Advisory report

Methodological guidance

to determine the 'size' of premium and capital support (PCS) at macro level

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About this publication

This advisory report is an output of the Global Risks and Resilience Programme (GRR) at ODI. GRR provides rigorous analysis of multiple interconnected risks, interrogates narratives and risk perceptions, and uses this evidence to recommend tailored solutions for the management of systemic risks in development, humanitarian, climate adaptation and disaster risk management policies and actions.

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Acronyms

ADB	Asian Development Bank
ADF	African Development Fund, AfDB
ADRiFi	African Disaster Risk Financing Programme
AfDB	African Development Bank
ARC	African Risk Capacity
CAT DDO	Catastrophe Deferred Drawdown Option
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDRFI	Climate and Disaster Risk Finance and Insurance
CEO	Chief Executive Officer
DRF	disaster risk finance
FCDO	Foreign, Commonwealth and Development Office, UK
IDA	International Development Association, World Bank
IGP	InsuResilience Global Partnership
KII	key informant interview
MoF	Ministry of Finance
M&E	monitoring and evaluation
PCRIC	Pacific Catastrophe Risk Insurance Company
PCS	premium and capital support
PEA	political economy analysis
PIC	Pacific Island country
TWG	technical working group
UK	United Kingdom

Executive Summary

This report is based on the SMART Principles for premium and capital support (PCS), developed by the InsuResilience Global Partnership (IGP) for the purposes of scaling up climate and disaster risk and finance insurance (CDRFI) solutions. It proposes methodological guidance to define the 'scaling factor' to determine the size/amount of premium support allocations. This guidance aims to support actors who are part of the IGP (e.g. the Programme Alliance) and policymakers and practitioners who are responsible for such allocation decisions.

The policy note for SMART PCS (Töpper and Stadtmüller, 2022) provides conceptual guidance to determine the size/amount of PCS. It suggests an indicative formula to calculate externally supported (donor) share of the premium for a government (see below). The formula is proposed as a fraction that reflects need-based considerations, along with a scaling factor that needs to be defined in an evidence-based fashion to suit different country contexts.

$$P_e = t_n * \frac{\textit{expected contingent government liabilities from disasters}}{\textit{total government budget}}$$

Where $P_e + P_p = P_a$ and $P_a = 1$

Where P_e is the externally supported premium share, P_p is the remaining premium share payable by the policyholder (country), and P_a is the full, actuarially priced premium charged by the risk carrier. t_n is a scaling factor.

Based on the suggested formula, this report provides methodological guidance to define the scaling factor (t_n). The proposed approach is based on a multi-criteria decision model (MCDM), involving the selection and prioritisation of multiple factors/objectives. It primarily builds on the performance-based allocation (PBA) systems used by multilateral development institutions and funds to allocate financial resources. The proposed approach is predominantly quantitative and considers factors that are readily quantifiable and widely available for a large set of countries. It includes discussion of (i) the selection of critical factors (along with appropriate indicators) that could be used to determine the size of premium support; (ii) the preliminary guidance on weighting the selected factors; (iii) the calculation of a composite or final score/value; and (iv) the duration of premium support. However, several simulations (trial and error) would need to be performed to obtain suitable weights (and get robust values) to factor in PCS priorities/principles in the suggested indicators.

With necessary adjustments, the approach depicted in this document could also be applied to directly derive (i.e. without the fraction) the 'allocation share' by country, in cases where decisions need to be made regarding the allocation of a fixed donor fund among recipients. In addition, the feasibility of the overall formula, in terms of its practical use, is also reviewed to identify limitations and suggest appropriate remedies.

1 Background

This document proposes methodological guidance to determine the 'size' of premium and capital support (PCS) at macro level. It is based on the SMART PCS Principles developed by the InsuResilience Global Partnership (IGP) for the purposes of scaling up Climate and Disaster Risk and Finance Insurance (CDRFI) solutions (see Box 1).

Conceptual guidance on what considerations need to be taken to determine the size/amount of PCS is provided across all five SMART PCS Principles. Principle A (accessibility) in the SMART PCS concept note (hereafter 'the policy note') argues 'transparent, uniform and consistent criteria for needs-based PCS levels should be formulated' to guide donors in determining an 'uptake-enabling' size of PCS intervention (Töpper and Stadtmüller, 2022).

Box 1 The SMART premium and capital support principles

S – Sustainable impact for the most vulnerable: To enable tangible, lasting change in the lives of those most vulnerable to disasters, PCS should be used to fund risk transfer mechanisms coupled with effective, development-oriented delivery systems.

M – Value for money: To maximise poor and vulnerable countries' and people's resilience for each dollar of premium or capital support, PCS initiatives should support needs-based CDRFI products that add value and entail a clear assessment framework that makes improvements in resilience verifiable and comparable. Smart PCS proactively and effectively crowds-in private capital rather than undermining private sector potentials.

A – Accessibility: Smart PCS is needs-based, (climate) risk-adjusted, and aligned with appropriate measures for enabling access, while empowering beneficiaries and promoting client ownership of the solutions employed.

R – Resilience-building incentives: To build financial, physical and social resilience, only risks that are too costly to reduce further should be absorbed by risk financing instruments, and only risks stemming from low-frequency and high-severity events should be transferred via insurance. Reducing premiums through PCS should not alter this; rather, it should keep incentives to reduce risks in place.

T – Transparency and Consistency: To empower recipients and maximise synergies, PCS should be provided and employed in a manner that promotes transparency and accountability towards recipients and at-risk communities as well as consistency and coordination among support offers and providers.

Source: Töpper and Stadtmüller (2022)

The policy note suggests an indicative formula to calculate the externally supported (donor) share of the premium for a government. The formula is proposed as a fraction that reflects need-based considerations, along with a scaling factor that needs to be defined in an evidence-based fashion to suit different country contexts. The formula proposed is:

$$P_e = t_n * \frac{\textit{expected contingent government liabilities from disasters}}{\textit{total government budget}}$$

Where $P_e + P_p = P_a$ and $P_a = 1$

Where P_e is the externally supported premium share, P_p is the remaining premium share payable by the policyholder (country), and P_a is the full, actuarially priced premium charged by the risk carrier. t is a scaling factor that could decrease (or, under specified conditions, increase) annually (year n). Values for the scaling factor (t_n) can be in the range of 0 (absolute exclusion) to 1 (absolute inclusion).

In addition to the SMART PCS Principles, this guidance document is based on and aligns with the IGP's monitoring and evaluation (M&E) framework (IGP, 2021), IGP's pro-poor principles (IGP, 2019) and conceptual guidance provided in Panda et al. (2021a; 2021b; 2021c), World Bank (2017) and Vivid Economics et al. (2016), among others. Insights from the key informant interviews (KIIs) conducted as part of the political economy analysis on CDRFI uptake (Scott et al., 2022) and consultation with the Advisory Working Group (AWG) were particularly helpful in developing this guidance document. Further, the methodology suggested in the document builds on the funding/aid allocation mechanisms prevalent at the global scale, mostly used by multilateral development institutions and funds to determine the 'allocation share' for different recipient countries (see section 4.1.2 for more details).

The rest of the document is structured as follows. The next section describes how and where to use this guidance. Section 3 presents a critical review of the practical feasibility of the suggested indicative formula (in Principle A) for sizing PCS interventions. Section 4 presents a systematic approach to determine the value of the scaling factor (and/or allocation share) by examining existing evidence and building on stakeholder and expert consultations.

2 Where to use this guidance document

The purpose of this document is to provide methodological guidance to develop a transparent and consistent method for allocating premium support to countries based on their needs for financial support and performance in effectively furthering disaster risk management (and financing) actions. This guidance document is developed to support actors who are part of the IGP (e.g. the Programme Alliance) in deciding appropriate allocations of premium support, differentiated by different country categories. However, the guidance could be used more widely by policymakers and practitioners who are responsible for such allocation decisions.

This guidance document uses a multi-criteria decision model (MCDM) to define the scaling factor.[1] The approach used here is predominantly quantitative and considers factors that are readily quantifiable and widely available for a larger set of countries. Primarily, it builds on the performance-based allocation (PBA) systems used to allocate financial resources by multilateral development institutions and funds.

