIDS, with all the average indices and many of the individual indices suggesting that most SIDS actually fall in the bottom half (least vulnerable). These findings are even stronger when looking at numbers of people rather than numbers of countries.

This suggests that not only is using individual indices to identify the particularly vulnerable fraught with difficulty, but the SIDS category may not be a very good indicator of vulnerability to climate change. This finding will be surprising and contentious for many, especially given SIDS' well-known susceptibility to hurricanes and sea-level rise, and the prevailing narrative that SIDS are among the most vulnerable countries. For example, this World Bank blog describes SIDS as "among the world's

most exposed countries to climate change," noting that 10 of the 19 countries in the most exposed decile of the ND-GAIN exposure sub-index are SIDS (Canagarajah, 2024).[22]

However, our analysis shows that across a range of indices, it is not so evident that SIDS are disproportionately vulnerable. That of course serves to highlight just how different the methodologies are. But even the ND-GAIN exposure example cited by the World Bank (which, after the MVI, is most favourable to SIDS) needs to be interpreted carefully: While it does indeed show that SIDS are heavily concentrated in the top decile (accounting for an even higher 64 percent of top-decile countries in our sample of developing countries, whereas LDCs account for 50 percent), they account for just 0.1 percent of the *population* of top-decile countries (cf. LDCs at 8.7 percent, see Annex 3).[23] What's more, only 3 percent of SIDS populations reside in the top decile of most exposed countries (cf. 12 percent for LDCs).[24] So taking population into account is critical to this analysis, even more so if looking at deciles rather than quartiles. Choice of metric also matters: SIDS account for a much lower 36 percent of the top-decile countries in ND-GAIN's *vulnerability* index (cf. LDCs at 79 percent) and just 1.6 percent of their populations (cf. LDCs at 99.9 percent). Other articles single out Africa and LDCs as being particularly vulnerable.[25]

This is not to diminish the very real climate threats (genuinely existential in some cases) or wider vulnerabilities that many SIDS are facing, and special support is undoubtedly justified (we return to this in the concluding section). But the case for them being described as the most vulnerable to climate change is not universally supported by the major indices assessed, which illustrates the difficulties of relying on a single index and of not taking populations into account.

But even if we *had* been able to conclude that the LDC and/or SIDS categories provided an adequate proxy for those most vulnerable to climate change, to which climate finance (notably adaptation and L&D finance) might be targeted, that approach would not inform allocation *within* those categories. I return to this in the concluding section.

Climate finance allocations to date

One would expect patterns of mitigation and adaptation finance to differ significantly. Mitigation finance should be targeted at countries where emissions are large and rapidly rising and/or where

22 Other examples include these: "SIDS are disproportionately impacted by climate change" (World Food Programme); "SIDS are among the most vulnerable to the impacts of climate change" (Climate and Clean Air Coalition); "SIDS nations are among the most vulnerable to climate change impacts" (GCA and CPI); and there are numerous references to SIDS being "on the frontlines of catastrophic climate crisis" (UN) or "facing extinction" (Context News).

23 Total top-decile population is 1.56 billion, dominated by India. Figures for the top *quartile* using ND-GAIN's exposure index showed that SIDS made up 37 percent and LDCs, 57 percent. Their shares of top-quartile populations were 0.4 and 24 percent, respectively (of a total top quartile population of 2.7 billion).

24 Figures based on populations in top *quartile* were 16 and 58 percent, respectively.

25 The UN's Economic Commission for Africa claims that "17 out of the 20 countries most threatened by climate change are in Africa" (citing ND-GAIN's vulnerability index), while the World Meteorological Organization notes that "Africa suffers disproportionately from climate change" and The Conversation claims that "Africa is particularly vulnerable to climate change." UNCTAD notes that "17 of the 20 most climate-vulnerable and least climate-prepared countries were LDCs" (also drawing on ND-GAIN).

the costs per tonne of carbon abated are comparatively low; adaptation finance should be targeted at countries most vulnerable to climate change, although the balance between physical vulnerability and adaptive capacity and broader institutional quality (which may influence the effectiveness with which finance can be spent) is an important consideration. One might also expect allocation rules to differ for climate finance channelled through climate-specific funds, and allocated according to different multilateral and bilateral resource allocation models (see the section "Discussion and a way forward").

Previous literature (briefly reviewed in Robinson et al. [2023]) suggests conflicting evidence on the role of vulnerability in driving international adaptation finance allocation (partly reflecting the diverse indicators and datasets used to measure adaptation finance flows and levels of vulnerability), with other factors such as the quality of governance and donor interests also playing a role. Most of that literature is focused on specific funds, such as the Adaptation Fund or the Green Climate Fund, or on the Climate-Related Development Finance database provided by the OECD. Some recent analysis of World Bank adaptation finance by CGD colleagues suggested that the most exposed countries with low adaptive capacity (using ND-GAIN indices) received relatively less adaptation finance than the most exposed countries with higher adaptive capacity over the period 2014–2023, although this partly reflects accounting methodologies,[26] and prioritisation of the most vulnerable did improve in the second half of that period.

In the rest of this section I look at OECD figures, starting with data from OECD reports on "Climate Finance and the USD 100 Billion Goal" for the period 2016–2022, which show total climate finance doubling to $116 billion and adaptation finance tripling to more than $32 billion over this period. Figures are summarised in Table 7 for all climate finance recipients and for LDCs and SIDS,[27] along with data on per capita income levels.

The figures suggest the following for total climate finance:

- The shares going to LDCs doubled to 22 percent between 2016 and 2020 but have since fallen back to around 18 percent ($21.2 billion in 2022). The shares to SIDS have been more erratic but have recently risen to around 3 percent ($3.2 billion in 2022).
- Figures per head in LDCs have only exceeded the average for all developing countries since 2019 (and not by much: $18.7/hd in 2022 compared to $17.2/hd for all developing countries).

26 Countries with higher adaptive capacity tend to be wealthier with basic infrastructure (both physical and social) already in place. In such cases, 100 percent of any World Bank financing designed to adapt existing infrastructure (such as a drainage scheme or social protection system) to climate change will count as adaptation finance. But in poorer countries much of that infrastructure may need to be built, and only a fraction (typically 20–50 percent) will count as adaptation if the investment is made adaptive to climate change.

27 The OECD notes that it is not appropriate to add together the LDC and SIDS figures to get a combined total because some countries (Comoros, Guinea-Bissau, Haiti, Kiribati, Sao Tome and Principe, Solomon Islands, Timor-Leste, and Tuvalu) are members of both groups (as was Vanuatu until 2020). That said, the total population and GNI of these countries is less than 2 percent of the combined population and GNI of all LDCs and SIDS, so adding together may not be a bad approximation unless there have been some disproportionately huge climate finance payments to these eight countries.

Figures per head in SIDS are significantly higher, double or even triple the average for all developing countries in most years ($48.1/hd in 2022).

- Total climate finance as a percentage of GNI is significantly higher than the developing country average in SIDS (even though they are much richer) and higher still in LDCs (which are much poorer).

For adaptation finance:

- The shares going to LDCs and SIDS show similar trends over time but are approximately twice as large (absolute figures being $10.9 billion and $1.9 billion, respectively, in 2022).[28]
- Adaptation per head figures in both LDCs and SIDS have been steadily rising. LDC figures ($9.6/hd in 2022) are now twice the developing country average ($4.8/hd), with SIDS figures six times higher ($29/hd).
- As a percentage of GNI, adaptation is also significantly higher than the developing country average in SIDS, and higher still in LDCs.

TABLE 7. Summary data on total and adaptation climate finance (2016–2022), with focus on LDCs and SIDS

	2016	2017	2018	2019	2020	2021	2022
Total climate finance ($bn)	58.5	71.6	79.9	80.4	83.3	89.6	115.9
LDCs share (%)	10.3%	15.4%	15.4%	19.2%	22.2%	16.7%	18.3%
SIDS share (%)	1.7%	2.0%	2.6%	1.5%	2.4%	3.5%	2.8%
Climate finance $/hd	9.3	11.2	12.4	12.3	12.6	13.4	17.2
LDCs $/hd	6.1	10.9	11.9	14.5	17.1	13.5	18.7
SIDS $/hd	15.9	22.0	32.7	18.5	30.5	47.1	48.1
Climate finance%/GNI	0.20%	0.23%	0.24%	0.23%	0.24%	0.24%	0.28%
LDCs%/GNI	0.65%	1.13%	1.14%	1.35%	1.61%	1.21%	1.55%
SIDS%/GNI	0.17%	0.23%	0.32%	0.18%	0.37%	0.52%	0.49%
Adaptation finance ($bn)	10.1	13.3	17.0	20.3	28.6	24.6	32.4
LDCs ada share (%)	24.8%	30.1%	29.4%	35.0%	35.0%	33.5%	33.5%
SIDS ada share (%)	4.0%	3.8%	4.1%	3.4%	4.5%	6.0%	6.0%
Adaptation $/hd	1.6	2.1	2.6	3.1	4.3	3.7	4.8
LDCs ada $/hd	2.5	4.0	4.8	6.7	9.2	7.4	9.6
SIDS ada $/hd	6.3	7.9	10.9	10.8	19.8	22.3	29.0
Adaptation%/GNI	0.03%	0.04%	0.05%	0.06%	0.08%	0.06%	0.08%
LDCs%/GNI	0.27%	0.41%	0.46%	0.62%	0.87%	0.66%	0.79%
SIDS%/GNI	0.07%	0.08%	0.11%	0.10%	0.24%	0.25%	0.30%

28 The latest report of the Global Center on Adaptation and Climate Policy Initiative says that public adaptation finance to SIDS (just over $2 billion annually for 2021–2022) amounted to just 0.2 percent of all global climate finance and 2 percent of all adaptation finance, but those shares are based on *global* commitments (including all private and domestic finance) that averaged $1.3 trillion per annum in this period, with $63 billion specifically for adaptation (GCA and CPI, 2025).

TABLE 7. (Continued)

	2016	2017	2018	2019	2020	2021	2022
GNI $/hd (all developing)	4753	4838	5180	5415	5193	5694	6103
LDCs $/hd	942	962	1043	1077	1061	1120	1205
SIDS $/hd	9452	9656	10089	10462	8150	9014	9725

Notes: Figures derived from OECD reports for climate finance covering 2016–2020, and 2016–2022. LDC and SIDS adaptation figures for 2021 and 2022 assume that combined figures for 2021–2022 (derived by subtracting 2016–2020 from 2016–2022 total) are split between 2021 and 2022 in same proportions as aggregate adaptation spend. Figures per head and as percentage of GNI are derived using population and GNI data from World Development Indicators (data missing for some countries but with negligible impact).

However, it is important to also consider adaptation financing needs. The United Nations Environment Programme in its latest Adaptation Gap Report annual (UNEP, 2025) has just re-estimated such needs using both a modelling approach and by reviewing adaptation finance costs submitted in developing country nationally determined contributions (NDCs) and national adaptation plans (NAPs):

- UNEP's modelling approach estimated total developing country adaptation finance needs by the year 2035 of $310 billion per annum. The figure for SIDS was $4.2 billion ($59/hd) and for LDCs, $33.5 billion ($28/hd).
- UNEP's estimates based on NDCs and NAPs (extrapolated from the 97 of 155 developing countries that actually specified adaptation needs) are $365 billion per annum by the year 2035. The figure was $6 billion for SIDS ($84/hd) and $46 billion for LDCs ($39/hd).[29] UNEP notes that adaptation finance needs *per head* tend to *rise* with income levels, but adaptation needs *as a percentage of GDP* tend to *fall* as income levels rise.

