Proposal for a Global Credit Guarantee Facility (GCGF)

To de-risk climate investments in emerging markets & developing economies

Discussion Paper

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CLIMATE POLICY INITIATIVE

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RECOMMENDED CITATION

CPI, 2023. Proposal for a Global Credit Guarantee Facility (GCGF).

ABOUT CLIMATE POLICY INITIATIVE

CPI is an analysis and advisory organization with deep expertise in finance and policy. Our mission is to help governments, businesses, and financial institutions drive economic growth while addressing climate change. CPI has six offices around the world in Brazil, India, Indonesia, the United Kingdom, and the United States.

1. INTRODUCTION

Climate Policy Initiative (CPI) published a discussion paper in June 2023, [Cost of Capital for Renewable Energy Investments in Developing Economies](#), that outlines CPI's market-readiness analysis of more than 40 International Solar Alliance (ISA) member countries with high solar output and significant associated investment potential. The discussion paper aimed to better understand the impact of investment risks specific to solar project development on the commercial viability of such projects, i.e., the risk premia on the delivered cost of capital for projects in these countries.

The primary purpose of this new discussion paper is to highlight the potential reduction in cost of capital as a result of risk mitigation through a well structured and sized credit guarantee facility. This paper outlines three different approaches by which a Global Credit Guarantee Fund (GCGF) could be sized via different proportions of funded capital and callable capital.

Many countries are setting ambitious net zero targets, embracing renewable energy expansion as a principal strategy. Investments to tackle this transition to renewable energy, however, are still largely concentrated in high-income countries, despite many lower-income countries having higher renewable energy generation potential.

The cost of capital, essentially debt, is on average 7x higher for developing economies than developed economies. The actual spread varies widely, from 3% to 50%. This is despite the fact that the marginal cost of mitigation through renewable energy for one unit of carbon in developing economies is less than half of that in developed countries. This rationale would apply to all climate investments in developing economies.

2. THE GCGF AND INTERNATNIONAL FINANCIAL ARCHITECTURE REFORM

The Think20 India 2023 Secretariat, an official engagement group of the G20 that serves to generate actionable ideas, created a task force to discuss how the global green transition can be accelerated, mainstreamed, and made more inclusive. Some of the key recommendations from the task force include:

- The G20 should consider establishing a Green Development and Investment Accelerator to streamline the flow of bankable clean energy projects by supporting country-specific de-risking initiatives and scaling best practices.
- The G20 should create a global platform to de-risk private investment and align financial regulation to trigger substantial new investment in sustainable infrastructure in developing economies.
- Focus should be on de-risking investment and reducing credit risk, with a more strategic allocation of currency and political risks across reformed multilateral financial institutions.

Subsequently, the G20 New Delhi Leaders' Declaration built on the above:

- The 21st century requires an international development finance system that is fit for purpose, especially for the scale of need and depth of the shocks facing developing economies, the poorest and most vulnerable of them in particular.
- The international finance system must deliver significantly more financing to help developing economies fight poverty, tackle global challenges, and maximize development impact.
- Stronger multilateral development banks (MDBs) are important vectors to mobilize financing from all sources, to effect a quantum jump from billions to trillions of dollars. Going forward, MDBs should be encouraged to collaborate in areas such as hybrid capital, callable capital, and guarantees.
- MDBs should also be encouraged to leverage private capital through innovative financing models and new partnerships to maximize their development impact and enhance domestic resource mobilization in developing economies.

3. A PROPOSED GLOBAL CREDIT GUARANTEE FACILITY FOR RISK MITIGATION

CPI proposes a Global Credit Guarantee Facility (GCGF) that could help reduce the cost of capital for countries with high solar and other renewable energy potential, and significantly increase their installed renewable energy capacity.

In 2017, the International Solar Alliance commissioned a feasibility study to explore an easily accessible, first-loss financial guarantee instrument. This led to the Common Risk Mitigation Mechanism (CRMM) emerging as an innovative and viable option.[1] CRMM included a bundle of different risk management instruments, ranging from guarantees to insurance to swaps, covering risks in both local and hard currencies. Though CRMM did not see the light of day, this approach was widely discussed and debated.