The methodological guidance provided in this document is intended to define values for the scaling factor in an evidence-based fashion.[2] However, with necessary adjustments, the approach depicted in this document could be applied to directly derive (i.e. without the fraction) the 'allocation share' by country, in cases where decisions regarding allocating a 'donor fund' among recipients are under consideration.[3]

This guidance document applies in the following cases:

1. where PCS allocation is considered for macro-level CDRFI (particularly, sovereign risk insurance)
2. at the time when PCS prioritisation, allocation and appraisal decisions are made
3. for countries eligible for PCS support (e.g. countries that, in the first place, meet eligibility criteria for PCS support, such as those suggested in the policy note (see Principle S)).

1 Multi-criteria decision models are typically used to solve decision-making problems where multiple criteria (or factors, objectives) have to be considered collectively in order to choose or prioritise among them. This also includes allocation of fixed/scarce resources across alternatives (in this case, recipient countries). MCDM could be based on quantitative, qualitative or both types of criteria.

2 Before doing so, the feasibility of the suggested formula (in terms of its practical use) is also reviewed in section 3.

3 Donor funds here represent a fixed sum of finances at a particular period (commonly known as 'replenishment period') that donors aim to allocate to recipient countries.

4. it is best suited for prioritising PCS allocation among a group of countries[4] (e.g. V20 Group, IDA-eligible[5] countries, countries on the DAC list of ODA recipients,[6] SIDS,[7] among others) and/or members of a sovereign risk pool
5. it is best suited to be used in the context of the suggested formula to calculate P_e.

The proposed approach has some limitations, notably that: (a) it might not be well suited for allocation decisions at global scale.[8] This is because it might not fully capture contextual differences among all the countries of the world. Therefore, as noted above, the suggested approach is best suited for use across a smaller group of recipient countries already identified as having relatively similar needs and where there is a need to make appropriate and meaningful comparisons within this group of countries; and (b) the value of the externally supported premium (P_e) depends on the value of the suggested fraction in the formula; therefore, with a change in the factors that represent the fraction, the suggested approach might also have to be adjusted.

4 This is in line with Principle S where it is argued that PCS allocation prioritisation should go beyond the basic eligibility. For instance, IDA eligibility for PCS could be a proxy for countries with severely restricted ability to pay, but further prioritisation of low-income countries might be required.

5 Eligible for support from the World Bank's International Development Association. See https://ida.worldbank.org/en/about/borrowing-countries for IDA-eligible countries.

6 For countries and territories eligible to receive official development assistance (ODA) from the Development Assistance Committee, see www.oecd.org/dac/financing-sustainable-development/development-finance-standards/daclist.htm.

7 Small island developing states

8 This is a common limitation with various performance-based systems of fund allocation (see section 4.1.2 and Annex 1).

3 Feasibility of the 'fraction' in the proposed SMART PCS sizing formula

Based on the review of literature and consultations with experts and Advisory Working Group members, the following limitations are identified for the proposed fraction in the formula suggested in section 1, in terms of its applicability for practical purposes. Possible remedies to these limitations are also suggested.

Limitations of the proposed fraction with possible remedies

Ambiguity on contingent liabilities

The SMART PCS policy note does not clearly define the value (meaning) of the numerator in the proposed criteria. What remains to be defined is whether the term 'expected contingent government liabilities from disasters' indicates explicit or implicit or both types of contingent liabilities for the government.[9] Further, short-term (response and early recovery) and long-term (long-term recovery and reconstruction) contingent liabilities may be very different, and therefore should be differentiated. While there are some frameworks available for quantifying contingent liabilities (see Gamper et al., 2017), they are generally not well defined and coded by governments, particularly in low-income countries (see Hochrainer-Stigler et al., 2018; Mechler et al., 2016). This makes it difficult to quantify and use them for a wider and meaningful comparison. As Gamper et al. (2017) imply, implicit contingent liabilities are particularly challenging to quantify, and there may be challenges associated with reporting them, if it creates 'a sense of an unconditional guarantee of post-disaster assistance'.

Possible solution

The average annual loss (AAL) expected from a range of different disasters could be used to approximate contingent liabilities, and the cost of sovereign insurance (government share + premium subsidies) could be represented as a percentage of AAL (World Bank, 2017: 28). In cases where (modelled) AAL is not available, historical losses could be used as a numerator. This approach would have the advantage of using data that is relatively easily available.[10] However, it should be noted that the typical emphasis placed on building damage in AAL estimates will likely make it only an imperfect proxy for either the humanitarian suffering of poor and vulnerable people as a result of disasters (who may not own the assets that suffer damage), or of the additional financial costs that governments may bear in responding to the disaster (especially in the immediate aftermath of the disaster). Over time, it is likely that better estimates of the costs

9 Explicit contingent liabilities are explicitly defined and mandated by law, such as liability to reconstruct public infrastructure. Implicit liabilities are moral obligations and not explicitly defined by law; for example, construction of houses for low-income population (for a detailed discussion, see Mechler et al., 2016).

10 Although, depending on the region, historical data on disaster damages (including humanitarian losses) often have incomplete and inconsistent coverage (see Panwar et al., 2020).

associated with responding to disaster events will be developed and IGP should look to make use of any more reliable data as it becomes available.[11]

Total AAL or adjusted AAL

The policy note does not provide clarity on whether the proposed criteria consider a country's total funding requirements (and by extension, total AAL) and adjust for existing funding mechanisms available with the government to finance its contingent liabilities (risk retained by government), as potentially proxied by the AAL. In practice, it makes economic sense for the government to retain a certain level of risk – therefore, the demand for insurance is usually lower than the total funding requirements of a country. For instance, the share of insurance coverage under ARC ranges between 10% and 30% of the total funding requirements of the member countries. Therefore, the question arises: what would be an optimal level of insurance for a country, and will insurance be provided for the total funding requirements of government?[12]

Possible solution

That part of a country's contingent liabilities, AAL, or other measure of disaster response which is financed through other instruments (or the part of risk which is retained by the government) could first be excluded from the calculation. For example, if a country has a 'ground-up' AAL of $100 million but the government has made use of reserve funds and contingent credit facilities to cover $40 million, then the adjusted AAL for the purpose of the calculation would be $60 million.[13] This type of calculation will be significantly easier in those countries that have a comprehensive DRF strategy in place,[14] an activity that is currently being supported by the Global Shield.[15]

Using total government budget in the denominator

There is a weak theoretical relationship between the numerator (contingent liabilities/AAL) and the total government budget. Therefore, total government budget might increase or decrease over time due to changes in government revenue and/or expenditure across different (and unrelated) sectors, affecting the value of the fraction in the formula.

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11 For example, the Global Risk Modelling Alliance (GRMA) programme of the InsuResilience Solution Fund (ISF) is designed to foster open-source data and models, which could support IGP in identifying (and developing) reliable disaster data.

12 See discussion on optimality consideration in Panda et al. (2021c: 17).

13 One consequence of this adjustment is that greater deliberate risk retention by a government, or the use of other unsubsidised risk transfer instruments, would result in a smaller PCS amount. This could be seen as penalising desirable behaviour. However, it is an adjustment that reflects the fact that the objective need for additional subsidised CDRFI solutions is lower, while, as discussed further in section 4, the scaling factor can be set in a way that provides an incentive for improved disaster risk finance practice.

14 Conversely, the risk financing instruments might not be well aligned at the national and sub-national levels in countries without a comprehensive DRF strategy. In such cases, it could be difficult to estimate the funding that is available from these instruments and the extent to which this funding can be relied upon in the context of a specific event.

15 The Global Shield is joint initiative between the G7 and the V20 to further strengthen the global CDRFI architecture and make financial protection more systematic, coherent and sustained. For more information see: www.v-20.org/global-shield-against-climate-risks, www.bmz.de/en/issues/climate-change-and-development/global-shield-against-climate-risks, or www.insuresilience.org/knowledge/global-shield.

Possible solution

Instead of total budget, it may be easier to use a measure of overall economic activity such as Gross Domestic Product (GDP), which is easily available, and which could provide a better assessment of the overall scale of the impact of the disaster on a country's economic performance. One other alternative that has also been suggested is to use the DRM-related component of the total budget. However, given the relative fungibility of budget allocations, this could create a strong, undesirable incentive for countries to reduce the size of their DRM budgets over time, so as to appear to have a greater need for PCS.

The upper bound for t_n

Considering that there is an upper limit suggested for the scaling factor ($0 \leq t_n \geq 1$), the outcome of this formula may not be practically useful in calculating the size of PCS intervention by donors (P_e); i.e. the result of multiplication of scaling factor and fraction would be very low even for higher values of tn (say, $t_n = 0.8$). Consider the following hypothetical example.