Adaptation needs tend to be higher in richer countries because they have more assets to protect and are building more infrastructure, while unit costs also tend to be higher (especially in SIDS). UNEP's latest adaptation finance gap analysis (UNEP, 2005, Table 4.2) actually suggests that current public adaptation finance flows meet a higher proportion of needs (23 to 31 percent in LDCs, and 20 to 29 percent in SIDS), than in developing countries overall (7 to 8 percent). However, the gaps are still large, and UNEP also emphasise that the relative adaptation finance needs and modelled costs, as compared to the size of their economies, are significantly higher in these vulnerable countries.

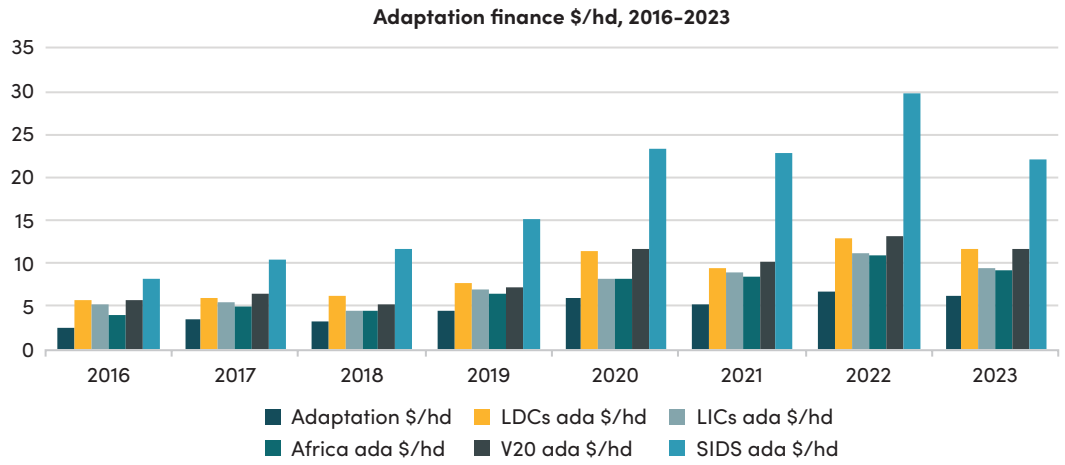
In summary, the shares of climate finance, particularly adaptation finance, going to both LDCs and SIDS have been steadily increasing. In per capita terms, SIDS benefit significantly more than all developing countries (receiving six times more adaptation finance per head for 2021–2022), and also than LDCs (three times more), even though they are substantially richer (with SIDS per capita income

29 These per capita figures (and those for the modelled estimates cited above) are not stated in the report but were provided by the report's authors. They match very closely my own estimates based on SIDS and LDC population and GNI figures used in this analysis, which also suggest that the NDC/NAP estimates of adaptation finance needs equate to 3.2 percent of LDC GNI and 0.8 percent of SIDS GNI. All UNEP figures cited are central estimates, but the upper and lower bounds are wide, reflecting high uncertainty in both modelling and extrapolation methods. The GCA/CPI report suggests a SIDS figure of nearer $12 billion (GCA and CPI, 2025).

60 percent higher than the developing country average, and eight times higher than that of LDCs). That said, per capita adaptation financing needs appear to be about twice as high in SIDS than in LDCs. Whether this justifies the provision of such significantly higher adaptation finance per capita to what are significantly richer countries, however, can be questioned.

A weakness of the OECD climate finance reports is that they provide only limited disaggregation by recipient group, so to estimate relative amounts and shares going not just to LDCs and SIDS but also to V20, African, and low-income countries, I have also analysed data from the OECD's Climate-Related Development Finance dataset (recipient perspective). Reporting methods differ and the two are not directly comparable, but the message is broadly the same: In per capita terms, V20 countries, Africa, and LICs receive similar amounts of adaptation finance as LDCs (and all receive a little more than developing countries overall), but SIDS receive substantially more (Figure 4, with full details in Annex 4).[30]

FIGURE 4. Adaptation finance per head, 2016–2023, for all developing countries and different country groups



Source: OECD Climate-Related Development Finance dataset.

The country disaggregation of the Climate-Related Development Finance data also allows us to explore both the variability of adaptation finance and its correlation with vulnerability and per capita income. The results are striking.

First, we see a huge degree of variation in adaptation finance across all country groups, particularly SIDS. Table 8 reports the minimum, median, average, and maximum values of adaptation finance per head for the individual countries in each country group over the period 2016–2023 (in contrast to Figure 4, which shows average adaptation finance per head for each group as a whole).

30 Although adaptation finance per head in most groups, especially SIDS, falls in 2023, this is partly explained by a substantial increase in "cross-cutting" expenditures (especially in SIDS) in that year, with total climate finance rising in all groups except LICs. Full details are provided in Annex 4. Figures for principal and significant Rio-marked programmes are both counted in full.

Tuvalu receives by far the highest levels of adaptation finance per head in most years and for the period 2016–2023 overall with an average of more than $2,400 per head. SIDS dominate, with Nauru ($677/hd), Marshall Islands ($530/hd), Dominica ($326/hd), Kiribati ($286/hd), Tonga ($277/hd), Vanuatu ($260/hd), Micronesia ($233/hd), Saint Vincent and the Grenadines ($232/hd), and Grenada ($190/hd) filling the next nine positions. This reflects the comparatively high costs of adaptation in many SIDS.[31] All 10 countries (bar Saint Vincent) are also in the V20 group, while Tuvalu and Kiribati are also LDCs. Average figures are consequently far higher than median figures in SIDS, LDCs, and the V20, and confirm earlier OECD findings (from its USD 100 Billion Goal climate finance progress reports) that adaptation finance for SIDS and LDCs is relatively concentrated in a small number of countries.[32] In Africa, however, the average value ($13.3/hd) is only slightly higher than the median ($10.4/hd), while for LICs they are the same ($9.6/hd), pointing to much lower variability in these two groups of countries. In all groups, however, the minimum values are tiny, suggesting that there are "orphan" countries within every group that attract very little adaptation finance.

31 The World Bank notes, for example, that the costs for adapting to a 0.5-meter sea-level rise by 2070–2100 in Tuvalu are approximately $1 billion, which reflects around 20 years of Tuvalu's current GDP (World Bank, 2024).

32 It reports that between 2016 and 2020, more than 40 percent of total adaptation finance for LDCs was directed to only five of the 45 least developed countries. Similarly, 39 percent of adaptation finance for SIDS was directed to five of the 40 SIDS (OECD, 2022).

TABLE 8. Minimum, median, average, and maximum values of adaptation finance per head ($/hd) by country group, 2016–2023

	2016	2017	2018	2019	2020	2021	2022	2023	Annual Avg Over 2016–2023
LDCs minimum ada $/hd	0.06	0.58	0.00	0.88	0.31	1.34	0.50	0.42	2.69
SIDS minimum ada $/hd	0.00	0.06	0.11	1.02	0.49	0.98	1.07	0.24	2.81
Africa minimum ada $/hd	0.00	0.12	0.00	0.15	0.01	0.10	0.05	0.01	0.36
V20 minimum ada $/hd	0.15	0.06	0.00	0.24	0.49	0.99	1.66	0.24	2.69
LICs minimum ada $/hd	0.01	0.14	0.00	0.02	0.03	0.02	0.50	0.00	0.03
LDCs median ada $/hd	5.4	6.8	7.1	8.6	12.7	11.4	17.9	16.1	12.2
SIDS median ada $/hd	12.0	24.9	19.9	45.7	93.2	63.4	96.0	70.1	62.3
Africa median ada $/hd	4.0	6.5	5.2	8.1	10.2	8.3	12.5	13.5	10.4
V20 median ada $/hd	8.0	8.9	6.9	15.4	18.3	16.5	22.3	16.8	15.6
LICs median ada $/hd	3.8	6.2	4.5	6.6	10.1	8.2	12.3	12.6	9.6
LDCs average ada $/hd	95.0	19.1	57.0	58.2	38.6	73.3	150.0	112.8	75.0
SIDS average ada $/hd	159.0	56.8	226.7	183.4	188.0	226.5	363.7	298.7	203.2
Africa average ada $/hd	8.0	10.9	8.3	16.1	14.0	14.0	17.8	19.1	13.3
V20 average ada $/hd	75.9	24.6	101.6	67.2	81.5	95.4	160.0	129.2	91.6
LICs average ada $/hd	7.8	6.9	5.0	8.0	10.1	10.9	14.8	13.1	9.6
LDCs maximum ada $/hd	3536.6	384.3	1999.8	1370.0	700.7	2255.0	5478.2	3982.4	2429.4
SIDS maximum ada $/hd	3536.6	422.2	1999.8	1370.0	920.9	2255.0	5478.2	3982.4	2429.4
Africa maximum ada $/hd	42.7	64.2	68.6	152.8	79.6	78.9	76.4	117.8	62.4
V20 maximum ada $/hd	3536.6	422.2	1999.8	1370.0	920.9	2255.0	5478.2	3982.4	2429.4
LICs maximum ada $/hd	33.0	23.3	14.2	20.3	20.8	29.6	38.6	36.6	22.1

Notes: 2016–2023 figures (final column) are derived from each country's average adaptation/hd over the whole period 2016–2023, not the average of the min/median/avg/max values for each country group in each individual year.

Source: OECD Climate-Related Development Finance database.

Second, there is virtually no correlation between adaptation finance per head and any of our three average vulnerability indices (for overall risk, vulnerability, and exposure derived in the previous section). In fact, adaptation per head is if anything *negatively* correlated with risk or vulnerability (more vulnerable countries get less adaptation finance per head). Only for exposure is the relationship positive (except for the V20 countries), although the coefficients are very small and none are statistically significant (Table 9). Moreover, adaptation finance per head tends to be *positively* correlated with GNI/hd (richer countries get more), although correlations are generally very weak, being high and significant only for LDCs. Absorption capacity may partly explain this. It may also reflect the fact that aid allocation models, particularly from the multilateral development banks (MDBs), favour countries with better policies and institutions, which tend not to be the poorest. But the main point is that neither vulnerability nor per capita income seem to have much if any effect on adaptation finance allocations. Nor does this appear to be changing: Dividing the period into half and assessing for both 2016–2019 and 2020–2023 produced almost identical results in both periods for developing countries overall, and for each country group.

TABLE 9. Correlation coefficients between adaptation/hd (2016–2023) and (a) vulnerability indices and (b) GNI/hd

	Number of Countries	Correlation Coefficients			
		Overall Risk Indices	Vulnerability Indices	Exposure Indices	GNI/hd (2022)
All developing countries	128	–0.07	0.00	0.03	0.12
LDCs	43	–0.21	–0.19	0.06	0.81***
SIDS	32	–0.02	0.12	0.19	0.07
Africa	52	–0.16	–0.05	–0.14	–0.04
V20	70	–0.13	–0.07	0.05	0.26*
LICs	22	–0.21	–0.14	0.05	0.23

Notes: Correlation coefficients are between adaptation/hd figures (averaged over period 2016–2023) and each of the three average indices (for overall risk, vulnerability and exposure) used in earlier section, as well as 2022 figures for GNI/hd also used in previous section. Coverage is limited to countries that have data for all components. Asterisks denote significance: *** significant at 0.1% level, ** at 1% level, * at 5% level.

Figure 5 presents scatter plots to further illustrate the enormous variation in adaptation finance per head (Tuvalu excluded for ease of presentation) and the lack of correlation with either indices of vulnerability (at all levels) or per capita income.