Building on the CRMM experience, CPI proposes a new facility focused on de-risking and reducing the cost of global debt financing from Organization for Economic Co-operation and Development (OECD) countries to Emerging Market & Development Economies (EMDEs). **GCGF would primarily focus on aggregate credit risk for lenders, while political and residual foreign exchange risks would be transferred to appropriate existing institutions such as the Multilateral Investment Guarantee Agency (MIGA) and the Currency Exchange Fund (TCX) respectively.**

Figure 1. Proposed GCGF structure

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[1] https://www.ceew.in/publications/common-risk-mitigation-mechanism
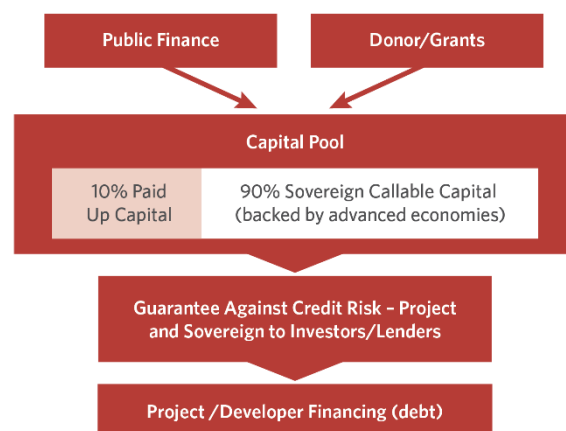
Institutional Structure

The proposed GCGF structure is that of **a trust fund incorporated in a suitable legal jurisdiction or housed as a trust fund within existing MDBs**. GCGF would work as a **bilateral loss-sharing agreement** between the credit guarantee trust and member institutional investors/international financial institutions. **The primary risk mitigated would be credit risk**—sovereign, off-taker, and average FX risk—which would be managed by providing **a partial guarantee**. In case of delay/default in debt servicing, GCGF would reimburse a portion of the losses incurred by the lenders. The GCGF could either be fully or partially funded, depending on backstop support, with callable capital from OECD countries.

Figure 2. Representative GCGF institutional mechanism
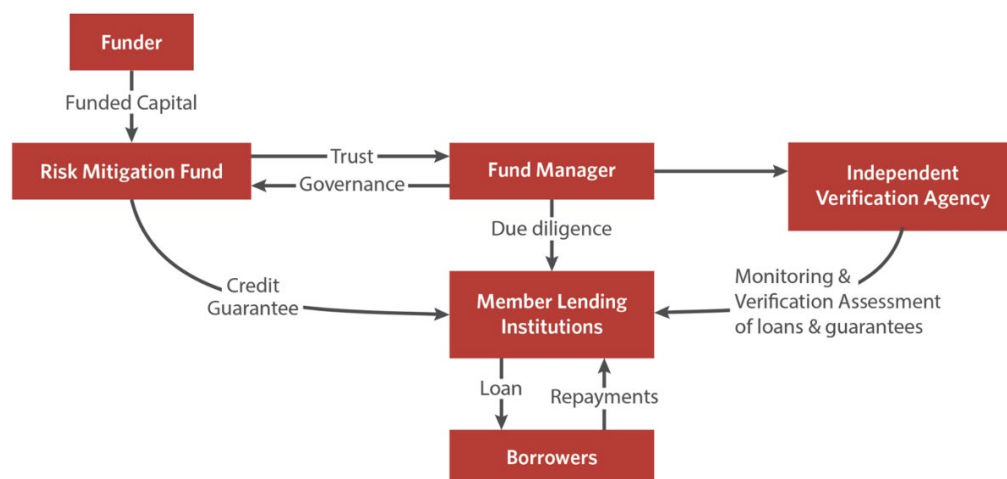
4. SIZING THE GCGF

To achieve the solar targets announced by governments of the countries included in CPI's June 2023 discussion paper[2], a total of ~USD 175 billion of capital will be needed, of which 70% (USD 120 billion) would be debt.

Using the 10-year default rates (Probability of Default: PD) and loss rates (Loss Given Default: LGD) taken from the corresponding credit ratings for each country, we calculated the Expected Loss (EL) for the portfolio, which came out to USD 8.4 billion. Similarly, using the standard deviations of PD and LGD, we calculated the mean Unexpected Loss (UL) for the portfolio, which came out to USD 22.1 billion.

Based on the above, a guarantee coverage of 50% results in a GCGF fund size of USD 15.2 billion, as the GCGF brings the EL and UL down to USD 4.2 billion and USD 11 billion respectively.

In this section, we discuss **three different approaches** by which the GCGF could be sized **via different proportions of funded capital and callable capital**.

APPROACH 1: CONSERVATIVE

To account for EL on a conservative basis, the total capitalization requirement, i.e., **funded capital**, **would be USD 4.2 billion**, which could be provided for by supranational entities such as the Green Climate Fund. To conservatively account for UL, the balance **USD 11 billion could exist as callable capital,** which would get called only when losses exceed capitalization of the facility. The callable capital could be provided for by donor countries, pro-rated by emissions.