Assuming government contingent liability (or AAL) for insurance purposes for a given year is $10 million, as against a total budget of, say, $100 million. Using these figures, the fraction will yield an outcome of 0.1. Considering a scaling factor of the value of, say, 0.8 (the scaling factor being valued between 0 and 1, as defined in the policy note), the product of the fraction and scaling factor will be 0.08, which, according to the proposed formula, will be the externally supported premium share (P_e). As Pe (0.08) is a proportion of P_a (i.e. 8% of P_a), the value of country premium share (P_p) would be 0.92 (1 – 0.08) – in other words, 92% of the premium is to be paid by the country. A higher fraction, say 0.4 (which is a rarity, even for the least-developed countries), and a scaling factor of 0.9 will result in 0.36 as P_e – i.e. 64% of premium share for countries (P_p).

Possible solution

The example explained above is contrary to the real-world application of and evidence on premium subsidies. For example, donors have provided support for 84–100% share of the premiums for low-income countries for policies purchased under the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) (World Bank, 2017). Considering the above example, it is therefore not feasible to have an upper bound for the scaling factor. Alternatively, a constant (k) with predefined value may be added into the formula. The value of 'k' may also be fixed beforehand for different country groups; e.g. for least-developed countries (LDCs), V20 countries,[16] small island developing states (SIDS), among others.

16 Detail of V20 countries is available at www.v-20.org/about

4 Defining the value of the scaling factor for macro-level PCS

As highlighted earlier, this guidance document uses a multi-criteria decision model (MCDM) to define the scaling factor and it builds on the performance-based allocation (PBA) systems used to allocate financial resources by multilateral development institutions and funds. This approach could also be used (with necessary modifications) to directly determine the 'allocation share' out of a fixed donor fund among recipient countries.

In this section, conceptual guidance and evidence on PCS allocation is revisited. Since the suggested approach builds on the PBA systems operational at the global level, a review of such allocation mechanisms is also presented to contextualise the choices of factors and indicators as well as the calculation method suggested later in this section.

4.1 Existing evidence on provisioning for PCS at macro level

4.1.1 Considerations for 'sizing' macro-level PCS interventions

The SMART PCS Principles suggest that both needs-based and performance-based considerations should inform PCS sizing decisions. Subsidies should not be provided universally to all countries, and income should not be the only criterion in deciding their size;[17] rather, the eligibility of countries (and the size of premium support) should be evaluated based on a country's (climate and disaster) risk profile and its government's 'ability to pay' and 'willingness to pay' for insurance (Vivid Economics et al., 2016; Panda et al., 2021c).[18] For instance, IDA eligibility could serve as proxy for countries with lack of ability to pay, and specific risk metrics that account for both physical and social vulnerability could be used to approximate the climate and disaster risk of a country.[19] Therefore, higher premium support should be provided to countries that are poor (with weak fiscal position) and have the most vulnerable (at-risk) populations (Principle S).

These considerations are consistent with the conceptual guidance provided by Panda et al. (2021a; 2021b; 2021c) and Vivid Economics et al. (2016). For instance, Panda et al. (2021c) provide insights into three main considerations for appropriately sizing PCS: (i) needs-based considerations for target countries, (ii) optimal level of insurance protection, and (iii) sustainability of the supported scheme. The needs-based considerations include higher allocation of premium support for low-income

17 Despite being a critical factor in in determining the size of PCS, a country's income level only reflects an annual status, and is therefore not a forward-looking metric that would account for (for example) increased climate risks to a country.

18 Panda et al. (2021c: 8) provide a detailed discussion on the eligibility of countries to receive premium support based on their ability and willingness to pay for insurance.

19 With a fixed availability of PCS, further prioritisation might be required among the IDA eligible countries as well. There might also be situations where premium support to non-IDA (IBRD countries) would be justified (see Principle S in Töpper and Stadtmüller, 2022).

countries, as they typically have limited fiscal space (and debt accessibility constraints) to cover premium costs compared to higher income countries. Further, countries that are exposed to risk of low-frequency but high-impact events, though it may not be strongly reflected in their AAL, will still have a larger share of output/capital or population at risk than countries whose risk profile is dominated by higher-frequency/lower-impact events, and should get higher premium support. The optimality consideration requires identifying the optimal level of insurance for a country, and argues for higher support from donors to under-insured countries to help them achieve their optimal level of insurance protection.[20] In addition, the sustainability of the supported insurance scheme is an important consideration as the premium support should make the scheme viable and not disincentivise other risk reduction measures (ibid.).

As suggested in the SMART PCS policy mote, the policy performance of the government in proactive disaster risk management (and risk financing) should be considered as an important criterion, in addition to the needs-based consideration, in deciding the size of PCS interventions. Principle A (accessibility) suggests that higher premium support should be provided to countries that show strong political commitment and create an enabling policy environment for greater CDRFI uptake. As highlighted in Panda et al. (2021c), performance indicators that might be used for defining the scaling factor could include (i) improvements in the financial protection status of the country, and (ii) investment in adaptation measures and improvement in disaster preparedness and resilience. Novel indices constructed for measuring performance could be used for this purpose (ibid.).

According to the policy note, the needs-based considerations are 'reasonably' accounted for in the suggested fraction (Töpper and Stadtmüller, 2022: 16) while performance indicators could be used to define the scaling factor.[21] However, several important needs-based factors that could influence the demand of PCS (e.g. per capita income, debt stress, vulnerable population, among others) are not accounted for in the suggested fraction. Therefore, even for defining the scaling factor, it is important to explore such factors in addition to the performance indicators. This approach is consistent with multiple global resource allocation mechanisms (discussed in the next section), where needs-based and performance-based criteria are collectively used to allocate resources.

4.1.2 PCS allocations and resource allocation methodologies at global scale

Historically, ad hoc provisions have been made for targeting and allocating premium subsidies; for example, they have been based on countries' perceived needs, and/or on the political and

20 Note, though, that it is difficult to estimate the optimal level of insurance for a country, as it requires information on various benchmarks; for example, suitability and adequacy of insurance, and government preferences over debt and growth outcomes, among others. See Cebotari and Youssef (2020) for a detailed discussion on optimality of insurance for sovereigns.

21 Although the suggested performance indicators are relevant for this purpose, some of them may already be accounted for in the fraction (and might be pulling scaling factor and/or external premium share in different directions). For example, investment in adaptation measures and disaster preparedness should reduce the expected government contingent liabilities (the numerator of the fraction).

historical ties between donors and recipients (Vivid Economics et al., 2016; World Bank, 2017; Panda et al., 2021c).[22] Although the policy note provides conceptual guidance on allocation of PCS (in Principles A and S), there is limited evidence on empirical methods of appropriately allocating premium support to recipient countries. This could be partly because using PCS for CDRFI is a relatively new and evolving field that requires the development and refinement of operational guidelines based on increasing evidence (Panda et al., 2021a; 2021b). However, appropriately allocating 'fixed' financial resources among recipient countries to achieve maximum impact has always been a complex optimisation problem for donors and multilateral financial institutions (Kharas and Noe, 2018).

Aid allocation mechanisms, mostly used by multilateral development banks, could serve as a benchmark for developing an appropriate method to define the size of PCS (and the scaling factor). Performance-based allocation (PBA) systems are widely used to allocate development funds. The World Bank has been using PBA since 1977 to allocate IDA resources, and almost all major multilateral development institutions have adopted a PBA system over the past two decades (GEF, 2017). Annex 1 summarises the key allocation mechanisms relevant for the purpose of identifying and weighting indicators to define the scaling factor.

22 For example, in the Africa Disaster Risk Financing Programme (ADRiFi), a country will receive up to 50% of its annual premium as subsidy until the fourth year of a country's participation. Similarly, a direct capital support of $98 million as a 20-year non-interest-bearing loan was provided to ARC Limited by the UK Department of International Development and KfW (Panda et al., 2021c). The extent to which these ad hoc provisions have aligned with the SMART principles has been reviewed in evaluations of individual schemes, for example, recent evaluation of ADRiFi (not published).