FIGURE 5. Scatter plots showing adaptation finance ($/hd, 2016–2023 average) against average index values for overall risk, vulnerability, and exposure, and against GNI/hd ($/hd, 2022)

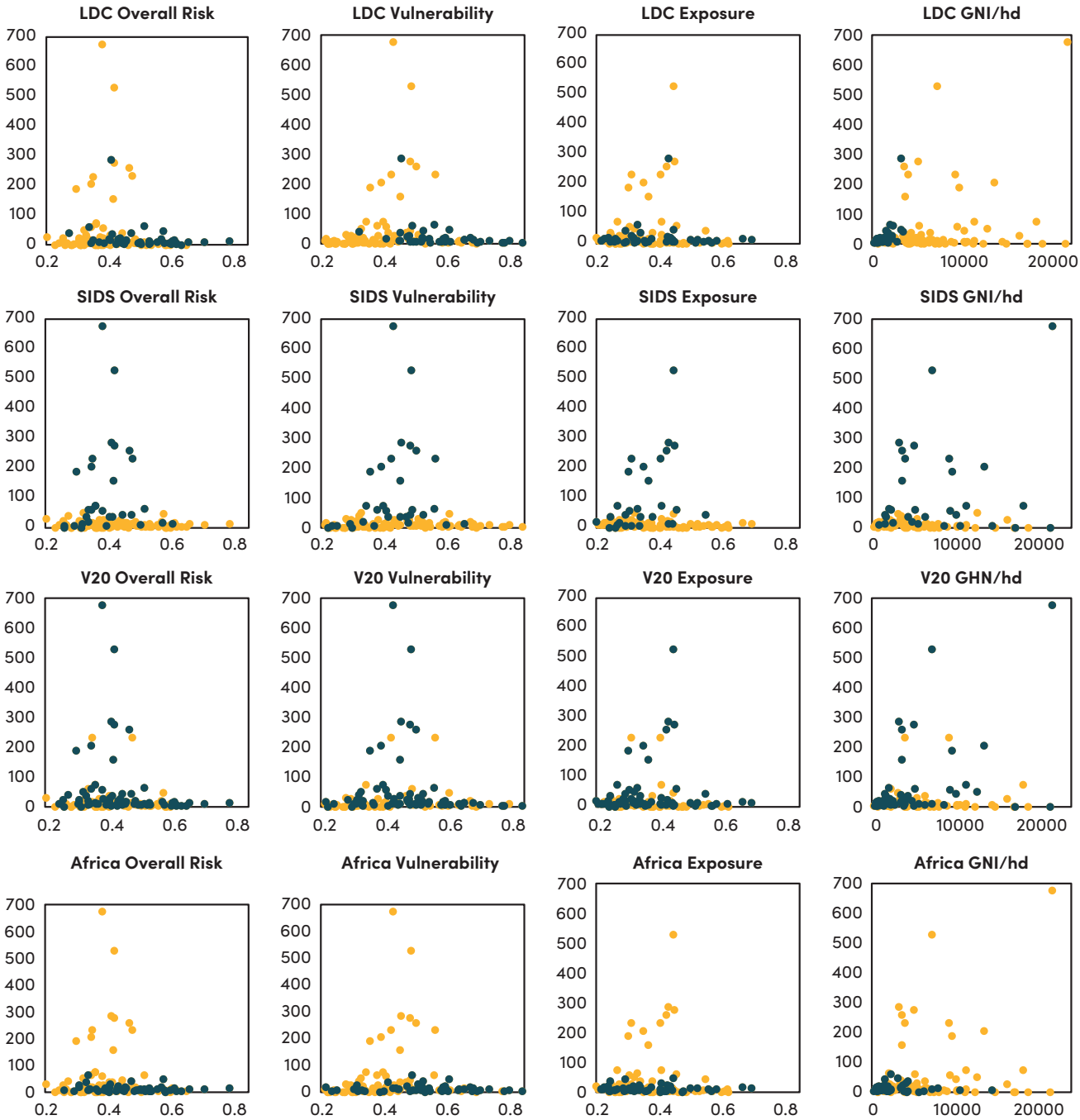
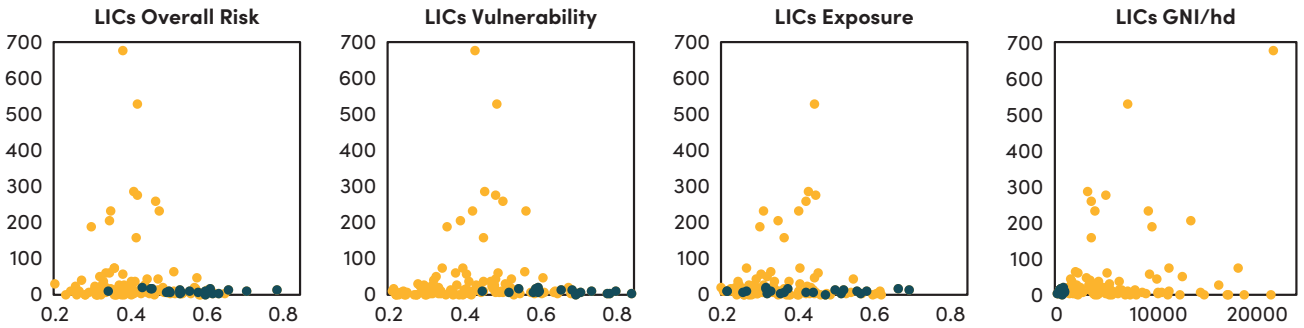


FIGURE 5. (Continued)



Notes: All countries are plotted in each chart, with countries from relevant country group shown in blue. Adaptation ($/hd, average 2016–2023) is on the vertical axis. Normalised index values (0–1 scale, first three columns) and GNI/hd (fourth column) are on the horizontal axis. Tuvalu (adaptation/hd of $2,429/hd, in both SIDS and V20 groups) has been excluded for ease of presentation. Dominica ($326/hd, SIDS and V20) does not appear as it is missing exposure index data. A very small number of other countries with extremely high or low index scores, or high per capita income, have also been excluded for ease of presentation.

Source: Derived from OECD Climate-Related Development Finance database and earlier analysis of vulnerability indices.

Discussion and a way forward

Discussion

The analysis has found that vulnerability indices give wildly different results, which poses challenges for identifying countries that are particularly vulnerable to climate change, and that the SIDS category in particular may not in fact be a good proxy for vulnerability when looking across a range of indices. It notes too that even if we could agree on a proxy group of countries, we still face the problem of how best to allocate within such a group. The paper also finds that shares of climate finance, particularly adaptation finance, going to both LDCs and SIDS have increased since 2016, and that in per capita terms the (much richer) SIDS have fared disproportionately well, although their needs may be higher. That said, overall levels of support remain well short of what is needed, and further prioritisation towards the most vulnerable is desirable. There is currently huge variation in adaptation finance across countries, with per capita levels ranging from less than a dollar to more than $2,400 each year over the period 2016–2023, and much adaptation finance is concentrated in relatively few countries. Moreover, there is virtually no correlation between adaptation per head and either levels of vulnerability or per capita income across all country groups.

LDCs and LICs appear to be the country groups that are the most vulnerable, but per capita income looks unlikely to serve as an adequate allocation tool as it is at best only moderately correlated with vulnerability. Related World Bank research assessing socio-economic resilience to natural disasters (Middelanis et al., 2025) has also shown that while GDP per capita is correlated with resilience, it is not the *causal* factor. Rather, people living in countries with high GDP per capita are more resilient *not* because GDP per capita is higher but because these countries have better infrastructure, flood protection, access to financial instruments, and social protection coverage. And countries at the

same level of income can achieve very different levels of resilience, depending on their levels of inequality, poverty, and financial inclusion among other factors.

Most aid allocation models (particularly among the MDBs) incorporate assessments of need (proxied by GNI/hd) and effectiveness (proxied by some measure of each country's policy and institutional quality such as the World Bank's Country Policy and Institutional Assessment). Other things being equal, a case exists for allocating more official development assistance to countries that are more exposed and vulnerable to climate change, focusing on those elements that are not already captured within existing allocation models. Feindouno et al. (2020), architects of the PVCCI, go further and argue that these should be limited to the physical impacts of climate change, exogenous to the policies of the countries concerned and excluding socio-economic components of vulnerability. Differences in definitions and understanding of vulnerability and exposure matter. But even if an appropriate index could be agreed, the question of what weight to assign to such a term in any aid allocation model would still need to be addressed. Increasing the weight on need in existing models would be a simpler, but probably inferior, alternative. Some MDBs have explored various options (see this K4D summary), but we don't pursue this further in this paper.

Similar considerations apply to more specific climate adaptation funds that do not have an underpinning performance-based allocation model. Feindouno et al. (2020) suggest that allocation decisions will still need to reflect more traditional allocation criteria of income per capita and performance of countries. But while broader measures of governance and effectiveness may indeed be relevant, these are arguably better to inform the instrument through which assistance is channelled.

In both cases (overall aid and adaptation finance allocations), questions about whether and how best to incorporate estimates of financing need have yet to be resolved. These are generally higher per capita in SIDS, and it is typically only SIDS that can experience losses larger than 100 percent of GDP following extreme climate-related events.[33] That doesn't necessarily mean that (richer) SIDS need more adaptation finance, but it does suggest they need a different type of help, especially risk sharing and contingent insurance, and direct recovery support after disasters.

This highlights another important distinction. Whereas adaptation finance can be thought of as "ex ante" support designed to help countries withstand and be more resilient to a changing climate, the case of L&D is arguably different. The FRLD is designed to "assist those countries in responding to loss and damage associated with the adverse effects of climate change"[34] and can be thought therefore more as "ex post" support to help countries respond to an event. This is where SIDS may have a stronger claim on future support. Garschagen's earlier finding that the weakest correlations

33 For example, Hurricane Maria is estimated to have caused damages equivalent to 226 percent of Dominica's GDP in 2017, while modelling work by the University of Cambridge Institute for Sustainability Leadership suggests that the smallest, most vulnerable countries across the Pacific, Caribbean, and Indian Oceans could lose greater than 100% of GDP from disasters that are insurable (CISL, 2024).

34 Paragraph 3 of the Governing Instrument of the Fund for responding to Loss and Damage, where "those countries" refers to "developing countries that are particularly vulnerable to the adverse effects of climate change."

are between the Climate Risk Index (the CRI, based exclusively on past damages/impacts) and other indices (which address risk in the future) is relevant here, in that it suggests that most vulnerability indices may provide a poor indication of actual damages incurred. Pledges (as of 30 June 2025) of $789 million to the FRLD are tiny in comparison with estimated needs ($200–$400 billion per year by 2030 according to Songwe et al., 2022), but L&D is only going to grow in importance and prominence, not least in the courts as the recent International Court of Justice ruling attests.