This results in a direct debt mobilization leverage of 28x on the funded capital.

APPROACH 2: BASE CASE

As an alternative to the above approach, we took conservative Basel III capital-adequacy requirements of 8% for the EL and UL of the portfolio to calculate the regulatory capital needed. This leads to a **funded capital requirement of USD 1.2 billion**, which could be provided for by global institutional entities such as the Green

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[2] CPI, 2023. Cost of Capital for Renewable Energy Investments in Developing Economies.

Climate Fund or sovereign bilateral institutions. The balance **USD 14.0 billion could exist as callable capital,** which would get called only when losses exceed capitalization of the facility. The callable capital could be provided by donor countries as contingent capital, pro-rated by emissions.

This results in a direct debt mobilization leverage of 98x on the funded capital.

APPROACH 3: OPTIMISTIC

With an empirically derived average default rate of 11% for the EMDE countries included in the CPI June 2023 discussion paper and a guarantee-coverage of 50%, **a USD 6.6 billion guarantee facility is proposed, with a 10% funded capital requirement (USD 660 million), and the balance USD 5.9 billion as callable capital.** This approach can be scaled up as solar and other renewable energy projects in the pipeline increase, driven by policy and procurement actions by governments and utilities respectively.

Capital would get called only when losses exceed capitalization of the facility or, more conservatively, could be increased to cover unexpected losses.[3] **Theoretically, this results in a (direct) leverage of 250x for the total capital mobilized.**

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In all the above approaches, additional capital can be accumulated by charging a guarantee fee for providing the guarantee service, which would in turn act as a buffer on the funded capital.

In addition, the use of contingent capital provides much higher leverage for the use of public finance. Such a facility could be housed at a suitable MDB as a Multi-Donor Investment Trust Funds to be managed at arm's length.

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[3] Unexpected losses would be added to capitalisation requirements at the next stage.

5. IMPACT OF CREDIT GUARANTEE ON RISK PREMIA

APPROACH 1: OVERALL RISK REDUCTION

With the assumption that the guarantor would be an AAA-rated supranational institution, we recalibrated the sovereign credit risk and off-taker risk scores, keeping the political risk score the same. With this we arrived at an enhanced climate investment risk score, which was then used in the regression to recalculate the climate investment risk premia.

For the sample set of countries, the average reduction in risk premium is 6% and the average improvement in rating is 5-6 notches.[4]

APPROACH 2: ONLY LOWERING THE DEFAULT RATE

Rating agencies may hold a more conservative view and consider the guarantee to lower only the expected default rate and not the overall risk. With the guarantor being AAA-rated (same as above), the 10-year expected default rates for the sample countries were recalculated and their new, lowered default rates were matched to the corresponding rating, using Moody's cumulative default rate tables.

With these new ratings, the sovereign credit risk and off-taker risk scores were recalibrated, keeping the political risk score the same. The new and enhanced scores were then used in the regression to recalculate the climate investment risk premia.

For the sample set of countries, the average reduction in risk premium is 3% and the average improvement in rating is 2-3 notches. As with Approach 1, countries with more associated risk would benefit more.

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[4] Notches are the credit rating agency tiers for specific instruments or entities, for example, improving one notch from "BB" to "BB+".

6. WAY FORWARD

We offer some considerations for various stakeholders on how next steps could be developed to advance the GCGF concept.

1. **Framing**

   - Develop a simple outreach document to explain the needs for GCGF, and how it builds on experiences and data. Target an upcoming G20 Compact with Africa meeting to initially socialize the idea and put it on high-level agendas.

   - Develop an investment proposal and pitch deck for GCGF.

2. **Analytical support**

   - Validate the theoretical approach with empirical data and analysis of the observed cost of capital, with focus on debt financing for climate-related renewable energy projects in the shortlisted countries.

   - Follow-on research and analytical work as required to better facilitate the transferring and pricing of residual FX and Political Risks to suitable entities and focus GCGF purely on alleviating the risk of credit defaults for cross-border climate finance.

   - Review near-term executable pipeline of renewable energy projects in each of the shortlisted countries, to estimate the appropriate facility size more accurately.

   - Carry out research and consultation on how callable capital could be provided. Identify the OECD countries that could provide the callable capital, and in what proportion; establish a suitable basis for such proportionate contributions to sovereign contingent liability.

   - Propose possible institutional structures and approaches.

3. **Convening and bridging**

   - Connect with relevant discussions across actors in the financial system and help build political backing.

   - Engage in global climate-related events such as COP, climate weeks, Spring/Annual World Bank Group (WBG) meetings, and G20 Compact with Africa meeting, amongst others, as well as in forums such as MDB reform, Bridgetown, and CAR initiatives.