Table 1 Formulae in major performance-based allocation systems

Multilateral Development Institution, Fund	Needs Factors		Performance Factors	Result
Global Environment Facility, GEF Trust Fund	$\text{GBI}^{0.8} * \left(\frac{\text{GDP}}{\text{capita}}\right)^{-0.08}$	X	$(0.65\text{CEPIA} + 0.15\text{CPIA}_{\text{D}} + 0.2\text{Portfolio})$	= allocation share
African Development Bank, African Development Fund	$\text{Population}^{1} * \left(\frac{\text{GNI}}{\text{capita}}\right)^{-0.125} * AIDI^{-0.125}$	X	$(0.26\text{CPIA}_{\text{A–C}} + 0.58\text{CPIA}_{\text{D}} + 0.16\text{Portfolio})^{4}$	= allocation share
Asian Development Bank, Asian Development Fund	$\text{Population}^{0.6} * \left(\frac{\text{GNI}}{\text{capita}}\right)^{-0.25}$	X	$[(\text{ADB\_CPIA}_{A-C})^{0.7} * (\text{ADB\_CPIA}_{\text{D}}) * \text{Portfolio}^{0.3}]^{2}$	= allocation share
Caribbean Development Bank, Special Development Fund	$\text{LogPopulation} * \text{POOR}^{0.1} * \left(\frac{\text{GNI}}{\text{capita}}\right)^{-0.9} * \text{Vulnerability}^{2}$	X	$(0.7\text{CDB\_CPIA} + 0.3\text{Portfolio})^{2}$	= allocation share
International Fund for Agricultural Development	$\text{Rural\_Population}^{0.45} * \left(\frac{\text{GNI}}{\text{capita}}\right)^{-0.25}$	X	$(0.2\text{CPIA} + 0.35\text{Portfolio} + 0.45\text{RuralCPIA})^{2}$	= allocation share
Inter-American Development Bank, Fund for Special Operations (half of the fund allocated by each formula)	$\text{Population}^{0.5} * \left(\frac{\text{GNI}}{\text{capita}}\right)^{-0.25}$	X	$(0.3\text{Portfolio} + 0.7\text{CIPE})^{2}$	= allocation share
	$0.22\text{FUND} * \left(\frac{\text{Population}}{\sum \text{Population}}\right) + 0.133\text{FUND} * \left[\frac{\left(\frac{\text{GNI}}{\text{capita}}\right)^{-1}}{\sum\left(\frac{\text{GNI}}{\text{capita}}\right)^{-1}}\right]$	+	$(0.6\text{FUND}) * \left[\frac{0.7\text{CIPE} + 0.3\text{Portfolio}}{\sum(0.7\text{CIPE} + 0.3\text{Portfolio})}\right]$	= $ allocation
World Bank, IDA	$\text{Population}^{1} * \left(\frac{\text{GNI}}{\text{capita}}\right)^{-0.125}$	X	$(0.24\text{CPIA}_{\text{A–C}} + 0.68\text{CPIA}_{\text{D}} + 0.08\text{Portfolio})^{3}$	= allocation share

Note: GBI = GEF's Benefits Index; CEPIA = Country Environmental Policy and Institutional Assessment; CPIA = Country Policy and Institutional Assessment; AIDI = African Infrastructure Development Index; CIPE = Country Institutional and Policy Evaluation
Source: GEF (2017)

PBA systems typically involve multi-criteria decision models (MCDM). Table 1 presents the formulas used in major PBA systems at a global scale.[23] Allocations in a PBA system are generally determined by two components: (i) country needs; and (ii) policy performance and institutional capacity. The needs-based component generally includes indicators like income (e.g. GNI per capita) and population in order to assess the socio-economic conditions that prevail in a country. The second component measures the policy performance and institutional capacities in the country to make best use of allocated resources. Income and population, as key determinants of country needs, dominate most of the PBA systems. However, multi-dimensional vulnerability metrics are increasingly finding a place in such allocation systems – especially after

23 Table 1 is adopted from GEF's evaluation of STAR (GEF, 2017).

the COVID-19 pandemic, from which many high-income countries (e.g. SIDS) found it difficult to recover without external support (see UN-DESA, 2022).[24]

The focus of most of the allocation methods has been on including factors that are readily quantifiable and available at global scale. As in Table 1, all PBA systems use a multiplicative formula where all the factors that constitute the formula are critical and cannot have zero value (to avoid zero sum). On the contrary, in an additive formula, zero value for one factor will not result in a zero sum. Such additive formulae are seldom used in multilateral development aid allocations (GEF, 2017). One potential reason for this is that additive methods are more sensitive to decisions on weights.

It is important to note that PBA systems also suffer from a limitation of allocating 'appropriate' funding to a large set of countries, i.e. at a global scale. It is typically the case that some countries receive a much lower-than-expected allocation inter alia due to choices of indicators, weights and calculation method. Therefore, to increase their robustness, PBA systems are often operationalised for a group of countries and/or selected after setting some minimum eligibility criteria. The GEF's STAR allocation and IDA, among others, have minimum eligibility criteria for countries to receive funding (see Annex 1 for details).

4.2 Selection of factors and indicators

Building on the discussion presented in the foregoing sections, the following set of factors are suggested along with relevant indicators to define the value of the scaling factor (and/or allocation share). Following the guidance in the SMART PCS policy note and PBA systems of resource allocation, these factors are placed under two main components: the needs-based component and the performance-based component.

The selection of factors and indicators is also guided by the consultation with key stakeholders and AWG members. Table 2 presents a summary of stakeholder responses (during KIIs for the political economy analysis), recorded when asked about their most preferred choices among the factors that could influence PCS allocations and that should be part of the analysis determining the size of premium support.[25]

Note: The indicators suggested in this guidance document are quantifiable and readily available for most countries. The list of factors in Table 2 is not exhaustive; there could be additional indicators suitable for consideration under either of the two components. This means that indicators based on qualitative criteria, with no readily available value, could also be included along with (or potentially instead of) the suggested quantitative indicators. However, the inclusion of such indicators would have implications for the underlying

24 See, for example, UNDP's multi-dimensional vulnerability index for SIDS at https://sdgs.un.org/topics/small-island-developing-states/mvi.

25 Respondents were asked to pick their three most preferred choices, with justification, out of a list of key factors (identified based on AWG discussion and literature review) that must be used to determine the size of PCS allocations. See Scott et al. (2022) for more information on the political economy analysis of premium and capital support.

method suggested in this guidance document. Considerations for the inclusion and treatment of such qualitative criteria are discussed in Annex 2.

Table 2 Stakeholders' preferred choices (during KIIs for political economy analysis) of factors to determine size of PCS allocation

Rank*	Factors determining PCS allocation size	factor choice by % of respondents
1	Proportion of vulnerable population in total population	73%
1	Climate and disaster risk profile	73%
2	Country income level	60%
3	Prior risk reduction actions/policy of a country	53%
4	Country debt accessibility constraints	27%
5	Level of insurance penetration	13%
6	Others – country size, economy size, etc.	7%

*Ranked by proportion of choices by respondents. Respondents were asked to pick their three most preferred choices. There was a total of 15 KIIs.

4.2.1 Needs-based component

Country income level

In line with Principle S (sustainable impact), allocation of premium support should differentiate between countries' ability to pay; as such, PCS should be provided to countries with 'weak fiscal positions' (criteria A1 in GRiF, 2019; World Bank, 2017; Panda et al., 2021c). Therefore, a higher allocation should be given to low-income countries as they have limited 'scope of trade-off between economic growth and the impact of insurance-related expenses on fiscal positions' (see discussion on 'needs-based consideration' in Panda et al. (2021c)).

As with several global allocation mechanisms, 'GNI per capita' can be used as a measure of countries' financial need (and by extension, its demand for PCS). This measure is also the basis for the World Bank's income-based country classification. Some evidence (e.g. ARC, 2021) also suggests that 'GDP per capita' can be used as a measure of the financial needs of a country. However, in comparison with GNI per capita (which is a more comprehensive measure of the income received by residents of a country),[26] GDP per capita is rarely preferred by multilateral development institutions in allocating resources (see Table 1 in section 4.1).[27]

26 The GNI per capita indicator suggested here is in current US dollars. During consultations, some experts suggested using GNI per capita in PPP terms to account for differences in living standards across countries.

27 This could be because GDP is a measure of the economic activity taking place in a country but not the income received by residents. For example, if a large multinational corporation has lots of extractive activity in a country in the global South but most of its dividends and salaries go to people living in the global North, then the GDP value would be higher than the GNI numbers.

