CCAP
CENTER FOR CLEAN AIR POLICY

Annex II. Review of MRV in Selected Energy Efficiency Proposals

CCAP reviewed 10 proposals catalogued as mitigation projects/programmes in the GCF portfolio. The review focused on mitigation projects that selected the "buildings, cities and appliances" result area as their core focus. The sample selected was meant to get an initial sense of MRV similarities and differences that might be found across a single result area. The sample size is not large enough to yield statistically significant results. Table 1, below, summarizes general information on the sample of proposals. While the main bodies of the proposals are publicly available, the annexes were not available for review; therefore, any information indicated as missing in the following review may have been included in proposal annexes. One of the projects in our sample, FP006, was presented in an early funding round and does not follow the same proposal template as the others. As noted below, it is missing several core elements related to MRV.

ID	Project Name	Countries	AE
FP006	Energy Efficiency Green Bond Programme in Latin America and the Caribbean	Mexico	Inter-America Development Bank
FP009	Energy Savings Insurance (ESI) for private energy efficiency investments by Small and Medium-Sized Enterprises (SMEs)	El Salvador	Inter-America Development Bank
FP010	De-Risking and Scaling-up Investment in Energy Efficient Building Retrofits	Armenia	United Nations Development Programme
FP028	MSME Business Loan Programme for GHG Emission Reduction	Mongolia	XacBank
FP038	Geeref Next	Multiple Countries[1]	European Investment Bank
FP051	Scaling-up Investment in Low-Carbon Public Buildings	Bosnia and Herzegovina	United Nations Development Programme
FP063	Promoting private sector investments in energy efficiency in the industrial sector and in Paraguay	Paraguay	Inter-America Development Bank
FP064	Promoting risk mitigation instruments and finance for renewable energy and energy	Argentina	Inter-America Development Bank

[1] Bahamas, Barbados, Belize, Brazil, Chile, Comoros (the), Costa Rica, Cote d'Ivoire, Democratic Republic of the Congo (the), Dominica, Dominican Republic (the), Equatorial Guinea, Georgia, Grenada, Guatemala, Guyana, Haiti, Jordan, Kenya, Madagascar, Mauritius, Mexico, Papua New Guinea, Saint Kitts and Nevis, Saint Vincent and the Grenadines, South Africa, Suriname, Togo, Uganda

	efficiency investments		
FP065	Financial Instruments for Brazil Energy Efficient Cities (FinBRAZEEC)	Brazil	World Bank
FP071	Scaling Up Energy Efficiency for Industrial Enterprises in Vietnam	Viet Nam	World Bank

Methodology for Estimating Emission Reductions

In section E.1.2., proposals for mitigation projects are asked to estimate annual and lifetime emissions reductions (tCO_2eq) to be reduced or avoided and describe the detailed methodology used for these calculations. Among the ten proposals examined, however, the level of detail for this information varies. Additionally, key information for estimating emission reductions, such as emission factors, are often scattered throughout the proposal instead of being reported in E.1.2. More complete calculations and methodologies are generally presented in the proposal's annexes; however, these are not publicly available. Table 2, below, provides information on aspects of the estimation of emission reductions in the sampled proposals.

Of the ten proposals, only two reported using specific published methodologies. These projects are both UNDP projects and are the only ones that reported both direct and indirect emissions[2] (disaggregated). Both UNDP projects used GEF methods to estimate indirect emissions and either GEF or CDM methodologies to estimate direct emissions. The remaining projects either indicated they used the AE's own methodologies or provided a summary of the methodology.

ID	Methodology Used	Emission Factor (EF)	Accounting Period
FP006	AE Methodology	No information	Unspecified
FP009	Summary provided	EF given but no source or type	Investment Lifetimes (15 years)
FP010	Direct Emissions: GEF Methodology Indirect Emissions: GEF Methodology	Combined Margin[3]	Investment Lifetimes (20 years)[4]
FP028	AE Methodology	Combined Margin[5]	Program Lifetime

[2] While the GCF does not define indirect emissions, the GEF uses this term to refer to emissions reductions "attributable to the long-term outcomes of GEF activities that remove barriers, such as capacity building, innovation, and catalytic action for replication." The two proposals that quantified indirect emissions used the GEF methodology and definition.
[3] Combined margin emission factor refers to a weighted average of the build margin and operating margin emission factors.
[4] For indirect emissions, bottom-up and top-down methodologies were used. This assumes a 10 year influence period over which new investments are made. These investments are assumed to have 20 year lifetimes.
[5] A combined margin emission factor was assumed from the value of the actual emission factor given in the proposal and cited data on build margin and operating margin. This emission factor was reported as applying to