   - Engage the upcoming G20 forum/platform for discussions; identify the most suitable agency—or a new institution—to sponsor the facility with funded capital as well as oversee its management and implementation.

   - Explore possible institutional structures and approaches through discussions with relevant institutions such as the World Bank, regional development banks (ADB, AfDB, NDB, etc.); engage green and climate finance institutions and funds; and financial sector climate finance collaborations like GFANZ.

Since this is a Discussion Paper, CPI welcomes feedback. Please contact authors Kushagra Gautam (kushagra.guatam@cpiglobal.org), Dhruba Purkayastha (dhruba.purkayastha@cpiglobal.org), or Vikram Widge (vikram.widge@cpiglobal.org).

7. ANNEX I: GCGF SIZING APPROACH 1

Country	Government Solar Target Estimate (GW)	S&P Credit Rating	Comparable Moody's Rating	S&P 10 year Default Rates	Std. Dev. Of Default Rates (%)	Moody's LGD Rates (% Original Balance)	Std. Dev. Of LGD Rates (%)	Original Balance (US$ Bil)	Expected Loss (US$ Bil)	Unexpected Loss (US$ Bil)	Unexpected Loss (Calculation for Portfolio)
Saudi Arabia	40	A-	A3	1.20%	0.21%	50.70%	26.50%	28	0.17	14.20	201.54
Oman	3	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	2.1	0.18	1.17	1.37
Egypt	6	B	B2	22.91%	1.79%	61.40%	23.80%	4.2	0.59	2.59	6.71
Morocco	6	BBB-	Baa3	4.83%	0.46%	51.90%	26.60%	4.2	0.11	2.18	4.75
Brazil	30	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	21	1.81	11.71	137.20
Chile	5	A	A2	1.27%	0.21%	50.70%	26.50%	3.5	0.02	1.77	3.15
Peru	3	BBB	Baa2	2.75%	0.46%	51.90%	26.60%	2.1	0.03	1.09	1.19
Nigeria	2	B+	B1	20.73%	1.79%	61.40%	23.80%	1.4	0.18	0.86	0.74
Tanzania	1.5	B	B2	22.91%	1.79%	61.40%	23.80%	1.05	0.15	0.65	0.42
Namibia	0.5	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	0.35	0.03	0.20	0.04
Algeria	13.6	B	B2	22.91%	1.79%	61.40%	23.80%	9.52	1.34	5.87	34.47
Bolivia	1.2	B+	B1	20.73%	1.79%	61.40%	23.80%	0.84	0.11	0.52	0.27
Ghana	0.5	B-	B3	30.34%	1.79%	61.40%	23.80%	0.35	0.07	0.22	0.05
Zambia	1	CCC-	Caa3	51.05%	4.62%	77.30%	8.90%	0.7	0.28	0.54	0.29
UAE	12	AA	Aa2	0.86%	0.18%	45.60%	23.80%	8.4	0.03	3.83	14.67
Costa Rica	0.2	B	B2	22.91%	1.79%	61.40%	23.80%	0.14	0.02	0.09	0.01
Uganda	2.4	B+	B1	20.73%	1.79%	61.40%	23.80%	1.68	0.21	1.04	1.07
Ivory Coast	0.4	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	0.28	0.02	0.16	0.02
Panama	1.7	BBB	Baa2	2.75%	0.46%	51.90%	26.60%	1.19	0.02	0.62	0.38
Venezuela	0.1	C	C	51.05%	4.62%	77.30%	8.90%	0.07	0.03	0.05	0.00
Senegal	0.4	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	0.28	0.02	0.16	0.02
Jamaica	0.35	B+	B1	20.73%	1.79%	61.40%	23.80%	0.245	0.03	0.15	0.02
Cameroon	0.3	B	B2	22.91%	1.79%	61.40%	23.80%	0.21	0.03	0.13	0.02
Botswana	0.25	BBB+	Baa1	1.99%	0.46%	51.90%	26.60%	0.175	0.00	0.09	0.01
Mozambique	0.1	CCC+	Caa1	51.05%	4.62%	77.30%	8.90%	0.07	0.03	0.05	0.00
Cambodia	1	B	B2	22.91%	1.79%	61.40%	23.80%	0.7	0.10	0.43	0.19
Tunisia	3.8	CCC+	Caa1	51.05%	4.62%	77.30%	8.90%	2.66	1.05	2.06	4.26
Bahrain	0.3	B	B2	22.91%	1.79%	61.40%	23.80%	0.21	0.03	0.13	0.02
Bangladesh	0.6	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	0.42	0.04	0.23	0.05
Mauritius	0.36	BBB-	Baa3	4.83%	0.46%	51.90%	26.60%	0.252	0.01	0.13	0.02
Paraguay	0.7	BB+	Ba1	6.18%	1.04%	55.60%	27.90%	0.49	0.02	0.27	0.07
Sri Lanka	1.5	D	D	100.00%	0.00%	100.00%	0.00%	1.05	1.05	1.05	1.10
Israel	20	A+	A1	0.93%	0.21%	50.70%	26.50%	14	0.07	7.10	50.38
Indonesia	4.82	BBB	Baa2	2.75%	0.46%	51.90%	26.60%	3.374	0.05	1.75	3.07
Vietnam	12	BB	Ba2	10.06%	1.04%	55.60%	27.90%	8.4	0.47	4.68	21.88
Total	**176.6**							**Total**	**8.4**	**67.8**	**22.1**