Debt accessibility constraints/Debt status

In addition to the economic criteria captured under the 'income level of a country' indicator, a country's ability to diversify risks across time through issuing debt (to meet the initial costs of a disaster and be repaid over time) should be considered a key factor for determining the level of premium support (see Principle S; World Bank, 2017; Panda et al., 2021c). Therefore, debt accessibility constraints and/or debt stress levels would help in determining a country's lack of ability to pay for insurance and its need for higher levels of PCS.

The policy note and Panda et al. (2021c) suggest using the World Bank–IMF Debt Sustainability Framework for Low-Income Countries (LIC DSF) list to determine countries' debt status and risks of debt stress.[28] The framework's Highly Indebted Poor Countries (HIPC) status could also be utilised to approximate debt stress levels.

Poor (vulnerable) population

PCS allocations should be prioritised for countries with a higher number of poor and vulnerable people (see Principle S, and IGP's pro-poor principles (IGP, 2019)). Poor people are disproportionately affected by climate change and disasters (Hallegatte, 2020). Donors, in general, would want to focus on utility-maximising allocation to countries with a larger proportion of poor and at-risk people, where an extra unit of allocation would make the biggest difference to their well-being (see Ward et al. (2022) for a 'value for money' assessment of PCS).

The World Bank's 'poverty headcount ratio'[29] can be a readily available proxy for poor and vulnerable population in a country, and is typically measured as a proportion of total population.[30] Alternatively, IGP's 'vulnerable populations' indicator can be used, where 'people vulnerable to slipping into poverty as a result of climate risks are defined as those who earn less than $15 PPP/day' (see IGP, 2021: 9). The IGP indicator includes 'at-risk' population, in addition to the poor population as defined by the World Bank's headcount ratio.

Climate (and disaster) risk profile

As with Principles S and A, the levels of PCS should be climate (and disaster) risk-adjusted, i.e. higher premium support should be provided to countries at higher risks of climate stress. This would recognise that current and future insurance premiums might be higher in such countries due to the increasing frequency and intensity of climate-related fast-onset disasters, and therefore they would require higher premium support (Panda et al., 2021c).[31]

Suitable global indices on climate and disaster risk can be used to approximate a country's risks (hazard exposure and vulnerability).[32] The ND-GAIN Country Index can be suitable

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28 See IMF (2018) for more details on the LIC DSF.

29 According to the World Bank (https://data.worldbank.org/topic/poverty), poverty headcount ratio at $1.90 a day is the percentage of population living on less than $1.90 a day (in 2011 PPP).

30 Poverty is considered as unidimensional here, i.e. based on income only.

31 Climate change attribution science could provide a potential alternative for deciding the size of premium support. See Annex 3 for more details.

32 Important to note here is that the fraction in the suggested formula for PCS sizing already accounts for countries' (financial) vulnerability to climate risks through the level of contingent liability (or AAL). However, in light of Principle S, some experts argued that it is necessary to consider a 'physical vulnerability' measure as a key determinant of PCS size.

for this purpose as it summarises a country's exposure and sensitivity to climate risks (and geophysical disasters) using a comprehensive set of criteria.[33] Other global indices can also be considered, such as the Global Climate Risk Index,[34] the INFORM Risk Index,[35] the Verisk Climate Change Vulnerability Index[36] and the Climate Vulnerability Monitor.[37]

4.2.2 Performance-based component

Country's resilience to disaster and climate risks

Along the lines of baseline resilience/past policy action signalling readiness for further improvements (spurred by PCS) in the future, a country's resilience to climate (and disaster) risks, typically measured in terms of its ability to cope with climate risks, should be considered as an important determinant of PCS size (see Principle A; World Bank, 2017). This consideration will help promote the resilience-building incentives of PCS (see Principle R). Further, it could be useful in the periodic monitoring and evaluation of PCS allocations to observe progress in furthering the disaster risk financing and management actions of a country.[38]

Performance indices that reflect a country's resilience to climate risks could be used to approximate this factor. Since a (climate) risk index is already suggested as part of the needs-based criteria above, use of the same index for this criterion would help promote consistency and comparability – ensuring, for instance, that data is available for the same countries and is likely to refer to country performance at the same point in time. As before, the 'readiness index' part of the ND-GAIN country risk index could be a suitable choice.[39] Other similar indices, such as, among others, the INFORM risk index or the Climate Risk Index, may also be considered. While they do not provide a specific measure/index for resilience, related indices such as 'coping capacity' may be considered.

Country's policy performance and institutional effectiveness

Principle A (accessibility) suggests that 'higher premium support should be provided to countries that show strong political commitment and create an enabling policy environment for greater CDRFI uptake'. While this is partly captured by the country resilience indicator discussed above (which captures policy commitment specifically to CDRFI), it is suggested that a country's overall policy performance and institutional effectiveness also be included, in order to account for (a) the effectiveness of its economic management and structural policies, and of its human

33 ND-GAIN Country Index: https://gain.nd.edu/our-work/country-index/rankings/
34 The Global Risk Index, GermanWatch: www.germanwatch.org/en/cri
35 The INFORM Risk Index, DRMKC: https://drmkc.jrc.ec.europa.eu/inform-index
36 Verisk Climate Change Vulnerability Index:www.maplecroft.com/risk-indices/climate-change-vulnerability-index/
37 The Climate Vulnerability Monitor: https://daraint.org/climate-vulnerability-monitor/climate-vulnerability-monitor-2012/monitor/
38 This factor could also be (partly) captured by the fraction in the suggested formula if the DRM-related component of the government budget is used as denominator instead of the total government budget. In line with the discussion in section 3 (bullet c), an increase in the DRM-related budget over time would reflect (in financial terms) a country's progress in prioritising disaster risk management.
39 ND-GAIN's readiness index 'measures a country's ability to leverage investments and convert them to adaptation actions. ND-GAIN measures overall readiness by considering three components – economic readiness, governance readiness and social readiness'. See ND-GAIN's Technical Document for more details.

development and social inclusion policies; and (b) its institutional capacity to carry out macro-level policy changes.

The World Bank's Country Policy and Institutional Assessment (CPIA) index could be used to assess the quality of each country's political and institutional framework.[40] There are 16 criteria defined for the CPIA, grouped into four clusters of equal weights (see Annex 1 for details). The index was developed to aid IDA allocations and is currently being used by several multilateral development institutions for this purpose. Some institutions have also used a harmonised/modified version of the CPIA (see, for example, GEF's STAR in Annex 1) to make it specific for their context, but, for this context, there is not a version of the CPIA that focuses specifically on issues related to disaster risk management or disaster risk finance.

4.3 Weighting indicators and calculating results

Assigning appropriate weights to different indicators is a critical next step to account for allocation priorities outlined in the SMART PCS Principles. However, it is a difficult task for the donors/practitioners to quantitatively reflect such priorities in the calculations. Therefore, to factor in PCS priorities/principles in the suggested indicators, several simulations would have to be performed to obtain suitable weights.[41] In this regard, the weights used in PBA systems operational at global level could guide practitioners. Table 3 presents a summary of existing guidance (range) on weighting the suggested indicators.

40 As per the CPIA criteria, 'quality' refers to how conducive a given policy and institutional framework is to fostering poverty reduction, sustainable growth and the effective use of development assistance (see the CPIA criteria in World Bank 2018).

41 For example, some small island developing states (SIDS) might not get an appropriate allocation share inter alia due to their higher (per capita) income status. However, the guidance note includes multiple vulnerability and performance indicators that could compensate for the income dimension in the case of SIDS. This would require a careful calibration of weights for the suggested indicators.

Table 3 Suggested weighting range for further calibration (based on performance-based systems used by multilateral development institutions)

Factor	Suggested indicator/proxy	Suggested range of weights as exponent (for simulations)	Rationale/priorities
Needs-based component			
Income level of a country	GNI per capita	-0.08 to -0.25	Level of income is inversely linked to allocation size to provide for higher allocation to lower-income countries
Debt accessibility/debt stress levels	Debt stress risk/ranking (World Bank–IMF's DSF) or other suitable metric	No guidance available* Suggested: 0.1–1	Higher allocation for countries with high debt stress/accessibility constraints
Poor (vulnerable) population	World Bank's poverty headcount ratio, or IGP's vulnerable population criteria	Guidance used for population/rural population in PBA systems (see Table 1) Suggested: 0.1–1	Higher allocation for countries with larger proportion of poor (and vulnerable) population
Climate and disaster risk (hazard exposure)	ND-GAIN index, or hazard exposure score from other similar indices	0.1–2	Higher allocation to countries that have higher vulnerability to climate risks
Performance-based component			
Climate and disaster resilience	ND-GAIN readiness index, or resilience score from other similar indices	No guidance available Suggested: 0.1–2	Higher allocation to countries that show progress in resilience-building
Policy performance and institutional effectiveness	World Bank's CPIA	For combined† CPIA score: 2–4	Higher allocation to countries that have effective policy performance and institutional capacity

* No guidance on weighting range is available from PBA systems reviewed under section 4.1.2. The suggested range is based on expert judgement considering the rationale/priorities relevant for an indicator. This also accounts for the nature of underlying data. For example, to increase the value of an indicator which has a value more than 0 and less than 1 (for example, the poverty headcount ratio), an exponent weight between 0.1 and 0.99 should be tried, as the value of that indicator will increase when weight moves downwards from 0.99 to 0.1, and vice versa.