Policy implications and next steps

A number of policy implications and next steps arising from this analysis can be identified:

- *More emphasis should be placed on LDCs and LICs than on SIDS when it comes to prioritising for adaptation finance.* The use of "LDCs and SIDS" as a proxy for "particularly vulnerable" is not so well supported by the evidence, at least for SIDS, even though their priorities and needs are heavily emphasised in the key climate texts. Greater differentiation between the two groups of countries is required, with greater emphasis placed on the needs of LDCs. This may be controversial in some quarters, but as emphasised earlier, it is not meant at all to diminish the particular circumstances of the SIDS or the existential threats some face. There is a strong case for enhancing SIDS' access to concessional support, as advocates of the MVI have argued, and for finding other ways of supporting them. But the case for increasing SIDS' share of adaptation finance is not obvious, especially as they appear to already benefit disproportionately.
- *Further technical work is needed on vulnerability* There is far too much variability among the existing set of climate vulnerability indices (whether focused on overall risks, vulnerability, or exposure) for any one of them to be a reliable guide to which countries are "particularly vulnerable," or even to assess whether adaptation finance is being adequately targeted at those most vulnerable. In the short term, using a range or average of indices may be preferable. But further work to resolve differences in the ways in which vulnerability and exposure are defined, to understand the determinants of vulnerability in a way that assesses the coverage, measurement, and weights of different indicators of vulnerability, and to link these to actual impacts of climate change on socio-economic variables of interest is needed. This work would also benefit from closer collaboration and coordination among the various architects of the existing indices. The indices' potential use in specific allocation models, and the role of estimated financing needs, requires further exploration. It is likely, however, that different measures will be appropriate for different funders according to their areas of focus.
- *Technical work needs to be linked to a political process.* Even if a collective definition of the "particularly vulnerable" can be agreed (and arguably it already has, however imperfectly, in the various UNFCCC texts), that does not really guide the allocation of resources within that group. Some kind of summary measure or index is still needed. But the identification

of particularly vulnerable countries is as much a political as a technical exercise. Creating yet another (even if just a composite) vulnerability index is unlikely to clarify the situation without political support from all parties to the UNFCCC,[35] although the challenges in achieving consensus should not be underestimated.

- *Differences between adaptation and L&D need to be more clearly recognised when talking about the allocation of funds*. More analysis of the role of attribution science and alternative methods for rationing and prioritising L&D resources is still needed. The allocation of funds for L&D should arguably be based more on the scale of actual damages incurred (rather than measures of vulnerability) and the extent to which they have been caused by climate change (a question that attribution science is increasingly capable of answering), as well as the capability of countries to respond. The case for favouring SIDS may well be much stronger when it comes to L&D. But different approaches may be needed for rapid-onset events (such as floods and hurricanes) and slow-onset events (such as desertification, sea-level rise, and salinization) where the distinction between L&D and adaptation is more blurred.

35 As far back as 2009, Füssel argued that "the prioritization of countries for international adaptation assistance requires either clear political prioritization that can be implemented by a tailor-made aggregated vulnerability index or disaggregated vulnerability information that can inform the political debate."

Annex 1. List of countries in each country group

	Country	LDC	SIDS	V20	Africa	LICs	Number of Groups Country is in
1	Afghanistan	x		x		x	3
2	Algeria				x		1
3	Angola	x			x		2
4	Antigua and Barbuda		x				1
5	Bahamas		x				1
6	Bangladesh	x		x			2
7	Barbados		x	x			2
8	Belize		x				1
9	Benin	x		x	x		3
10	Bhutan	x		x			2
11	Botswana				x		1
12	Burkina Faso	x		x	x	x	4
13	Burundi	x			x	x	3
14	Cambodia	x		x			2
15	Cameroon				x		1
16	Cape Verde		x	x	x		3
17	Central African Republic	x			x	x	3
18	Chad	x		x	x	x	4
19	Colombia			x			1
20	Comoros	x	x	x	x		4
21	Congo				x		1
22	Congo, the Democratic Republic	x		x	x	x	4
23	Costa Rica			x			1
24	Cote d'Ivoire			x	x		2
25	Cuba		x				1
26	Djibouti	x			x		2
27	Dominica		x	x			2
28	Dominican Republic		x	x			2
29	Egypt				x		1
30	Equatorial Guinea				x		1
31	Eritrea	x			x	x	3
32	Ethiopia	x		x	x	x	4
33	Fiji		x	x			2
34	Gabon			x	x		2
35	Gambia	x		x	x	x	4
36	Ghana			x	x		2
37	Grenada		x	x			2
38	Guatemala			x			1
39	Guinea	x		x	x		3
40	Guinea-Bissau	x	x		x	x	4

(Continued)

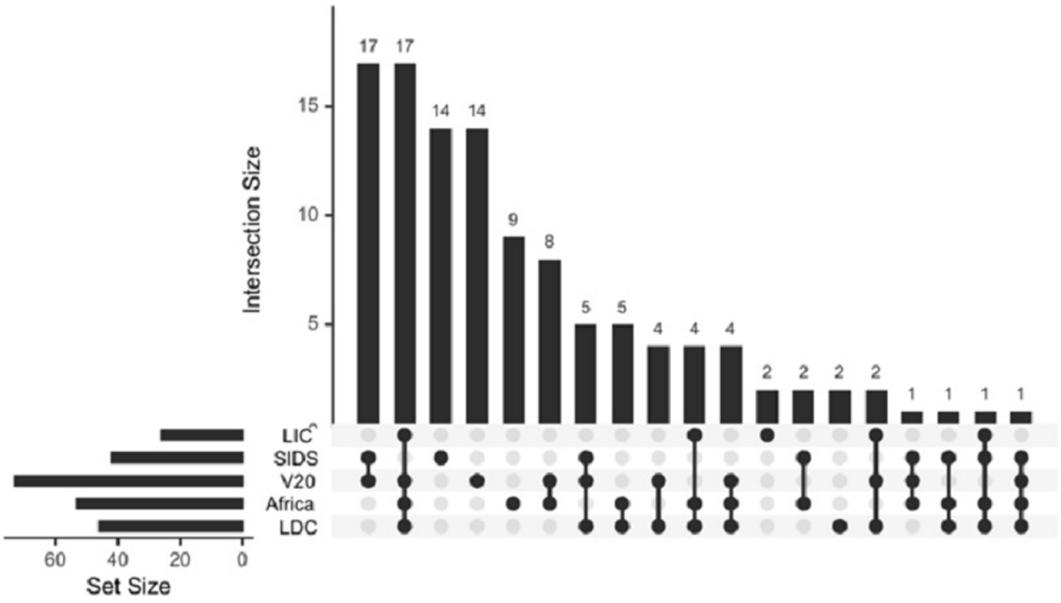
	Country	LDC	SIDS	V20	Africa	LICs	Number of Groups Country is in
41	Guyana		x	x			2
42	Haiti	x	x	x			3
43	Honduras			x			1
44	Jamaica		x				1
45	Jordan			x			1
46	Kenya			x	x		2
47	Kiribati	x	x	x			3
48	Korea, Democratic People's Repub					x	1
49	Kyrgyzstan			x			1
50	Lao People's Democratic Republic	x					1
51	Lebanon			x			1
52	Lesotho	x			x		2
53	Liberia	x		x	x	x	4
54	Libyan Arab Jamahiriya				x		1
55	Madagascar	x		x	x	x	4
56	Malawi	x		x	x	x	4
57	Maldives		x	x			2
58	Mali	x			x	x	3
59	Marshall Islands		x	x			2
60	Mauritania	x			x		2
61	Mauritius		x		x		2
62	Micronesia, Federated States of		x				1
63	Mongolia			x			1
64	Morocco			x	x		2
65	Mozambique	x		x	x	x	4
66	Myanmar	x					1
67	Namibia			x	x		2
68	Nauru		x	x			2
69	Nepal	x		x			2
70	Nicaragua			x			1
71	Niger	x		x	x	x	4
72	Nigeria				x		1
73	Pakistan			x			1
74	Palau		x	x			2
75	Papua New Guinea		x	x			2
76	Paraguay			x			1
77	Philippines			x			1
78	Rwanda	x		x	x	x	4
79	Saint Kitts and Nevis ^		x				1
80	Saint Lucia		x	x			2
81	Saint Vincent and the Grenadines		x				1

(Continued)

	Country	LDC	SIDS	V20	Africa	LICs	Number of Groups Country is in
82	Samoa		x	x			2
83	Sao Tome and Principe	x	x		x		3
84	Senegal	x		x	x		3
85	Seychelles		x		x		2
86	Sierra Leone	x		x	x	x	4
87	Singapore		x				1
88	Solomon Islands	x	x	x			3
89	Somalia	x		x	x	x	4
90	South Africa				x		1
91	South Sudan ^	x		x	x	x	4
92	Sri Lanka			x			1
93	Sudan	x		x	x	x	4
94	Suriname		x	x			2
95	Swaziland			x	x		2
96	Syrian Arab Republic					x	1
97	Tanzania, United Republic of	x		x	x		3
98	Timor-Leste	x	x	x			3
99	Togo	x		x	x	x	4
100	Tonga		x	x			2
101	Trinidad and Tobago		x	x			2
102	Tunisia			x	x		2
103	Tuvalu	x	x	x			3
104	Uganda	x		x	x	x	4
105	Vanuatu		x	x			2
106	Viet Nam			x			1
107	Yemen	x		x		x	3
108	Zambia	x			x		2
109	Zimbabwe				x		1
Total number of countries in each group		46	37	73	54	26	

Notes: Saint Kitts and Nevis and South Sudan (marked with ^) do not have data for all five risk/vulnerability indices, so 107 of the group of 140 countries (with data in all five indices) are members of at least one of the country groups considered in the paper. The 33 other countries (with data in all five risk/vulnerability indices) that are not members of any of these groups are as follows: Argentina, Armenia, Azerbaijan, Bahrain, Bolivia, Brazil, Brunei Darussalam, Chile, China, Ecuador, El Salvador, Georgia, India, Indonesia, Iran, Iraq, Kazakhstan, Kuwait, Malaysia, Mexico, Oman, Panama, Peru, Qatar, Saudi Arabia, Tajikistan, Thailand, Turkey, Turkmenistan, United Arab Emirates, Uruguay, Uzbekistan, Venezuela.

Numbers of countries common to different combinations of country groups



Annex 2. Comparison of vulnerability indices with World Bank measures of socio-economic resilience and vision indicator

This annex provides additional analysis comparing the five vulnerability indices assessed in the main paper with the World Bank's measures of socio-economic resilience and its vision indictor for the percentage of people at high risk from climate-related hazards.[36]

Annex Table 2a presents correlation coefficients between the five vulnerability indices and the World Bank's measures of socio-economic resilience, risks to well-being and risks to assets (Middelanis et al., 2025). These same World Bank measures are compared at all three levels (overall risk, vulnerability, and exposure). In addition, the World Bank's underpinning measures of vulnerability and exposure are included in their respective panels. While the World Bank data cover 132 individual countries, 39 of those are high-income countries and only 86 are common to our group of 135 developing countries (see Table 2 of the main paper). These 86 countries cover 60 to 80 percent of countries in the LDC, V20, Africa, and LIC country groups in our analysis, but only 11 percent of SIDS.

Annex Table 2b presents correlation coefficients between the five vulnerability indices and the World Bank's vision indicator for the percentage of people at high risk from climate-related hazards. People are counted as at high risk from climate-related hazards if they are exposed to at least one hazard and are identified as highly vulnerable on at least one dimension of vulnerability. The data

36 See discussion and footnotes in main document for details.

currently cover 103 individual countries (37 of which are high income), with 61 common to our group of 135 developing countries covered in Table 2 of the main paper. These 61 countries cover 40 to 45 percent of countries in the LDC, V20, Africa, and LIC country groups, but only 5 percent of SIDS.