Credit Guarantee Facility Sizing

Rounded-off Total (GW)	**175**
Project Cost per MW (USD mm)	1
Total Capital Required (USD bn)	**175**
Debt % of Total Capital	70%
Equity % of Total Capital	30%

Total Debt Required (USD bn) – 70% of $175 bn (rounded)	**120**
Expected Loss (USD Bil)	**8.4**
Expected Loss Rate (%)	7.0%
Un-Expected Loss (USD Bil)	**22.1**
% Debt Covered by Credit Guarantee Fund	50%
Total Debt Covered by Credit Guarantee Fund (USD Bil)	60.0
Total Size of Credit Guarantee Fund (USD Bil)	15.2

Funded Capital (USD Bil)	4.2
Unfunded/Callable Capital (USD Bil)	11.0
% Funded Capital	**28%**
Leverage on Funded Capital	**28x**
Possible Source for Funded Capital	**GCF/IFC**
Possible Source for Unfunded/Callable Capital	**Donor countries pro-rated by emissions**

DEFINITIONS

- **EL$_i$** (Expected Loss for country i) = PD$_i$ x LGD$_i$ x EAD$_i$

- **PD** = Probability of Default

- **LGD** = Loss Given Default

- **EAD** = Exposure at Default

- **EL$_p$** (EL for portfolio) = $\sum_{i=1}^{i=n} EL_i$

- **UL$_i$** (Unexpected Loss for country i) = EAD$_i$ x $\sqrt{PD_i \; x \; \sigma_{LGDi}^2 + LGD_i^2 \; x \; \sigma_{PDi}^2}$

- **σ_{LGD}** = Standard Deviation of LGD

- **σ_{PD}** = Standard Deviation of PD

- **UL$_p$** (UL for portfolio) = $Square \; Root(\sum_i^n \sum_j^n \rho_{ij} \; UL_i \; UL_j)$

- **ρ_{ij}** = correlation of default between asset i and asset j; we have conservatively considered ρ_{ij} = 0 for i ≠ j, i.e., the probabilities of default for the individual assets in the portfolio are independent of each other. Consequently, the unexpected loss of the portfolio will be equal to the square root of the sum of the squares of individual unexpected losses.

- **UL$_p$** (UL for portfolio) = $Square \; Root(UL_1^2 + \; UL_2^2 + \; UL_3^2 + \cdots + UL_n^2)$

- **Expected Loss Rate** (%) = Expected Loss/Total Debt Guaranteed

- **Total Size of Facility** = (EL$_p$ + UL$_p$) x % Debt Covered by Credit Guarantee Fund

- **Funded Capital** = EL$_p$ x % Debt Covered by Credit Guarantee Fund

- **Callable Capital** = Total Size of Facility – Funded Capital

- **% Funded Capital** = Funded Capital/Total Size of Facility

- **Leverage on Funded Capital** = Total Debt Required/Funded Capital

8. ANNEX II: GCGF SIZING APPROACH 2

Country	Government Solar Target Estimate (GW)	S&P Credit Rating	Comparable Moody's Rating	S&P 10 year Default Rates	Std. Dev. Of Default Rates (%)	Moody's LGD Rates (% Original Balance)	Std. Dev. Of LGD Rates (%)	Original Balance (US$ Bil)	Expected Loss (US$ Bil)	Unexpected Loss (US$ Bil)	Unexpected Loss (Calculation for Portfolio)
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Nigeria	2	B+	B1	20.73%	1.79%	61.40%	23.80%	1.4	0.18	0.86	0.74
Tanzania	1.5	B	B2	22.91%	1.79%	61.40%	23.80%	1.05	0.15	0.65	0.42
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Algeria	13.6	B	B2	22.91%	1.79%	61.40%	23.80%	9.52	1.34	5.87	34.47
Bolivia	1.2	B+	B1	20.73%	1.79%	61.40%	23.80%	0.84	0.11	0.52	0.27
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Expected Loss (USD Bil)	**8.4**
Expected Loss Rate (%)	7.0%
Time Period (years)	10
Un-Expected Loss (USD Bil)	**22.1**
Capital Adequacy Required (Basel III)	8.0%
% Debt Covered by Credit Guarantee Fund	50%