			(8 years)
FP038	AE Methodology/Summary Provided	No information	Investment Lifetimes (10 years)
FP051	Direct Emissions: CDM Methodology Indirect Emissions: GEF Methodology	No information	Investment Lifetimes (20 years)[6]
FP063	Summary Provided	EF given but no source or type	Investment Lifetimes (15 years)
FP064	Summary Provided	Operating Margin	Investment Lifetimes (10 years)
FP065	Summary Provided	Combined Margin	Investment Lifetimes (PSL: 13 years) (IEE: 8 years)[7]
FP071	Summary Provided	No information	Investment Lifetimes (10 years)

Project boundary was generally not explicitly stated, but could usually be inferred from the information provided. For example, FP051 which aimed at scaling up investment in EE for public buildings, estimated emissions reductions from the expected avoided quantity of fuel consumption. One project indicated that they included the rebound effect to correct for suppressed demand and included the rebound factor used.

With the exception of FP006, all proposals gave information on the length of the period over which emission reductions were estimated. All proposals used the estimated lifetime of investments except FP028, which reported emissions for the programme life of 8 years. Using investment lifetime better captures the full extent of reductions than programme lifetime. However, we note that there is a pretty wide range of estimates of investment lifetimes, ranging from 8 to 20 years. This parameter can be difficult to estimate ex-ante where individual GCF projects/programmemes are expected to finance a wide variety of technologies and the exact makeup of their expected portfolios is uncertain. While more information may be provided in annexes, only two proposals described how investment lifetimes were determined. IDB projects FP009 and FP063 estimated investment lifetimes by averaging and weighting surveyed technology lifetimes by the estimated distribution of investment demand. Other projects appeared to use generic default values.

Mongolia's Central grid. For projects to be connected to other grids, XacBank noted they will use UNFCCC standardized emission factor for Mongolia if approved.

[6] For indirect emissions, bottom-up and top-down methodologies were used. This assumes a 10 year influence period over which new investments are made. These investments are assumed to have 20 year lifetimes.

[7] The project has two intervention types, public street lighting (PSL) and industrial energy efficiency (IEE). 8 years for IEE projects was assumed based on the expected period of time before existing technology would be replaced.

Information on the emission factor used in calculations also varied. Four of the ten proposals gave no information on emission factors, two gave the emission factors used but not the source or type, and four gave the source and type of emission factor used. The most common type was the combined margin approach, which is the weighted average of the operating margin and the build margin. The operating margin represents the existing generation sources whose current electricity generation would be affected by the project, while the build margin represents the potential generation sources whose construction and future generation would be affected by the project.[8] Three proposals reported using combined margin emission factors while one used an operating margin emission factor.

While proposals gave qualitative descriptions of the project objective against the baseline scenario, as required in section C.2., quantitative analysis of baseline scenarios and assumptions were largely not present in the methodology description of emission reduction calculations. Only one proposal, FP065, described in detail assumptions made regarding the baseline scenario and how these were incorporated into the investment criteria calculations. This project invested in energy efficiency in two different sectors: public street lighting (PSL) and industrial energy efficiency (IEE). For public street lighting, assumptions were made about the replacement rate of burned out lamps with more efficiency LEDs based on the availability of public finance. For IEE, the baseline assumed existing equipment would be replaced after 8 years, and therefore the calculation did not estimate emission reductions after this point as they would not be additional.

While other proposals lacked information on baseline calculations, some information can be inferred in cases where proposals used established methodologies. Proposal FP010, for example, used GEF's methodology for energy efficiency projects which includes models for different intervention types that calculate dynamic baselines, that considers shifts to more efficient technologies over time. Proposal FP051 used CDM methodology (AMS I-C), which also provides guidance on baselines.

Logic Frameworks and Theories of Change

The Fund's PMF specifies indicators for mitigation impacts and outcomes for proposals to use in their logic frameworks. Indicators are provided for each of the four impact-level results and five outcome-level results identified in the Fund's RMF.

The impact-level result "M3.0 Reduced emissions from buildings, cities, industries, and appliances" largely reflects emissions reductions from energy efficiency projects. The indicator in the PMF corresponding to this result area is "3.1 tCO_2eq reduced or avoided as a result of Fund-funded projects/programmes". Some project logic frameworks also use the Fund-level impact indicators for "Volume of finance leveraged by Fund funding" and "Cost per t CO_2eq decreased for all Fund funded mitigation projects/programmes" as indicators for M3.0.