The key points to note are these:

- First, even though the samples are significantly smaller, the pairwise correlations of the original set of indices (ND-GAIN, WRI, etc.) do not differ much from those reported in Table 2 of the main paper. The key exception is the MVI, which is now more strongly correlated with other indices at the overall risk and vulnerability levels (but not for exposure) than previously, and is now consistently *negatively* correlated with GNI/hd (in line with all other indices, except for the WRI, which has now become marginally positive at the overall risk level). This is almost certainly due to the exclusion of most of the SIDS that the MVI was specifically designed to favour.
- Second, the World Bank's vulnerability measure is moderately correlated with the other indices. But the exposure measure is not. This may be because the World Bank analysis focuses on a wider set of natural hazards (including earthquakes and tsunamis—although those also feature to some degree in WRI, INFORM, and MVI) with a short-term focus, but it remains the case that exposure is the dimension where agreement between the indices is weakest (Table A2a).
- Third, the socio-economic resilience measure (which measures an economy's ability to minimize the impact of asset losses on well-being) shows *some* correlation with some other indices, but it's patchy, strongest at the "vulnerability" level and completely uncorrelated at the exposure level. As expected, correlations where they do exist are *negative,* as countries more at risk/vulnerable/exposed have lower resilience (Annex Table 2a).[37]
- Fourth, the two risk ratios (the constituent parts of the socio-economic resilience measure) are not correlated with anything, at any of the three levels, except (not surprisingly) each other (Annex Table 2a).
- Fifth, the vision scorecard indicator on the percentage of people at high risk of climate-related hazard is relatively well correlated with the other indices at both the overall risk and vulnerability levels, though somewhat less so at the exposure level. Further analysis using a "gap" rather than "headcount" measure of people at risk would be interesting.

37 While not reported here, this socio-economic resilience measure also shows some correlation with the sub-indices focusing on resilience or coping capacity (especially in ND-GAIN and INFORM).

ANNEX TABLE 2a. Correlation coefficients (for 86 countries common to all indices, including World Bank socio-economic resilience, with GNI/hd data)

Overall Risk Indices	WRI	INFORM CC	MVI	Avg (min-max normalised)	WB socio-ec Resilience	WB Risk to Well-Being	WB Risk to Assets	GNI/hd (2022)
NDGAIN (inverted)	−0.08	0.68***	0.46***	0.77***	−0.61***	0.14	−0.02	−0.74***
WRI		0.23*	−0.39***	0.40***	0.04	0.09	0.08	0.16
INFORM CC			0.28**	0.84***	−0.43***	0.09	−0.03	−0.48***
MVI				0.49***	−0.15	0.07	−0.02	−0.39***
Avg (min-max normalised)					−0.43***	0.16	0.02	−0.53***
WB socio-ec resilience						−0.04	0.26*	0.53***
WB risk to well-being							0.91***	−0.15
WB risk to assets								−0.07

Vulnerability Indices	WRI vuln	INFORM CC vuln	MVI struct vuln	Avg (min-max normalised)	WB socio-ec Resilience	WB Risk to Well-Being	WB Risk to Assets	WB Vulnerability	GNI/hd (2022)
NDGAIN vuln	0.59***	0.67***	0.38***	0.84***	−0.60***	0.07	−0.08	0.68***	−0.67***
WRI vuln		0.74***	0.28*	0.83***	−0.44***	0.02	−0.09	0.46***	−0.53***
INFORM CC vuln			0.43***	0.88***	−0.54***	0.08	−0.06	0.53***	−0.55***
MVI struct vuln				0.64***	−0.13	0.18	0.09	0.27*	−0.35***
Avg (min-max normalised)					−0.54***	0.11	−0.05	0.61***	−0.67***
WB socio-ec resilience						−0.04	0.26*	−0.54***	0.53***
WB risk to well-being							0.91***	−0.07	−0.15
WB risk to assets								−0.21	−0.07
WB vulnerability									−0.71***

Exposure Indices	WRI exp	INFORM CC H&E	MVI env vuln	PVCCI	Avg (min-max normalised)	WB socio-ec Resilience	WB Risk to Well-Being	WB Risk to Assets	WB Exposure	GNI/hd (2022)
NDGAIN exp	0.20	0.34**	−0.18	−0.08	0.38***	−0.40***	0.01	−0.09	−0.06	−0.23*
WRI exp		0.43***	−0.07	−0.03	0.52***	0.15	0.02	0.04	0.16	0.31**
INFORM CC H&E			0.05	0.12	0.72***	−0.04	0.02	−0.01	0.15	−0.05
MVI env vuln				0.71***	0.55***	0.07	0.07	0.07	−0.01	−0.25*
PVCCI					0.62***	−0.02	−0.16	−0.19	−0.19	−0.19
Avg (min-max normalised)						−0.06	−0.01	−0.06	0.03	−0.14
WB socio-ec resilience							−0.04	0.26*	0.27*	0.53*
WB risk to well-being								0.91***	0.72***	−0.15
WB risk to assets									0.77***	−0.07
WB exposure										0.08

Notes: Avg (min-max normalised) is the average value of the four indices (five for exposure) calculated after first normalising each index using the min-max method. Asterisks denote significance: *** significant at 0.1% level, ** at 1% level, * at 5% level.

ANNEX TABLE 2b. Correlation coefficients (for 61 countries common to all indices, including World Bank vision indicator on percentage of people at high risk of climate hazards, with GNI/hd data)

Overall Risk Indices	WRI	INFORM CC	MVI	Avg (min-max normalised)	WB % at High Risk of Climate Hazards	GNI/hd (2022)
NDGAIN (inverted)	−0.12	0.69***	0.56***	0.74***	0.71***	−0.72***
WRI		0.23	−0.31*	0.44***	−0.10	0.21
INFORM CC			0.46***	0.88***	0.47***	−0.47***
MVI				0.57***	0.54***	−0.44***
Avg (min-max normalised)					0.57***	−0.47***
WB % at high risk of climate hazards						−0.61***

Vulnerability Indices	WRI vuln	INFORM CC vuln	MVI struct vuln	Avg (min-max normalised)	WB % at High Risk of Climate Hazards	GNI/hd (2022)
NDGAIN vuln	0.59***	0.69***	0.46***	0.86***	0.74***	−0.66***
WRI vuln		0.78***	0.32*	0.84***	0.50***	−0.56***
INFORM CC vuln			0.43***	0.89***	0.52***	−0.52***
MVI struct vuln				0.65***	0.46***	−0.36**
Avg (min-max normalised)					0.69***	−0.66***
WB % at high risk of climate hazards						−0.61***

Exposure Indices	WRI exp	INFORM CC H&E	MVI env vuln	PVCCI	Avg (min-max normalised)	WB % at High Risk of Climate Hazards	GNI/hd (2022)
NDGAIN exp	0.18	0.36**	−0.04	0.00	0.43***	0.36**	−0.20
WRI exp		0.47***	−0.06	−0.04	0.54***	−0.21	0.36**
INFORM CC H&E			0.10	0.12	0.73***	0.10	−0.03
MVI env vuln				0.78***	0.60***	0.41**	−0.28*
PVCCI					0.63***	0.44***	−0.30*
Avg (min-max normalised)						0.34**	−0.14
WB % at high risk of climate hazards							−0.61*

Notes: Avg (min-max normalised) is the average value of the four indices (five for exposure) calculated after first normalising each index using the min-max method. Asterisks denote significance: *** significant at 0.1% level, ** at 1% level, * at 5% level.

Annex 3. Proportions of countries and populations in the top decile and in each quartile, and accounted for by each country group

A. Percentage share of each country group ranked in top decile and each quartile

	Overall Risk Indices					
	NDGAIN (inverted)	WRI	INFORM CC	MVI	Maximum Difference	Avg (min-max normalised)
All countries	**140**	**140**	**140**	**140**	**0**	**140**
Top decile (%)	10%	10%	11%	10%	1%	10%
Q1%	25%	25%	25%	25%	0%	25%
Q2%	25%	25%	27%	25%	2%	25%
Q3%	25%	25%	23%	25%	2%	25%
Q4%	25%	25%	25%	25%	0%	25%
LDCs	**45**	**45**	**45**	**45**	**0**	**45**
Top decile (%)	29%	13%	27%	18%	16%	24%
Q1%	64%	18%	42%	33%	47%	51%
Q2%	31%	27%	42%	29%	16%	29%
Q3%	2%	33%	11%	24%	31%	16%
Q4%	2%	22%	4%	13%	20%	4%
SIDS	**36**	**36**	**36**	**36**	**0**	**36**
Top decile (%)	6%	3%	0%	17%	17%	3%
Q1%	17%	8%	6%	39%	33%	8%
Q2%	19%	22%	17%	31%	14%	28%
Q3%	33%	39%	25%	25%	14%	31%
Q4%	31%	31%	53%	6%	47%	33%
LDC/SIDS	**73**	**73**	**73**	**73**	**0**	**73**
Top decile (%)	18%	10%	16%	16%	8%	15%
Q1%	42%	14%	27%	34%	29%	33%
Q2%	25%	25%	30%	29%	5%	26%
Q3%	18%	36%	16%	26%	19%	23%
Q4%	15%	26%	26%	11%	15%	18%
V20	**72**	**72**	**72**	**72**	**0**	**72**
Top decile (%)	11%	13%	14%	13%	3%	17%
Q1%	31%	22%	28%	26%	8%	29%
Q2%	28%	26%	28%	26%	1%	29%
Q3%	24%	26%	26%	24%	3%	22%
Q4%	18%	25%	18%	24%	7%	19%
Africa	**53**	**53**	**53**	**53**	**0**	**53**
Top decile (%)	23%	6%	21%	11%	17%	13%
Q1%	49%	13%	34%	28%	36%	42%
Q2%	30%	34%	36%	36%	6%	26%
Q3%	11%	26%	21%	21%	15%	19%
Q4%	9%	26%	9%	15%	17%	13%
LICs	**25**	**25**	**25**	**25**	**0**	**25**
Top decile (%)	48%	16%	52%	16%	36%	40%
Q1%	84%	16%	68%	32%	68%	72%
Q2%	16%	24%	28%	48%	32%	20%
Q3%	0%	40%	4%	12%	40%	8%
Q4%	0%	20%	0%	8%	20%	0%

(Continued)

A. Percentage share of each country group ranked in top decile and each quartile (Continued)

	Vulnerability Indices					
	NDGAIN vuln	WRI vuln	INFORM CC vuln	MVI struct vuln	Maximum Difference	Avg (min-max normalised)
All countries	**140**	**140**	**140**	**140**	**0**	**140**
Top decile (%)	10%	10%	10%	10%	0%	10%
Q1%	25%	25%	26%	25%	1%	25%
Q2%	25%	25%	25%	25%	0%	25%
Q3%	25%	25%	24%	25%	1%	25%
Q4%	25%	25%	25%	25%	0%	25%
LDCs	**45**	**45**	**45**	**45**	**0**	**45**
Top decile (%)	24%	24%	27%	16%	11%	27%
Q1%	64%	42%	51%	29%	36%	58%
Q2%	36%	31%	38%	24%	13%	38%
Q3%	0%	20%	9%	31%	31%	2%
Q4%	0%	7%	2%	16%	16%	2%
SIDS	**36**	**36**	**36**	**36**	**0**	**36**
Top decile (%)	14%	0%	3%	14%	14%	0%
Q1%	36%	3%	6%	36%	33%	11%
Q2%	19%	8%	19%	31%	22%	33%
Q3%	31%	39%	33%	25%	14%	39%
Q4%	14%	50%	42%	8%	42%	17%
LDC/SIDS	**73**	**73**	**73**	**73**	**0**	**73**
Top decile (%)	19%	15%	16%	15%	4%	16%
Q1%	48%	27%	33%	33%	21%	37%
Q2%	30%	22%	27%	25%	8%	33%
Q3%	15%	25%	18%	29%	14%	21%
Q4%	7%	26%	22%	14%	19%	10%
V20	**72**	**72**	**72**	**72**	**0**	**72**
Top decile (%)	13%	13%	17%	11%	6%	13%
Q1%	38%	28%	36%	26%	11%	28%
Q2%	29%	28%	22%	28%	7%	36%
Q3%	17%	25%	22%	24%	8%	24%
Q4%	17%	19%	19%	22%	6%	13%
Africa	**53**	**53**	**53**	**53**	**0**	**53**
Top decile (%)	17%	21%	17%	13%	8%	21%
Q1%	42%	38%	47%	32%	15%	47%
Q2%	34%	36%	26%	25%	11%	30%
Q3%	15%	21%	15%	23%	8%	11%
Q4%	9%	6%	11%	21%	15%	11%
LICs	**25**	**25**	**25**	**25**	**0**	**25**
Top decile (%)	36%	48%	48%	16%	32%	52%
Q1%	68%	64%	76%	40%	36%	84%
Q2%	28%	20%	20%	24%	8%	12%
Q3%	4%	16%	4%	24%	20%	0%
Q4%	0%	0%	0%	12%	12%	4%