† In some cases, CPIAA-C and CPIAD are used separately with different weights (see Table 1).

Although guidance from the existing PBA systems could help, weights for the indicators should ideally be assigned using a participatory approach. For this, consultative processes such as workshops, focus group discussions and key informant interviews could be helpful.

To bring it all together and calculate the result, two options may be considered.

Multiplicative approach – used by most PBA systems

t_n (or t_n score) = [Needs-based component] × [Performance-based component]

ie t_n (or t_n score) = $[(x)_1^{w_1} * (x)_2^{w_2} * (x)_3^{w_3} * (x)_4^{w_4}] \times [(y)_1^{w_5} * (y)_2^{w_6}]$

Additive approach – less used in practice

tn (or tn score) = [Needs-based component] + [Performance-based component]

ie t_n (or t_n score) = $[(x)_1^{w_1} * (x)_2^{w_2} * (x)_3^{w_3} * (x)_4^{w_4}] + [(y)_1^{w_5} * (y)_2^{w_6}]]$

Do note that other modes to represent weights as exponents may also be used. For example, a combined weight may be assigned to the performance-based component. Similarly, in the additive approach, weights can be added within each component (e.g. $[(x1*w1) + (x2*w2) + (x3*w3)] + [(y1*w5) + (y2*w6)]$).

Note: As discussed in section 2 and section 4, the suggested approach could also be used to calculate the proportion of funding that a country receives from a donor fund. This would require the following additional steps:[42]

1. calculating country share by dividing individual country score by the sum of all country scores, and
2. calculating the country allocation share by multiplying the country share by the funds to be allocated.

4.4 Additional considerations

4.4.1 Setting upper and lower limits for premium subsidies

All PBA systems prevalent at the global scale have some operational limitations; therefore, it is not possible to calculate 'optimum' levels of allocations for all the countries (see Section 4.1.2). This would most likely be true for the suggested method in this guidance document as well. There could be a scenario in which the calculated premium support allocation might not be adequate (for example, at too low a level for any donor support to come in – say, less than 10%) for a particular country or group of countries. It is therefore advised to consider setting pre-defined minimum and maximum limits for premium support. These limits could also be pre-defined for different country groups (see, for example, floor and ceiling in the STAR allocation method (Annex 1)).

4.4.2 Duration of premium support

The long-term sustainability of the insurance schemes for which premium support is provided is a key objective, as well as a concern, for donors. Per the policy note, 'PCS may be considered for as long as climate-fuelled impacts accelerate and it generates substantive quantified resilience benefits' (Töpper and Stadtmüller, 2022: 12). However, from a sustainability perspective it is likely to be valuable for at least some recipient countries to gradually assume more responsibility for the premium payments, by defining a clear strategy for reducing or removing subsidy support over time – though this needs to be judged carefully and with consideration of each country's context. To facilitate this judgement,

42 The approach is similar to the STAR allocation method of the GEF (see Annex 1).

the initial duration of premium support should be decided in advance. This will support medium-term budgetary planning and help build political support for a CDRFI solution. It should then be (re)evaluated at regular intervals (e.g. in the short, medium and long term),[43] based on predefined criteria.[44]

On the (initial) duration of premium support at macro level, Principle S suggests:

> Where premium support is deemed appropriate, it should wherever possible be provided on a multi-year basis. Since financial planning timeframes of recipient countries often have terms of 3–5 years, multi-year (3y+) commitments should be the default in order to promote longer-term certainty. After this initial support period, PCS needs and effectiveness should be re-evaluated at regular intervals, which can be of adequate length, varying from single- to multi-year periods. (Töpper and Stadtmüller, 2022: 12)

Panda et al. (2021c) suggest that low-income countries (lacking ability to pay) and small island states (with small market size and high vulnerability) should be eligible for premium support in the short term (1 to 4 years). The further eligibility of such countries in the medium and long term should be based on evaluation of their needs and progress made over the period of premium support (ibid).

Based on the analysis of existing evidence and discussion with experts (during KIIs and other consultations), it is suggested to define a 'minimum lock-in period' for premium support, during which the subsidy amount should remain fixed. After this minimum lock-in period, subsidies may be reduced in a pre-defined manner on an annual basis (for example, reducing between 10% and 25% per annum). In line with Principle S, and Panda et al. (2021c: 14), the minimum lock-in periods may be defined for different country categories.

Some experts (during KIIs) argued that premium support to low-income countries should be provided for at least three years without change, to persuade the country of the benefits of having climate risk insurance in place. Another argument was to continue premium support until the first payout happens for a country. This would help the government to realise the benefits of having an insurance mechanism in place, and make its eventual uptake more likely.

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43 Panda et al. (2021c) defines the short term as 1–4 years, the medium term as 4–8 years and the long term as 8–11 years.

44 The performance-based criteria suggested in this guidance document could be used to evaluate allocation decisions after specified intervals. In addition, value for money assessment of such interventions could be a useful yardstick (see Ward et al., 2022). For discussion on timespan of premium support, see Panda et al. (2021c: 14) and World Bank (2017: 29).

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Annex 1 Selected resource allocations mechanisms at global scale

International Development Association (IDA)

IDA is a lending mechanism of the World Bank, established in 1960 to complement the operations of the International Bank for Reconstruction and Development (IBRD). The aim of IDA is 'to reduce poverty by providing zero to low-interest loans (called "credits") and grants for programs that boost economic growth, reduce inequalities, and improve people's living conditions.'[45] IDA supports 74 of the world's poorest countries with funding assistance on concessional terms, usually with repayment terms of over 30 years. Typically, low-income countries that are at risk of high debt distress receive all or half of their IDA assistance in the form of grants with no repayment terms. In addition, IDA also provides debt relief to countries.

Contributions to IDA largely come from its member countries. The resource replenishment and related policy guidance is reviewed by donors every three years. In the most recent replenishment of IDA resources in December 2021, a historic $93 billion financing package was approved for the period 2022–2025. Annual commitments to IDA have increased in recent years, amounting to an average of $29.4 billion during FY2019–FY2021.

Performance-based allocation method

The first step in allocating IDA is identifying eligible countries. A country's eligibility for IDA is decided based on its relative poverty and lack of creditworthiness to access finance. GNI per capita below an established threshold is used to approximate a country's relative poverty. The threshold is $1,255 for FY2023, and it is updated annually.

Considering that IDA resources are fixed, the allocation of scarce resources among eligible countries is done based on country's policy performance and institutional capacity to ensure that allocated resources are best utilised in reducing poverty. This performance-based allocation is done using Country Policy and Institutional Assessment (CPIA). For IDA allocation purposes, CPIA is also referred to as the IDA Resource Allocation Index (IRAI). Another rating that is used to determine IDA allocation is the Portfolio Performance Rating (PPR). Both these rating systems are described below.

Country Policy and Institutional Assessment: This index is used to assess the quality of each country's political and institutional framework. There are 16 criteria defined for CPIA, grouped into four clusters of equal weights. Country teams propose ratings for each of the following criteria

45 World Bank – IDA (https://ida.worldbank.org/en/what-is-ida)

with written justifications. Details of the ratings criteria are provided in the CPIA questionnaire (see CPIA criteria in World Bank 2018).

A. Economic management

1. Monetary and exchange rate policies
2. Fiscal policy
3. Debt policy and management

B. Structural policies

4. Trade
5. Financial sector
6. Business regulatory environment

C. Policies for social inclusion/equity

7. Gender equality
8. Equity of public resource use
9. Building human resources
10. Social protection and labour
11. Policies and institutions for environmental sustainability

D. Public sector management and institutions

12. Property rights and rule-based governance
13. Quality of budgetary and financial managemen
14. Efficiency of revenue mobilisation
15. Quality of public administration
16. Transparency, accountability, and corruption in the public sector

Portfolio Performance Rating

This rating refers to the financial health of the IDA portfolio, which is measured by the percentage of problem projects in each of the IDA countries. Therefore, it captures the quality of management of IDA's projects and programmes.