Total Debt Covered by Credit Guarantee Fund (USD Bil)	60.0
Total Size of Credit Guarantee Fund (USD Bil)	15.2
Funded Capital (USD Bil)	1.2
Unfunded/Callable Capital (USD Bil)	14.0
% Funded Capital	**8%**
Leverage on Funded Capital	**98x**
Possible Source for Funded Capital	**GCF/IFC**
Possible Source for Unfunded/Callable Capital	**Donor countries pro-rated by emissions**

DEFINITIONS

- **EL$_i$** (Expected Loss for country i) = PD$_i$ x LGD$_i$ x EAD$_i$

- **PD** = Probability of Default

- **LGD** = Loss Given Default

- **EAD** = Exposure at Default

- **EL$_p$** (EL for portfolio) = $\sum_{i=1}^{i=n} EL_i$

- **UL$_i$** (Unexpected Loss for country i) = EAD$_i$ x $\sqrt{PD_i \ x \ \sigma_{LGDi}^2 + LGD_i^2 \ x \ \sigma_{PDi}^2}$

- $\boldsymbol{\sigma_{LGD}}$ = Standard Deviation of LGD

- $\boldsymbol{\sigma_{PD}}$ = Standard Deviation of PD

- **UL$_p$** (UL for portfolio) = $Square\ Root(\sum_i^n \sum_j^n \rho_{ij} \ UL_i \ UL_j)$

- $\boldsymbol{\rho_{ij}}$ = correlation of default between asset i and asset j; we have conservatively considered ρ_{ij} = 0 for i ≠ j, i.e., the probabilities of default for the individual assets in the portfolio are independent of each other. Consequently, the unexpected loss of the portfolio will be equal to the square root of the sum of the squares of individual unexpected losses.

- **UL$_p$** (UL for portfolio) = $Square\ Root(UL_1^2 + \ UL_2^2 + \ UL_3^2 + \cdots + UL_n^2)$

- **Expected Loss Rate** (%) = Expected Loss/Total Debt Guaranteed

- **Total Size of Facility** = (EL$_p$ + UL$_p$) x % Debt Covered by Credit Guarantee Fund

- **Funded Capital** = (EL$_p$ + UL$_p$) x Basel III capital adequacy requirements x % Debt Covered by Credit Guarantee Fund