(Continued)

A. Percentage share of each country group ranked in top decile and each quartile (Continued)

	Exposure Indices						
	NDGAIN exp	WRI exp	INFORM CC H&E	MVI env vuln	PVCCI	Maximum Difference	Avg (min-max normalised)
All countries	**140**	**140**	**140**	**140**	**140**	**0**	**140**
Top decile (%)	10%	10%	10%	10%	10%	0%	10%
Q1%	25%	25%	25%	25%	25%	0%	25%
Q2%	25%	26%	25%	25%	25%	1%	25%
Q3%	25%	24%	26%	25%	25%	1%	25%
Q4%	25%	25%	24%	25%	25%	1%	25%
LDCs	**45**	**45**	**45**	**45**	**45**	**0**	**45**
Top decile (%)	16%	7%	9%	13%	16%	9%	16%
Q1%	44%	16%	33%	24%	33%	29%	36%
Q2%	31%	24%	24%	22%	13%	18%	20%
Q3%	16%	24%	27%	27%	36%	20%	22%
Q4%	9%	36%	16%	27%	18%	27%	22%
SIDS	**36**	**36**	**36**	**36**	**36**	**0**	**36**
Top decile (%)	25%	3%	0%	17%	19%	25%	3%
Q1%	36%	8%	0%	44%	28%	44%	22%
Q2%	28%	28%	25%	17%	36%	19%	28%
Q3%	19%	47%	19%	14%	19%	33%	22%
Q4%	17%	17%	56%	25%	17%	39%	28%
LDC/SIDS	**73**	**73**	**73**	**73**	**73**	**0**	**73**
Top decile (%)	18%	5%	5%	15%	16%	12%	11%
Q1%	38%	12%	21%	36%	32%	26%	30%
Q2%	30%	26%	25%	19%	22%	11%	23%
Q3%	18%	34%	25%	21%	29%	16%	22%
Q4%	14%	27%	30%	25%	18%	16%	25%
V20	**71**	**71**	**71**	**71**	**71**	**0**	**71**
Top decile (%)	11%	10%	7%	11%	10%	4%	11%
Q1%	28%	23%	23%	25%	27%	6%	27%
Q2%	32%	25%	31%	25%	21%	11%	23%
Q3%	21%	25%	23%	23%	30%	8%	24%
Q4%	18%	27%	24%	27%	23%	8%	27%
Africa	**53**	**53**	**53**	**53**	**53**	**0**	**53**
Top decile (%)	8%	4%	8%	11%	9%	8%	9%
Q1%	32%	9%	30%	23%	36%	26%	23%
Q2%	28%	32%	17%	28%	11%	21%	26%
Q3%	23%	26%	34%	21%	34%	13%	25%
Q4%	17%	32%	19%	28%	19%	15%	26%
LICs	**25**	**25**	**25**	**25**	**25**	**0**	**25**
Top decile (%)	4%	8%	20%	12%	16%	16%	24%
Q1%	48%	20%	56%	32%	40%	36%	44%
Q2%	36%	16%	20%	24%	12%	24%	20%
Q3%	12%	24%	16%	24%	32%	20%	20%
Q4%	4%	40%	8%	20%	16%	36%	16%

Note: maximum difference is the share reported in the highest index less the share reported in the lowest index.

B: Percentage share of top decile and each quartile filled by countries from each country group

	Overall Risk Indices					
	NDGAIN (inverted)	WRI	INFORM CC	MVI	Maximum Difference	Avg (min-max normalised)
Top decile	**14**	**14**	**15**	**14**	**1**	**14**
LDCs%	93%	43%	80%	57%	50%	79%
SIDS%	14%	7%	0%	43%	43%	7%
LDC/SIDS%	93%	50%	80%	86%	43%	79%
V20%	57%	64%	67%	64%	10%	86%
Africa%	86%	21%	73%	43%	64%	50%
LICs%	86%	29%	87%	29%	58%	71%
Q1	**35**	**35**	**35**	**35**	**0**	**35**
LDCs%	83%	23%	54%	43%	60%	66%
SIDS%	17%	9%	6%	40%	34%	9%
LDC/SIDS%	89%	29%	57%	71%	60%	69%
V20%	63%	46%	57%	54%	17%	60%
Africa%	74%	20%	51%	43%	54%	63%
LICs%	60%	11%	49%	23%	49%	51%
Q2	**35**	**35**	**38**	**35**	**3**	**35**
LDCs%	40%	34%	50%	37%	16%	37%
SIDS%	20%	23%	16%	31%	16%	29%
LDC/SIDS%	51%	51%	58%	60%	9%	54%
V20%	57%	54%	53%	54%	5%	60%
Africa%	46%	51%	50%	54%	9%	40%
LICs%	11%	17%	18%	34%	23%	14%
Q3	**35**	**35**	**32**	**35**	**3**	**35**
LDCs%	3%	43%	16%	31%	40%	20%
SIDS%	34%	40%	28%	26%	14%	31%
LDC/SIDS%	37%	74%	38%	54%	37%	49%
V20%	49%	54%	59%	49%	11%	46%
Africa%	17%	40%	34%	31%	23%	29%
LICs%	0%	29%	3%	9%	29%	6%
Q4	**35**	**35**	**35**	**35**	**0**	**35**
LDCs%	3%	29%	6%	17%	26%	6%
SIDS%	31%	31%	54%	6%	49%	34%
LDC/SIDS%	31%	54%	54%	23%	31%	37%
V20%	37%	51%	37%	49%	14%	40%
Africa%	14%	40%	14%	23%	26%	20%
LICs%	0%	14%	0%	6%	14%	0%

(Continued)

B: Percentage share of top decile and each quartile filled by countries from each country group (Continued)

	Vulnerability Indices					
	NDGAIN vuln	WRI vuln	INFORM CC vuln	MVI struct vuln	Maximum Difference	Avg (min-max normalised)
Top decile	**14**	**14**	**14**	**14**	**0**	**14**
LDCs%	79%	79%	86%	50%	36%	86%
SIDS%	36%	0%	7%	36%	36%	0%
LDC/SIDS%	100%	79%	86%	79%	21%	86%
V20%	64%	64%	86%	57%	29%	64%
Africa%	64%	79%	64%	50%	29%	79%
LICs%	64%	86%	86%	29%	57%	93%
Q1	**35**	**35**	**37**	**35**	**2**	**35**
LDCs%	83%	54%	62%	37%	46%	74%
SIDS%	37%	3%	5%	37%	34%	11%
LDC/SIDS%	100%	57%	65%	69%	43%	77%
V20%	77%	57%	70%	54%	23%	57%
Africa%	63%	57%	68%	49%	19%	71%
LICs%	49%	46%	51%	29%	23%	60%
Q2	**35**	**35**	**35**	**35**	**0**	**35**
LDCs%	46%	40%	49%	31%	17%	49%
SIDS%	20%	9%	20%	31%	23%	34%
LDC/SIDS%	63%	46%	57%	51%	17%	69%
V20%	60%	57%	46%	57%	14%	74%
Africa%	51%	54%	40%	37%	17%	46%
LICs%	20%	14%	14%	17%	6%	9%
Q3	**35**	**35**	**33**	**35**	**2**	**35**
LDCs%	0%	26%	12%	40%	40%	3%
SIDS%	31%	40%	36%	26%	14%	40%
LDC/SIDS%	31%	51%	39%	60%	29%	43%
V20%	34%	51%	48%	49%	17%	49%
Africa%	23%	31%	24%	34%	11%	17%
LICs%	3%	11%	3%	17%	14%	0%
Q4	**35**	**35**	**35**	**35**	**0**	**35**
LDCs%	0%	9%	3%	20%	20%	3%
SIDS%	14%	51%	43%	9%	43%	17%
LDC/SIDS%	14%	54%	46%	29%	40%	20%
V20%	34%	40%	40%	46%	11%	26%
Africa%	14%	9%	17%	31%	23%	17%
LICs%	0%	0%	0%	9%	9%	3%

(Continued)

B: Percentage share of top decile and each quartile filled by countries from each country group (Continued)

	Exposure Indices						
	NDGAIN exp	WRI exp	INFORM CC H&E	MVI env vuln	PVCCI	Maximum Difference	Avg (min-max normalised)
Top decile	**14**	**14**	**14**	**14**	**14**	**0**	**14**
LDCs%	50%	21%	29%	43%	50%	29%	50%
SIDS%	64%	7%	0%	43%	50%	64%	7%
LDC/SIDS%	93%	29%	29%	79%	86%	64%	57%
V20%	57%	50%	36%	57%	50%	21%	57%
Africa%	29%	14%	29%	43%	36%	29%	36%
LICs%	7%	14%	36%	21%	29%	29%	43%
Q1	**35**	**35**	**35**	**35**	**35**	**0**	**35**
LDCs%	57%	20%	43%	31%	43%	37%	46%
SIDS%	37%	9%	0%	46%	29%	46%	23%
LDC/SIDS%	80%	26%	43%	74%	66%	54%	63%
V20%	57%	46%	46%	51%	54%	11%	54%
Africa%	49%	14%	46%	34%	54%	40%	34%
LICs%	34%	14%	40%	23%	29%	26%	31%
Q2	**35**	**36**	**35**	**35**	**35**	**1**	**35**
LDCs%	40%	31%	31%	29%	17%	23%	26%
SIDS%	29%	28%	26%	17%	37%	20%	29%
LDC/SIDS%	63%	53%	51%	40%	46%	23%	49%
V20%	66%	50%	63%	51%	43%	23%	46%
Africa%	43%	47%	26%	43%	17%	30%	40%
LICs%	26%	11%	14%	17%	9%	17%	14%
Q3	**35**	**34**	**36**	**35**	**35**	**2**	**35**
LDCs%	20%	32%	33%	34%	46%	26%	29%
SIDS%	20%	50%	19%	14%	20%	36%	23%
LDC/SIDS%	37%	74%	50%	43%	60%	36%	46%
V20%	43%	53%	44%	46%	60%	17%	49%
Africa%	34%	41%	50%	31%	51%	20%	37%
LICs%	9%	18%	11%	17%	23%	14%	14%
Q4	**35**	**35**	**34**	**35**	**35**	**1**	**35**
LDCs%	11%	46%	21%	34%	23%	34%	29%
SIDS%	17%	17%	59%	26%	17%	42%	29%
LDC/SIDS%	29%	57%	65%	51%	37%	36%	51%
V20%	37%	54%	50%	54%	46%	17%	54%
Africa%	26%	49%	29%	43%	29%	23%	40%
LICs%	3%	29%	6%	14%	11%	26%	11%

Note: maximum difference is the share reported in the highest index less the share reported in the lowest index.