[8] CDM, Methodological too: Tool to calculate the emission factor for an electricity system, https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v6.pdf

On the outcome-level, "M7.0 Lower energy intensity of buildings, cities, industries, and appliances" is tracked with indicator "7.1 Energy intensity/improved efficiency of buildings, cities, industries and appliances as a result of Fund support."

Table 3. Indicators in energy efficiency projects' logic frameworks[9]

	FP009	FP010	FP028	FP038	FP051	FP063	FP064	FP065	FP071
Impact Indicators									
M3.0 Emission Reductions	•	•	•	•	•		•	•	•
M3.0 Finance Leveraged		•						•	•
M3.0 Cost/tCO_2e		•							
M1.0 Emissions Reductions[10]			•	•		•	•		
Other Non-GCF Indicators				•	•				
Outcome Indicators									
M7.0 Energy Intensity	•	•	•		•	•		•	•
M6.0 Generation/Access[11]			•	•			•		
M5.0 Institutions[12]		•		•	•	•		•	
Other Non-GCF Indicators		•	•	•	•		•		

In Table 3, the indicators tracked in each of the proposals in our sample are summarized. Three of the nine proposals with a logic framework exclude either M3.0 or M7.0 indicators. FP038, for example, is a project with combined renewable energy and energy efficiency components. While it includes the impact-level indicator for energy efficiency (M3.0), it does not quantify energy intensity (M7.0) or any other energy efficiency indicators on the outcome-level. Instead it tracks "Energy saved (GWh)" as an output indicator. Further, it tracks several results and indicators on both the outcome-level and the output-level. This shows a clear lack of progression in the causal chain for energy efficiency results. FP063 is missing the buildings, cities, industries and appliances result area (M3.0) altogether; it seems

[9] Project FP006 does not have a logic framework

[10] M1.0 is the GCF impact-level result for "Reduced emissions through increased low-emission energy access and power generation". Proposals FP028, FP038, and FP06 are both energy efficiency and energy generation projects and thus track both M1.0 and M3.0. Proposal FP063 tracks emission reductions under M1.0 instead of M3.0 even though it is only an energy efficiency project.

[11] M6.0 is the GCF outcome-level result for "Increased number of small, medium and large low-emission power suppliers". This result has three associated quantitative indicators related to energy generation and access.

[12] M5.0 is the GCF outcome-level result for "Strengthened institutional and regulatory systems for low-emission planning and development" and has two associated quantitative indicators. FP063's logic framework seems to mistakenly use A5.0 (for adaptation projects) instead of M5.0 (for mitigation projects).

they mistakenly used low-emission energy access and power generation (M1.0) instead. FP064 doesn't estimate energy intensity (M7.0) but does have an outcome-level result and indicator for reduced emissions from energy efficiency.

In addition to what indicators are tracked in the logic framework, AEs also report means of verification, baselines, mid-term (optional) and final targets, and assumptions for each indicator. For emissions reduction indicators, it isn't always clear how targets were determined or over what timeframe the targets are estimated for. Two of the nine proposals' final targets for emission reductions presented in their logic frameworks do not appear to align with their estimates of emission reductions presented in Section E of the proposal as investment criteria. FP064 was a combined renewable energy and energy efficiency project. The final target reported for their energy access and generation indicator was equal to their investment criteria estimate. This means either emission reductions from energy efficiency were excluded from their investment criteria estimate or double counted in the logic framework. FP063 reports an investment criteria estimate for emission reductions that is about 18% higher than their final target for emissions reductions in their logic framework.[13] Mid-term targets often didn't specify what year the reductions are expected by or how they were calculated. This information, however, could potentially be in an annex that isn't publicly available.

Although the GCF requires proposals to include a theory of change, only four of the ten proposals had any explicit description of the theory of change. Three of the four proposals included a visual representation of the theory of change, while the fourth had a brief description and referred to an Annex with the full theory of change. Two of the proposals with visual representations of the theory of change somewhat aligned their theory of change with their logic framework, mostly on the activity level, while the third, FP038, did not align their theory of change with their logic framework.

Arrangements for Monitoring, Reporting and Evaluation (H.2.)

With the exception of FP006, proposals at a minimum in section H.2. provided general information on who is responsible for different aspects of monitoring, reporting and evaluation and the reports and evaluations that will be conducted and their timing. Beyond that, the information and level of detail provided by AEs varied significantly. Proposals frequently referenced alignment with other arrangements, such as their AMAs and MAFs, and standards such as GCF policies and internal policies. Only one proposal, FP009, provided a detailed description of the actual methodology that will be used to measure energy savings.

[13] Calculations for the targets are reportedly included in an annex that we do not have access to.