- **Callable Capital** = Total Size of Facility – Funded Capital

- **% Funded Capital** = Funded Capital/Total Size of Facility

- **Leverage on Funded Capital** = Total Debt Required/Funded Capital

9. ANNEX II: GCGF SIZING APPROACH 3

Country	Government Solar Target Estimate (GW)	S&P Credit Rating	Comparable Moody's Rating	S&P 10 year Default Rates	Std. Dev. Of Default Rates (%)	Moody's LGD Rates (% Original Balance)	Std. Dev. Of LGD Rates (%)	Original Balance (US$ Bil)	Expected Loss (US$ Bil)	Unexpected Loss (US$ Bil)	Unexpected Loss (Calculation for Portfolio)
Saudi Arabia	40	A-	A3	1.20%	0.21%	50.70%	26.50%	28	0.17	14.20	201.54
Oman	3	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	2.1	0.18	1.17	1.37
Egypt	6	B	B2	22.91%	1.79%	61.40%	23.80%	4.2	0.59	2.59	6.71
Morocco	6	BBB-	Baa3	4.83%	0.46%	51.90%	26.60%	4.2	0.11	2.18	4.75
Brazil	30	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	21	1.81	11.71	137.20
Chile	5	A	A2	1.27%	0.21%	50.70%	26.50%	3.5	0.02	1.77	3.15
Peru	3	BBB	Baa2	2.75%	0.46%	51.90%	26.60%	2.1	0.03	1.09	1.19
Nigeria	2	B+	B1	20.73%	1.79%	61.40%	23.80%	1.4	0.18	0.86	0.74
Tanzania	1.5	B	B2	22.91%	1.79%	61.40%	23.80%	1.05	0.15	0.65	0.42
Namibia	0.5	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	0.35	0.03	0.20	0.04
Algeria	13.6	B	B2	22.91%	1.79%	61.40%	23.80%	9.52	1.34	5.87	34.47
Bolivia	1.2	B+	B1	20.73%	1.79%	61.40%	23.80%	0.84	0.11	0.52	0.27
Ghana	0.5	B-	B3	30.34%	1.79%	61.40%	23.80%	0.35	0.07	0.22	0.05
Zambia	1	CCC-	Caa3	51.05%	4.62%	77.30%	8.90%	0.7	0.28	0.54	0.29
UAE	12	AA	Aa2	0.86%	0.18%	45.60%	23.80%	8.4	0.03	3.83	14.67
Costa Rica	0.2	B	B2	22.91%	1.79%	61.40%	23.80%	0.14	0.02	0.09	0.01
Uganda	2.4	B+	B1	20.73%	1.79%	61.40%	23.80%	1.68	0.21	1.04	1.07
Ivory Coast	0.4	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	0.28	0.02	0.16	0.02
Panama	1.7	BBB	Baa2	2.75%	0.46%	51.90%	26.60%	1.19	0.02	0.62	0.38
Venezuela	0.1	C	C	51.05%	4.62%	77.30%	8.90%	0.07	0.03	0.05	0.00
Senegal	0.4	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	0.28	0.02	0.16	0.02
Jamaica	0.35	B+	B1	20.73%	1.79%	61.40%	23.80%	0.245	0.03	0.15	0.02
Cameroon	0.3	B	B2	22.91%	1.79%	61.40%	23.80%	0.21	0.03	0.13	0.02
Botswana	0.25	BBB+	Baa1	1.99%	0.46%	51.90%	26.60%	0.175	0.00	0.09	0.01
Mozambique	0.1	CCC+	Caa1	51.05%	4.62%	77.30%	8.90%	0.07	0.03	0.05	0.00
Cambodia	1	B	B2	22.91%	1.79%	61.40%	23.80%	0.7	0.10	0.43	0.19
Tunisia	3.8	CCC+	Caa1	51.05%	4.62%	77.30%	8.90%	2.66	1.05	2.06	4.26
Bahrain	0.3	B	B2	22.91%	1.79%	61.40%	23.80%	0.21	0.03	0.13	0.02
Bangladesh	0.6	BB-	Ba3	15.48%	1.04%	55.60%	27.90%	0.42	0.04	0.23	0.05
Mauritius	0.36	BBB-	Baa3	4.83%	0.46%	51.90%	26.60%	0.252	0.01	0.13	0.02
Paraguay	0.7	BB+	Ba1	6.18%	1.04%	55.60%	27.90%	0.49	0.02	0.27	0.07
Sri Lanka	1.5	D	D	100.00%	0.00%	100.00%	0.00%	1.05	1.05	1.05	1.10
Israel	20	A+	A1	0.93%	0.21%	50.70%	26.50%	14	0.07	7.10	50.38
Indonesia	4.82	BBB	Baa2	2.75%	0.46%	51.90%	26.60%	3.374	0.05	1.75	3.07
Vietnam	12	BB	Ba2	10.06%	1.04%	55.60%	27.90%	8.4	0.47	4.68	21.88
Total	**176.6**							**Total**	**8.4**	**67.8**	**22.1**

Credit Guarantee Facility Sizing

Rounded-off Total (GW)	**175**
Project Cost per MW (USD mm)	1
Total Capital Required (USD bn)	**175**
Debt % of Total Capital	70%
Equity % of Total Capital	30%

Total Debt Required (USD bn) – 70% of $175 bn (rounded)	**120**
10-year Weighted Average Default Rate	**11%**
Expected Loss (USD bn) (rounded)	**13**
% Debt Covered by Credit Guarantee Facility	50%
Total Debt Covered by Credit Guarantee Facility (USD bn)	60
Size of Guarantee Facility (USD bn) – 11% of 60bn	**6.6**

% Funded Capital (balance is Callable Capital)	10%
Funded Capital for Guarantee Facility (USD bn)	**0.7**
Unfunded/Callable Capital (USD bn)	**5.9**
Leverage on Funded Capital ($175bn / $0.7bn)	**250x**
Possible Source for Funded Capital	**GCF**
Possible Source for Unfunded/Callable Capital	**Donor countries pro-rated by emissions**