C: Percentage share of each country group's population (for countries with index data) in top decile and each quartile

	Overall Risk Indices					
	NDGAIN (inverted)	WRI	INFORM CC	MVI	Maximum Difference	Avg (min-max normalised)
All countries pop (m)	**6604**	**6604**	**6604**	**6604**	**0**	**6604**
Top decile (%)	5%	40%	12%	2%	38%	13%
Q1%	15%	76%	51%	8%	68%	48%
Q2%	14%	13%	18%	16%	5%	15%
Q3%	43%	7%	28%	32%	36%	32%
Q4%	28%	4%	3%	44%	41%	5%
LDC pop (m)	**1125**	**1125**	**1125**	**1125**	**0**	**1125**
Top decile (%)	30%	30%	45%	10%	34%	45%
Q1%	83%	36%	74%	17%	66%	75%
Q2%	17%	24%	25%	36%	20%	16%
Q3%	0%	30%	1%	32%	32%	9%
Q4%	0%	10%	0%	15%	15%	0%
SIDS pop (m)	**67**	**67**	**67**	**67**	**0**	**67**
Top decile (%)	20%	15%	0%	19%	20%	17%
Q1%	38%	33%	33%	22%	16%	34%
Q2%	4%	41%	25%	7%	37%	9%
Q3%	45%	15%	9%	53%	44%	21%
Q4%	12%	11%	33%	18%	22%	36%
LDC/SIDS pop (m)	**1174**	**1174**	**1174**	**1174**	**0**	**1174**
Top decile (%)	28%	30%	43%	10%	33%	44%
Q1%	81%	37%	72%	17%	64%	73%
Q2%	16%	24%	25%	35%	19%	16%
Q3%	3%	29%	1%	33%	32%	10%
Q4%	1%	10%	2%	15%	14%	2%
V20 pop (m)	**1759**	**1759**	**1759**	**1759**	**0**	**1759**
Top decile (%)	16%	40%	27%	6%	34%	49%
Q1%	46%	54%	67%	24%	42%	69%
Q2%	30%	18%	20%	25%	11%	16%
Q3%	20%	20%	12%	20%	9%	9%
Q4%	4%	8%	1%	30%	29%	6%
Africa pop (m)	**1434**	**1434**	**1434**	**1434**	**0**	**1434**
Top decile (%)	20%	6%	45%	5%	40%	18%
Q1%	47%	22%	55%	11%	44%	65%
Q2%	32%	46%	33%	57%	26%	18%
Q3%	18%	21%	12%	16%	9%	11%
Q4%	4%	11%	0%	15%	15%	6%
LICs pop (m)	**706**	**706**	**706**	**706**	**0**	**706**
Top decile (%)	46%	17%	74%	14%	60%	50%
Q1%	93%	17%	88%	24%	76%	88%
Q2%	7%	30%	12%	61%	54%	7%
Q3%	0%	40%	0%	10%	40%	5%
Q4%	0%	13%	0%	5%	13%	0%

(Continued)

C: Percentage share of each country group's population (for countries with index data) in top decile and each quartile (Continued)

	Vulnerability Indices					
	NDGAIN vuln	WRI vuln	INFORM CC vuln	MVI struct vuln	Maximum Difference	Avg (min-max normalised)
All countries pop (m)	**6604**	**6604**	**6604**	**6604**	**0**	**6604**
Top decile (%)	3%	11%	7%	3%	9%	8%
Q1%	9%	52%	24%	10%	43%	22%
Q2%	18%	16%	33%	12%	21%	8%
Q3%	35%	8%	16%	34%	28%	33%
Q4%	37%	25%	28%	44%	20%	36%
LDC pop (m)	**1125**	**1125**	**1125**	**1125**	**0**	**1125**
Top decile (%)	17%	43%	37%	11%	31%	43%
Q1%	54%	77%	77%	16%	60%	75%
Q2%	46%	21%	23%	30%	25%	25%
Q3%	0%	2%	1%	37%	37%	1%
Q4%	0%	0%	0%	17%	17%	0%
SIDS pop (m)	**67**	**67**	**67**	**67**	**0**	**67**
Top decile (%)	5%	0%	17%	19%	19%	0%
Q1%	25%	15%	33%	24%	17%	22%
Q2%	19%	19%	8%	23%	15%	22%
Q3%	45%	32%	22%	27%	23%	39%
Q4%	11%	34%	37%	26%	26%	17%
LDC/SIDS pop (m)	**1174**	**1174**	**1174**	**1174**	**0**	**1174**
Top decile (%)	17%	41%	35%	11%	30%	41%
Q1%	53%	74%	74%	16%	58%	71%
Q2%	44%	20%	22%	30%	24%	25%
Q3%	3%	3%	2%	37%	35%	3%
Q4%	1%	2%	2%	18%	17%	1%
V20 pop (m)	**1759**	**1759**	**1759**	**1759**	**0**	**1759**
Top decile (%)	9%	26%	23%	7%	19%	25%
Q1%	32%	69%	67%	25%	44%	59%
Q2%	43%	19%	19%	23%	24%	26%
Q3%	20%	10%	4%	21%	17%	11%
Q4%	5%	3%	10%	31%	28%	4%
Africa pop (m)	**1434**	**1434**	**1434**	**1434**	**0**	**1434**
Top decile (%)	11%	45%	22%	6%	39%	29%
Q1%	27%	61%	63%	12%	52%	59%
Q2%	50%	34%	15%	37%	36%	19%
Q3%	3%	2%	15%	30%	28%	18%
Q4%	19%	3%	7%	21%	18%	4%
LICs pop (m)	**706**	**706**	**706**	**706**	**0**	**706**
Top decile (%)	27%	71%	60%	16%	55%	71%
Q1%	54%	79%	89%	26%	62%	88%
Q2%	43%	15%	8%	45%	38%	9%
Q3%	3%	5%	4%	19%	16%	0%
Q4%	0%	0%	0%	9%	9%	4%

(Continued)

C: Percentage share of each country group's population (for countries with index data) in top decile and each quartile (Continued)

	Exposure Indices						
	NDGAIN Exp	WRI Exp	INFORM CC H&E	MVI env vuln	PVCCI	Maximum Difference	Avg (min-max normalised)
All countries pop (m)	**6603**	**6603**	**6603**	**6603**	**6603**	**0**	**6603**
Top decile (%)	24%	56%	34%	2%	3%	54%	54%
Q1%	41%	72%	82%	10%	12%	72%	68%
Q2%	17%	17%	10%	34%	34%	25%	20%
Q3%	34%	4%	7%	40%	36%	36%	8%
Q4%	8%	6%	1%	15%	18%	17%	3%
LDC pop (m)	**1125**	**1125**	**1125**	**1125**	**1125**	**0**	**1125**
Top decile (%)	12%	10%	11%	10%	9%	3%	20%
Q1%	58%	31%	69%	19%	23%	49%	48%
Q2%	28%	27%	19%	15%	13%	16%	29%
Q3%	11%	19%	12%	48%	37%	37%	17%
Q4%	3%	24%	1%	18%	27%	27%	6%
SIDS pop (m)	**67**	**67**	**67**	**67**	**67**	**0**	**67**
Top decile (%)	3%	15%	0%	37%	23%	37%	1%
Q1%	16%	33%	0%	40%	26%	40%	41%
Q2%	38%	41%	76%	6%	23%	70%	5%
Q3%	40%	15%	7%	6%	25%	34%	23%
Q4%	5%	10%	17%	47%	26%	42%	32%
LDC/SIDS pop (m)	**1174**	**1174**	**1174**	**1174**	**1174**	**0**	**1174**
Top decile (%)	12%	11%	11%	10%	10%	2%	19%
Q1%	57%	31%	66%	20%	23%	46%	47%
Q2%	29%	27%	21%	14%	12%	17%	28%
Q3%	12%	19%	12%	46%	37%	35%	18%
Q4%	3%	23%	1%	20%	28%	26%	7%
V20 pop (m)	**1759**	**1759**	**1759**	**1759**	**1759**	**0**	**1759**
Top decile (%)	2%	20%	14%	6%	5%	18%	29%
Q1%	32%	50%	68%	25%	28%	43%	52%
Q2%	50%	21%	20%	22%	18%	32%	27%
Q3%	13%	13%	10%	35%	25%	25%	12%
Q4%	6%	15%	2%	18%	30%	28%	9%
Africa pop (m)	**1434**	**1434**	**1434**	**1434**	**1434**	**0**	**1434**
Top decile (%)	6%	4%	20%	7%	7%	15%	9%
Q1%	35%	16%	62%	16%	28%	46%	24%
Q2%	20%	50%	16%	26%	14%	36%	52%
Q3%	30%	17%	21%	37%	44%	27%	15%
Q4%	16%	17%	1%	21%	14%	20%	9%
LICs pop (m)	**706**	**706**	**706**	**706**	**706**	**0**	**706**
Top decile (%)	4%	9%	21%	13%	14%	18%	24%
Q1%	54%	21%	81%	28%	33%	60%	45%
Q2%	31%	25%	13%	21%	14%	18%	40%
Q3%	11%	23%	6%	33%	34%	28%	11%
Q4%	3%	31%	1%	18%	20%	30%	4%

Note: maximum difference is the share reported in the highest index less the share reported in the lowest index.

D: Percentage share of top decile and each quartile's total population accounted for by each country group

	Overall Risk Indices					
	NDGAIN (inverted)	WRI	INFORM CC	MVI	Maximum difference	Avg (min-max normalised)
Top decile pop (m)	**339**	**2628**	**791**	**125**	**2503**	**891**
LDCs%	98%	13%	63%	94%	85%	57%
SIDS%	4%	0%	0%	10%	10%	1%
LDC/SIDS%	98%	13%	63%	94%	85%	57%
V20%	84%	27%	60%	89%	63%	97%
Africa%	85%	3%	82%	56%	82%	28%
LICs%	95%	5%	66%	80%	90%	40%
Q1 pop (m)	**1019**	**5021**	**3377**	**526**	**4495**	**3157**
LDCs%	92%	8%	25%	37%	84%	27%
SIDS%	3%	0%	1%	3%	2%	1%
LDC/SIDS%	93%	9%	25%	37%	84%	27%
V20%	79%	19%	35%	82%	63%	38%
Africa%	66%	6%	23%	30%	60%	29%
LICs%	64%	2%	18%	33%	62%	20%
Q2 pop (m)	**923**	**875**	**1199**	**1030**	**324**	**1000**
LDCs%	20%	30%	24%	40%	19%	18%
SIDS%	0%	3%	1%	0%	3%	1%
LDC/SIDS%	20%	32%	25%	40%	19%	18%
V20%	57%	37%	30%	43%	27%	29%
Africa%	49%	75%	40%	80%	40%	26%
LICs%	6%	24%	7%	42%	36%	5%
Q3 pop (m)	**2822**	**432**	**1818**	**2114**	**2391**	**2084**
LDCs%	0%	79%	0%	17%	79%	5%
SIDS%	1%	2%	0%	2%	2%	1%
LDC/SIDS%	1%	80%	1%	19%	79%	5%
V20%	12%	79%	11%	17%	68%	7%
Africa%	9%	69%	9%	11%	60%	8%
LICs%	0%	65%	0%	3%	65%	2%
Q4 pop (m)	**1839**	**275**	**209**	**2934**	**2725**	**362**
LDCs%	0%	40%	0%	6%	40%	0%
SIDS%	0%	3%	11%	0%	10%	7%
LDC/SIDS%	0%	43%	11%	6%	42%	7%
V20%	4%	49%	10%	18%	45%	30%
Africa%	3%	58%	2%	7%	56%	23%
LICs%	0%	34%	0%	1%	34%	0%
total pop (m)	**6604**	**6604**	**6604**	**6604**	**0**	**6604**
LDCs%	17%	17%	17%	17%	0%	17%
SIDS%	1%	1%	1%	1%	0%	1%
LDC/SIDS%	18%	18%	18%	18%	0%	18%
V20%	27%	27%	27%	27%	0%	27%
Africa%	22%	22%	22%	22%	0%	22%
LICs%	11%	11%	11%	11%	0%	11%