Using the CPIA and PPR, the IDA Country Performance Rating (CPR) is developed. The CPR of IDA are determined annually.

*Country Performance Rating (CPR) = (0.24*CPIAA-C + 0.68*CPIAD + 0.08*PPR)*

Here, CPIAA-C represents the average rating for clusters A to C from the CPIA criteria, and CPIAD represents the rating for cluster D.

The performance-based allocation formula for IDA is presented below. In the formula, CPR has an exponent of 3 and it is the main determinant of the allocation. Population size has an exponent of 1 (as it affects allocations positively). GNI per capita is negatively related to allocations and has an exponent of -0.125.

IDA country allocation = f (CPR^3, population, GNI per $capita^{-0.125}$)

IDA also provides additional resources to countries through some dedicated windows, which are described in detail in the Annexes of the IDA19 Replenishment Report (IDA, 2020). Further, there are specific exemptions to the performance-based allocation method discussed above; for example, the small island exemption, which allows small island economies with population less than 1.5 million to receive IDA, even if they are a high-income country. Such exemptions are also discussed in detail in the IDA19 Replenishment Report (IDA, 2020: Annex 2).

Global environment facility (GEF) – STAR allocation method

The GEF funds country-specific initiatives for biodiversity protection, climate change response, pollution reduction and nature restoration in developing countries. It works closely with environmental financiers and connects 184 member countries with a network of civil society, indigenous people, and the private sector. Since its inception in 1991, it has provided more than

$22 billion of funding through grants and blended finance, and mobilised more than $120 billion for national and regional projects and programmes across the globe.

The GEF uses the System for Transparent Allocation of Resources (STAR) to allocate resources to its eligible countries. STAR replaced the Resource Allocation Framework (RAF), the former resource allocation system of the GEF, during the fifth replenishment period of the GEF (GEF-5). STAR is a performance-based allocation system that aims 'to allocate resources to countries in a transparent and consistent manner based on global environmental priorities and country capacity, policies and practices relevant to successful implementation of GEF projects and programs' (GEF, 2018).

STAR allocation method

The STAR allocation method is applicable to countries which satisfy the eligibility conditions to receive funding from the GEF trust fund.[46] STAR consists of the following three indices and sub-indices:

Global Benefits Index (GBI)

GBI is a measure of GEF's investment benefits in a country, pertaining to a specific focal area. There are three focal areas in STAR: (i) biodiversity (GBIBD); (ii) climate change (GBICC); and (iii) land degradation (GBILD). For a specific focal area, GBI represents a country's relative share of GEF potential benefits that can be generated with a fixed resource input in that focal area (a higher GBI means higher potential benefits generated).

GBIBD is a weighted score of a country's terrestrial (0.75) and marine (0.25) biodiversity. GBICC is a weighted score of two sub-indices – GHG emissions (0.95) and forest cover and change in forest cover (0.05). GBILD constitutes global share of land area affected (0.2), proportion of dryland area (0.6) and proportion of rural population (0.2).

Country performance index (CPI)

The GEF CPI (or GPI) measures a country's relative performance and capacity to deliver on potential global environmental benefits. It is considered the same for all focal areas in a country, and calculated based on the country's current and past performance in project development and implementation, along with the effectiveness of its policy and institutional frameworks. CPI works as a counterbalance measure for GBI. CPI is calculated using two main sources – the CPIA index developed by the World Bank, and the GEF portfolio performance index.

GDP index

This is designed to benefit countries with low per capita income, as it is used to decrease the allocation to countries with high per capita income.

A floor (minimum allocation) is also set for the respective focal areas, differentiating between least-developed countries (LDCs) and non-LDCs. A ceiling (maximum allocation) is set at 10% of the total focal area allocations for each of the focal areas (for GEF-7). Details on the floor and ceiling limits are provided in GEF (2018: 7).

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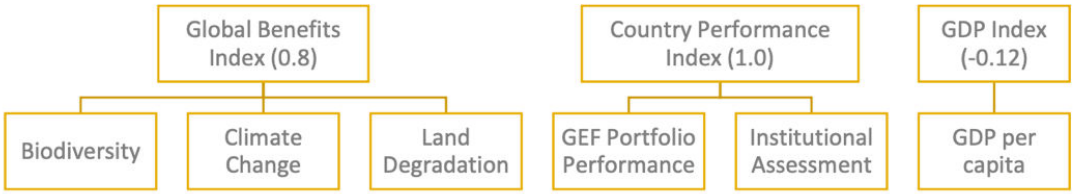
46 To be eligible for GEF funding, a country should (i) be a Party to the relevant Convention and meet the eligibility criteria decided by the Conference of the Parties to that Convention; (ii) not be member of the European Union; and (iii) have had at least one national project in the past five years, excluding projects that involve reporting to the Conventions (GEF, 2018: point 5).

Weights for three STAR indices

The weights to STAR indices are provided as exponents. GBI has an exponent of 0.8, CPI is given an exponent of 1, and the GDP index has an exponent of -0.12 in the GEF-7 period.[47]

Figure 1 STAR indices and sub-indices (as in GEF-7)



Source: GEF (2018)

Based on the values of the abovementioned indices for each country, the following steps are followed to calculate country allocations as per the GEF-7 guidelines (see GEF, 2018):

- Country score is calculated using the following formula:

  $$Country\ score = GBI^{0.8} * CPI^{1.0} * GDP\ index^{-0.12}$$

- Based on country score, country share is calculated as follows:

  $$Country\ share = Country\ score / Sum\ of\ country\ scores\ for\ all\ STAR\ recipient\ countries$$

- For preliminary STAR country allocation, a focal area is calculated as:

  $$Preliminary\ allocation = Country\ share * STAR\ resources$$

- Finally, preliminary STAR country allocations are adjusted for floors and ceilings for each focal area.

A review of the GEF-7 STAR policy guidelines is currently underway as part of the GEF-8 replenishment review. More details can be accessed from www.thegef.org/who-we-are/gef-council/council-meetings#replenishments.

Global Risk Financing Facility (GRiF) – Appraisal framework for grant support

The GRiF functions as a multi-donor trust fund, established in 2018 with pledges of over $200 million from Germany and the United Kingdom to help vulnerable countries develop and implement disaster and climate risk financing solutions. The facility provides finance and technical expertise to countries to develop innovative financial instruments while supporting the growth of existing ones. Financial solutions are typically designed as part of World Bank projects across different sectors.

47 The GEF-8 review has recommended changing the weight for the GDP index to -0.16 (see revised recommendations at www.thegef.org/sites/default/files/documents/2022-04/GEF_R.08_32_Revised_Policy_Recommendations.pdf).

The GRiF uses a set of principles and an appraisal framework for the use of grant financing under the Multi-Donor Trust Fund (MDTF) (GRiF, 2019). The guidelines and appraisal framework help in making resource allocations at the portfolio level, and appraise proposals at product/project level. This helps in the appraisal of decisions related to (but not limited to) providing start-up and operating costs, the capitalisation of risk financing vehicles, the cost of financial instruments and the cost of linking ex ante funding with national delivery mechanisms.

At portfolio level, donors are expected to agree on prioritised countries, mainly based on their level of economic development and vulnerability to disaster and climate shocks. The GRiF appraisal method recommends prioritising IDA countries over IBRD countries, assuming all other factors are equal. It also recommends prioritising high-risk countries.

Project and product appraisal is conducted as per the criteria described in the final table in the guidance note (GRiF, 2019: 9). Evaluation and scoring for Part B (project appraisal) and Part C (product appraisal) are to be completed by the technical task team of the GRiF secretariat. A colour-coded framework of appraisal is used to review co-financing proposals. The objective is to achieve a 'green' rating for all the indicators. A summary of indicators described as part of the appraisal framework is presented in Table 4 below.