10. ANNEX IV-1: IMPACT OF GUARANTEE OF CREDIT RATING & RISK PREMIUM (APPROACH 1)

Country	Current S&P Rating	Enhanced S&P Rating	Rating Notches Improved	Reduction in Climate Investment Risk Premium
Zambia	CCC-	BBB-	9	18%
Argentina	CCC+	BBB	8	14%
Tunisia	CCC+	BBB	8	13%
Mozambique	CCC+	BBB	8	12%
Ghana	B-	BBB+	8	11%
Tanzania	B	BBB+	7	10%
Egypt	B	BBB+	7	10%
Cameroon	B	BBB+	7	9%
Bahrain	B	BBB+	7	9%
Nigeria	B+	BBB+	6	9%
Cambodia	B	BBB+	7	9%
Uganda	B+	BBB+	6	9%
Costa Rica	B	BBB+	7	9%
Sri Lanka	D	BB	10	8%
Bolivia	B+	BBB+	6	9%
Jamaica	B+	BBB+	6	8%
South Africa	BB-	A-	6	8%
Namibia	BB-	A-	6	8%
Ivory Coast	BB-	A-	6	7%
Senegal	BB-	A-	6	7%
Brazil	BB-	A-	6	7%
Bangladesh	BB-	A-	6	7%
Oman	BB-	A-	6	7%
Greece	BB+	A	5	6%
Vietnam	BB	A-	5	6%
Paraguay	BB+	A	5	5%
Mauritius	BBB-	A+	5	5%

Country	Current S&P Rating	Enhanced S&P Rating	Rating Notches Improved	Reduction in Climate Investment Risk Premium
Morocco	BBB-	A+	5	5%
Hungary	BBB	A+	4	5%
India	BBB-	A+	5	4%
Indonesia	BBB	A+	4	4%
Italy	BBB	A+	4	3%
Botswana	BBB+	AA-	4	3%
Peru	BBB	A+	4	3%
Panama	BBB	A+	4	3%
Saudi Arabia	A-	AA-	3	2%
Chile	A	AA-	2	2%
Israel	A+	AA	2	2%
Australia	AAA	AAA	0	1%
France	AA	AA+	1	2%
Sweden	AAA	AAA	0	1%
Netherlands	AAA	AAA	0	1%
UAE	AA	AA+	1	1%
USA	AA+	AA+	0	0%
Germany	AAA	AAA	0	0%
Norway	AAA	AAA	0	0%
Average			5.6	6%

11. ANNEX IV-2: IMPACT OF GUARANTEE OF CREDIT RATING & RISK PREMIUM (APPROACH 2)

Country	Current S&P Rating	Enhanced S&P Rating	Rating Notches Improved	Reduction in Premium
Zambia	CCC-	B-	3	8%
Argentina	CCC+	B+	3	6%
Tunisia	CCC+	B+	3	5%
Mozambique	CCC+	B+	3	6%
Ghana	B-	BB-	3	5%
Tanzania	B	BB	3	5%
Egypt	B	BB	3	5%
Cameroon	B	BB	3	5%
Bahrain	B	BB	3	5%
Nigeria	B+	BB+	3	5%
Cambodia	B	BB	3	4%
Uganda	B+	BB+	3	4%
Costa Rica	B	BB	3	4%
Sri Lanka	D	CCC+	5	4%
Bolivia	B+	BB+	3	4%
Jamaica	B+	BB+	3	4%
South Africa	BB-	BB+	2	3%
Namibia	BB-	BB+	2	3%
Ivory Coast	BB-	BB+	2	3%
Senegal	BB-	BB+	2	3%
Brazil	BB-	BB+	2	3%
Bangladesh	BB-	BB+	2	3%
Oman	BB-	BB+	2	2%
Greece	BB+	BBB	2	3%
Vietnam	BB	BBB-	2	2%
Paraguay	BB+	BBB	2	2%
Mauritius	BBB-	BBB+	2	2%

Country	Current S&P Rating	Enhanced S&P Rating	Rating Notches Improved	Reduction in Premium
Morocco	BBB-	BBB+	2	2%
Hungary	BBB	A-	2	2%
India	BBB-	BBB+	2	2%
Indonesia	BBB	A-	2	2%
Italy	BBB	A-	2	2%
Botswana	BBB+	A	2	2%
Peru	BBB	A-	2	2%
Panama	BBB	A-	2	2%
Saudi Arabia	A-	A+	2	1%
Chile	A	A+	1	1%
Israel	A+	AA-	1	1%
Australia	AAA	AAA	0	1%
France	AA	AA+	1	1%
Sweden	AAA	AAA	0	1%
Netherlands	AAA	AAA	0	1%
UAE	AA	AA+	1	1%
USA	AA+	AA+	0	0%
Germany	AAA	AAA	0	0%
Norway	AAA	AAA	0	0%
Average			2.4	3%

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