(Continued)

D: Percentage share of top decile and each quartile's total population accounted for by each country group (Continued)

	Vulnerability Indices					
	NDGAIN vuln	WRI vuln	INFORM CC vuln	MVI struct vuln	Maximum Difference	Avg (min-max normalised)
Top decile pop (m)	**194**	**752**	**439**	**187**	**564**	**510**
LDCs%	100%	64%	94%	69%	36%	94%
SIDS%	2%	0%	3%	7%	7%	0%
LDC/SIDS%	100%	64%	94%	69%	36%	94%
V20%	83%	60%	94%	66%	34%	86%
Africa%	79%	87%	73%	49%	37%	80%
LICs%	97%	67%	96%	60%	37%	99%
Q1 pop (m)	**617**	**3426**	**1584**	**636**	**2809**	**1476**
LDCs%	98%	25%	54%	29%	73%	57%
SIDS%	3%	0%	1%	3%	2%	1%
LDC/SIDS%	100%	25%	55%	29%	75%	57%
V20%	92%	35%	74%	68%	56%	70%
Africa%	64%	26%	57%	26%	38%	58%
LICs%	62%	16%	40%	29%	46%	42%
Q2 pop (m)	**1198**	**1056**	**2148**	**781**	**1367**	**550**
LDCs%	43%	23%	12%	43%	31%	51%
SIDS%	1%	1%	0%	2%	2%	3%
LDC/SIDS%	43%	23%	12%	45%	33%	53%
V20%	63%	32%	16%	52%	48%	83%
Africa%	60%	47%	10%	69%	59%	50%
LICs%	25%	10%	2%	41%	38%	11%
Q3 pop (m)	**2318**	**500**	**1045**	**2267**	**1818**	**2209**
LDCs%	0%	5%	1%	18%	18%	0%
SIDS%	1%	4%	1%	1%	3%	1%
LDC/SIDS%	1%	8%	2%	19%	18%	2%
V20%	15%	34%	7%	17%	28%	9%
Africa%	2%	5%	21%	19%	18%	12%
LICs%	1%	7%	3%	6%	6%	0%
Q4 pop (m)	**2470**	**1621**	**1827**	**2920**	**1298**	**2369**
LDCs%	0%	0%	0%	7%	7%	0%
SIDS%	0%	1%	1%	1%	1%	0%
LDC/SIDS%	0%	1%	1%	7%	7%	1%
V20%	4%	3%	10%	19%	16%	3%
Africa%	11%	2%	5%	10%	9%	2%
LICs%	0%	0%	0%	2%	2%	1%
total pop (m)	**6604**	**6604**	**6604**	**6604**	**0**	**6604**
LDCs%	17%	17%	17%	17%	0%	17%
SIDS%	1%	1%	1%	1%	0%	1%
LDC/SIDS%	18%	18%	18%	18%	0%	18%
V20%	27%	27%	27%	27%	0%	27%
Africa%	22%	22%	22%	22%	0%	22%
LICs%	11%	11%	11%	11%	0%	11%

(Continued)

D: Percentage share of top decile and each quartile's total population accounted for by each country group (Continued)

	Exposure Indices						
	NDGAIN Exp	WRI Exp	INFORM CC H&E	MVI env vuln	PVCCI	Maximum Difference	Avg (min-max normalised)
Top decile pop (m)	**1562**	**3706**	**2274**	**134**	**165**	**3572**	**3594**
LDCs%	9%	3%	6%	82%	61%	79%	6%
SIDS%	0%	0%	0%	18%	9%	18%	0%
LDC/SIDS%	9%	3%	6%	92%	70%	88%	6%
V20%	2%	9%	11%	83%	57%	82%	14%
Africa%	5%	2%	12%	76%	61%	74%	4%
LICs%	2%	2%	7%	69%	58%	67%	5%
Q1 pop (m)	**2693**	**4758**	**5388**	**661**	**801**	**4727**	**4520**
LDCs%	24%	7%	14%	33%	32%	25%	12%
SIDS%	0%	0%	0%	4%	2%	4%	1%
LDC/SIDS%	25%	8%	14%	35%	34%	27%	12%
V20%	21%	18%	22%	66%	62%	48%	20%
Africa%	19%	5%	16%	35%	50%	45%	8%
LICs%	14%	3%	11%	30%	29%	27%	7%
Q2 pop (m)	**1112**	**1120**	**655**	**2273**	**2225**	**1618**	**1340**
LDCs%	28%	27%	32%	7%	6%	26%	25%
SIDS%	2%	2%	8%	0%	1%	8%	0%
LDC/SIDS%	31%	29%	38%	7%	6%	32%	25%
V20%	79%	33%	55%	17%	14%	65%	36%
Africa%	25%	64%	35%	16%	9%	55%	55%
LICs%	20%	16%	14%	6%	4%	15%	21%
Q3 pop (m)	**2248**	**296**	**476**	**2670**	**2375**	**2374**	**522**
LDCs%	5%	71%	28%	20%	18%	66%	37%
SIDS%	1%	3%	1%	0%	1%	3%	3%
LDC/SIDS%	6%	73%	29%	20%	18%	67%	39%
V20%	10%	79%	36%	23%	18%	69%	41%
Africa%	19%	83%	64%	20%	27%	64%	42%
LICs%	4%	55%	9%	9%	10%	52%	15%
Q4 pop (m)	**551**	**429**	**84**	**999**	**1203**	**1119**	**221**
LDCs%	6%	62%	10%	20%	26%	56%	29%
SIDS%	1%	2%	14%	3%	1%	13%	10%
LDC/SIDS%	6%	63%	20%	23%	27%	57%	37%
V20%	18%	63%	37%	32%	43%	46%	68%
Africa%	41%	57%	18%	30%	16%	41%	59%
LICs%	4%	51%	6%	13%	12%	47%	11%
total pop (m)	**6603**	**6603**	**6603**	**6603**	**6603**	**0**	**6603**
LDCs%	17%	17%	17%	17%	17%	0%	17%
SIDS%	1%	1%	1%	1%	1%	0%	1%
LDC/SIDS%	18%	18%	18%	18%	18%	0%	18%
V20%	27%	27%	27%	27%	27%	0%	27%
Africa%	22%	22%	22%	22%	22%	0%	22%
LICs%	11%	11%	11%	11%	11%	0%	11%

Note: maximum difference is the share reported in the highest index less the share reported in the lowest index.

Annex 4. Summary data on total and adaptation climate finance (2016–2023) and for selected country groups

	2016	2017	2018	2019	2020	2021	2022	2023
Total climate finance ($bn)	56.0	70.1	71.3	82.9	96.8	98.0	129.8	145.1
LDCs share (%)	19.7%	18.0%	19.6%	19.4%	22.0%	19.3%	20.1%	19.7%
SIDS share (%)	1.8%	2.3%	2.9%	2.1%	2.5%	2.6%	3.1%	3.2%
Africa share (%)	21.9%	22.9%	20.7%	21.9%	22.1%	23.4%	26.1%	24.1%
V20 share (%)	36.5%	33.4%	31.8%	37.3%	36.6%	34.7%	38.4%	35.9%
LICs share (%)	9.9%	8.6%	8.3%	9.4%	8.8%	10.9%	10.6%	8.7%
Climate finance $/hd	9.3	11.5	11.5	13.2	15.3	15.3	20.1	22.2
LDCs $/hd	11.2	12.5	13.5	15.2	19.7	17.1	23.0	24.6
SIDS $/hd	15.7	25.3	32.2	27.4	36.6	39.1	60.2	68.2
Africa $/hd	9.8	12.5	11.2	13.5	15.5	16.2	23.5	23.7
V20 $/hd	13.0	14.6	13.9	18.5	20.8	19.6	28.2	28.9
LICs $/hd	9.1	9.7	9.2	11.8	12.5	15.4	19.3	17.2
Climate finance%/GNI	0.22%	0.27%	0.25%	0.28%	0.33%	0.30%	0.37%	0.40%
LDCs%/GNI	1.19%	1.30%	1.30%	1.41%	1.85%	1.52%	1.91%	1.98%
SIDS%/GNI	0.17%	0.26%	0.32%	0.26%	0.45%	0.43%	0.62%	0.65%
Africa share%/GNI	0.52%	0.71%	0.62%	0.73%	0.87%	0.86%	1.17%	1.19%
V20 share%/GNI	0.73%	0.80%	0.71%	0.92%	1.09%	0.97%	1.31%	1.31%
LICs share%/GNI	1.50%	1.62%	1.52%	2.01%	2.15%	2.55%	3.01%	2.60%
Adaptation finance ($bn)	14.5	20.9	20.3	27.4	37.9	34.0	43.4	41.0
LDCs ada share (%)	39.3%	28.3%	32.1%	29.5%	32.5%	30.7%	33.9%	33.2%
SIDS ada share (%)	3.5%	3.2%	3.7%	3.6%	4.0%	4.4%	4.6%	3.6%
Africa ada share (%)	34.3%	31.2%	28.6%	31.5%	30.3%	34.8%	36.5%	33.5%
V20 ada share (%)	60.8%	48.9%	42.1%	44.4%	52.4%	52.1%	53.9%	51.5%
LICs ada share (%)	22.0%	16.2%	13.9%	16.6%	14.7%	18.2%	18.4%	16.8%
Adaptation $/hd	2.4	3.4	3.3	4.4	6.0	5.3	6.7	6.3
LDCs ada $/hd	5.8	5.9	6.3	7.6	11.3	9.4	13.0	11.7
SIDS ada $/hd	8.2	10.5	11.8	15.0	23.3	22.9	29.8	22.1
Africa ada $/hd	4.0	5.1	4.4	6.4	8.3	8.4	11.0	9.3
V20 ada $/hd	5.6	6.4	5.2	7.3	11.6	10.2	13.2	11.7
LICs ada $/hd	5.3	5.4	4.4	6.9	8.2	8.9	11.2	9.3
Adaptation%/GNI	0.06%	0.08%	0.07%	0.09%	0.13%	0.11%	0.12%	0.11%
LDCs%/GNI	0.61%	0.61%	0.60%	0.71%	1.07%	0.84%	1.07%	0.94%
SIDS%/GNI	0.09%	0.11%	0.12%	0.14%	0.29%	0.25%	0.31%	0.21%
Africa%/GNI	0.21%	0.29%	0.24%	0.35%	0.47%	0.44%	0.55%	0.47%
V20%/GNI	0.31%	0.35%	0.27%	0.36%	0.61%	0.51%	0.61%	0.53%
LICs%/GNI	0.86%	0.91%	0.73%	1.17%	1.41%	1.48%	1.74%	1.41%

(Continued)

	2016	2017	2018	2019	2020	2021	2022	2023
GNI $/hd (all developing)	4131	4231	4541	4763	4577	5034	5398	5612
LDCs $/hd	942	962	1043	1077	1061	1120	1205	1244
SIDS $/hd	9452	9656	10089	10462	8150	9014	9725	10559
Africa $/hd	1877	1769	1809	1856	1784	1891	1998	1988
V20 $/hd	1787	1821	1953	2006	1904	2015	2158	2201
LICs $/hd	610	596	605	589	579	602	641	661

Notes: Figures are derived from the OECD's Climate-Related Development Finance dataset. Figures per head and as a percentage of GNI are derived using population and GNI data from World Development Indicators (data are missing for some countries but with negligible impact).

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