Table 4 Summary of indicators for GRiF appraisal framework

S. No.	Indicator	Criteria
Part A: Portfolio appraisal		
A1	Level of economic development and vulnerability	IDA countries will be prioritised against IBRD countries, all other things being equal. Higher-risk countries will be prioritised.
Part B: Project appraisal		
B1	Sustainability and exit strategy	The country is willing and able to allocate sufficient resources toward financial protection.
B2	Country ownership and readiness	The country has the required documents in place demonstrating readiness and political support to work on DRF; e.g. DRF strategy, and adequate legal and regulatory framework.
B3	Comprehensive financial protection	Financial solutions should be part of an integrated and comprehensive financial protection strategy.
B4	Participatory process	Appropriate stakeholder engagement is undertaken with communities, civil society organisations and private sector.
B5	Improvements in preparedness and resilience	The project demonstrates how the GRiF contributions will enable improved preparedness and resilience, either directly (in the project) or indirectly (incentives).
B6	Capability, plans and systems	The project demonstrates that pre-agreed plans and/or distribution systems are in place or being developed to channel the funding to the targeted beneficiaries.
B7	Accountability and clear decision-making processes	The project demonstrates clear accountability rules and decision-making processes either in place or under development as part of the project.
B8	Target beneficiaries	The project explicitly targets benefits to vulnerable people and steps are taken to support targeting of funds, with a special consideration of gender issues.
Part C: Product appraisal		
C1	High-quality, open data and models	The project demonstrates how data and risk modelling will be subject to external review and made publicly available.
C2	Value for money (VfM) and suitability of the product	The project demonstrates the added value of the proposed product/ strategy in the country's disaster risk financing strategy, as set against their objectives, and relative to the alternatives (qualitatively and quantitatively).
C3	Communication of the product	The project demonstrates clear understanding of the product by the client, or actions are taken to ensure the client understands the product and that it is fully transparent to the client.
C4	Quality and reliability of the product	The project demonstrates how the quality and reliability of the product will be monitored.
C5	Procurement process and non-preferential treatment	The project demonstrates the extent to which the placement of the financial product will follow a competitive and transparent process.

Source: GRiF (2020)

Official development assistance (ODA)

ODA is the assistance provided by donors to countries and territories that feature in the Development Assistance Committee (DAC) list of ODA recipients and to multilateral development institutions.[48] It consists of grants and concessional loans. ODA transactions can be bilateral as well as multilateral, including transactions to national and international non-government development organisations. ODA can also be provided by non-DAC members.

There is no set method for allocating ODA. It is typically targeted towards the poorest countries, meaning that the income level of a country (measured by GNI per capita) remains a critical factor in allocating assistance. However, there are other factors that influence the selection of partners and allocation of ODA in bilateral transactions, including historical and cultural relations with partner countries, and national security concerns.

There are a few examples of countries which have developed their own criteria for allocating aid. Luxembourg, for example, uses Human Development Index (HDI) ranking as a benchmark, and selects beneficiary countries from among those ranking lowest. Netherlands uses factors like GNI per capita, positive trends in democratisation and governance, volume of aid per capita, perceived value-addition to Dutch development cooperation, historical ties and the number of donors already represented in a country.

48 The DAC list of ODA recipients is available at www.oecd.org/dac/financing-sustainable-development/development-finance-standards/daclist.htm.

Annex 2: Inclusion and treatment of qualitative criteria

Qualitative criteria could also be used to quantify the suggested (see section 4.3) and additional factors for which quantities/data are not readily and/or widely available. However, the inclusion of such indicators would have implications for the underlying method suggested in this guidance document for calculating the score/value of the scaling factor. The multi-criteria decision model (MCDM) suggested in the guidance should be modified to define the qualitative criteria, along with the quantitative criteria.[49] The modified approach would be similar to the one described in the guidance note developed for measuring the 'value for money' of PCS interventions (see Ward et al., 2022). Following is a summary of steps to be taken in the modified approach.

As a first step, qualitative criteria for the suggested (and additional) factors should be determined. For example, an indicator for country's prior policy performance in DRM (and DRF) could be judged by evaluating the qualitative criteria, such as whether the country has a DRF strategy/policy/plan in place and whether there is adequate support in its legal and regulatory framework for the same (see criteria B2 in GRiF, 2019).

In the next step, a scoring method should be designed that assigns scores against different qualitative and quantitative criteria on a standard metric. Typically, in such MCDMs, scoring is assigned in a range (e.g. 0–5, 0–10, 0–100), where a wider range provides more flexibility in scoring.

Scoring the qualitative criteria requires expert judgment; based on this, 'best' (maximum) and 'worst' (minimum) scores can be defined. Similarly, for a quantitative criterion, the score for an expected quantity/value can be relative to pre-defined highs and lows. Other, more subjective, ways to score quantitative criteria may also be valid. Furthermore, there could be a scenario where the scoring scale for a (readily available) index (e.g. CPIA) is different from the designed scoring methodology. A unitary method may be used to convert scores to the same scale. For example, if the score for an indicator is 3.2 on a 6-point scale, it would be approximately 5.33 on a 10-point scale (i.e. (3.2/6) * 10). While this is a very straightforward approach, it may not be suitable in some cases (e.g. where the minimum values of the scales are different).

Scoring should be done through a participatory and consultative process involving a wider group of stakeholders. Appropriate justification should be provided for the assigned scores to ensure transparency in allocation decisions.

49 Notable here is that some of the proxies for the factors suggested in section 4.3 are already in the form of index scores, which have been developed using both qualitative and quantitative criteria (see, for example, the ND-GAIN Index and the CPIA).

As a next step, weighting criteria should be determined to account for SMART PCS allocation principles and priorities (see discussion in section 4.2.1 on considerations for PCS allocation). Weights could be determined once scoring has been completed, or after best and worst scores for a criterion are identified. Assigning weights requires expert judgement and consultations. The weighting process could follow a subjective, objective or integrated approach (see Odu, 2019 for discussion on weighting methods for MCDM).

Weights and scores can be aggregated using either an additive method (viz., (s1 * w1) + (s2 * w2)... (sn * wn)) or a multiplicative method (viz., (s1 w1) * (s2w2)... (sn wn)), where the final score in the latter is less sensitive to selected weights. A similar method/procedure to aggregate weights as exponents is suggested in section 4.4, which is more suited to quantitative indicators.

Annex 3: A potential alternative to determine the size of premium support

Climate change attribution science (hereafter: attribution science) could offer an alternative method for deciding allocation size for premium support. Simply put, attribution science can help in scientifically ascertaining the mechanisms that are responsible for climate change – i.e. whether and how much of recent climate change is caused by anthropogenic (human-induced) activities, and how much has been due to natural causes. For climate insurance purposes, climate modelling (e.g. global climate models, probabilistic event attribution) could be used to estimate changes in the risks of climate-related damages in a specific location and to what extent they can be attributed to climate change (Otto, 2020; James et al., 2019). A risk insurance premium share equivalent to the portion of risk attributed to climate change could be funded by the donors as premium support (ibid.). As highlighted by Otto (2020):

> ...Rather than waiting until the total damage has been determined, which can take weeks, they (insurance providers) can pay out when droughts occur that exceed a specific extreme index – for example, a drought to be expected every twenty years or more. In this type of insurance, it is significant if an event that previously occurred every twenty years (i.e. exceeded the index every twenty years or so) is suddenly to be expected every five years – and can therefore cause much greater damage. If insurance companies want to profit from this model in the long term, they will need to keep raising premiums. At some point, many poorer countries will not be able to afford it – even today, some cannot or do not want to pay. The poorest of the poor will have very few options to escape their predicament. Attribution science may provide one solution. We could begin by calculating how the risk of climate damage has changed in a specific location and to what extent we can attribute this to climate change. This portion of the risk could be covered by an international fund paid into by industrialized countries. It would therefore be worthwhile for insurers to continue doing business in developing countries, who would continue paying their usual premiums but still receive full protection. Even now, insurers are only making a profit from many countries because of the millions contributed by countries like Germany and institutions like the World Bank

In a more practical application of attribution science to risk insurance, New et al. (2020) used the case of drought-related agricultural losses in Malawi to estimate 'climate change-implicated' weather losses, in order to determine an equitable contribution to weather insurance premiums in Africa.

Although considerable progress has been made in recent years in assessing the influence of climate change on an extreme event, attributing the influence of climate change on natural and social systems (among many confounding factors) is still a big challenge (New et al., 2020). Further, other considerations, such as a country's ability and

willingness to pay, still have to be integrated into such assessments. Therefore, while attribution science could offer an objective way to estimate externally supported premium share, further research and evidence is warranted to make it practically usable for this purpose.