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M&E Frameworks for Capacity Building in Climate Transparency

A Comparative Review of Two Quantitative Approaches

Chisa Umemiya, Sumit Prasad, and Shikha Bhasin

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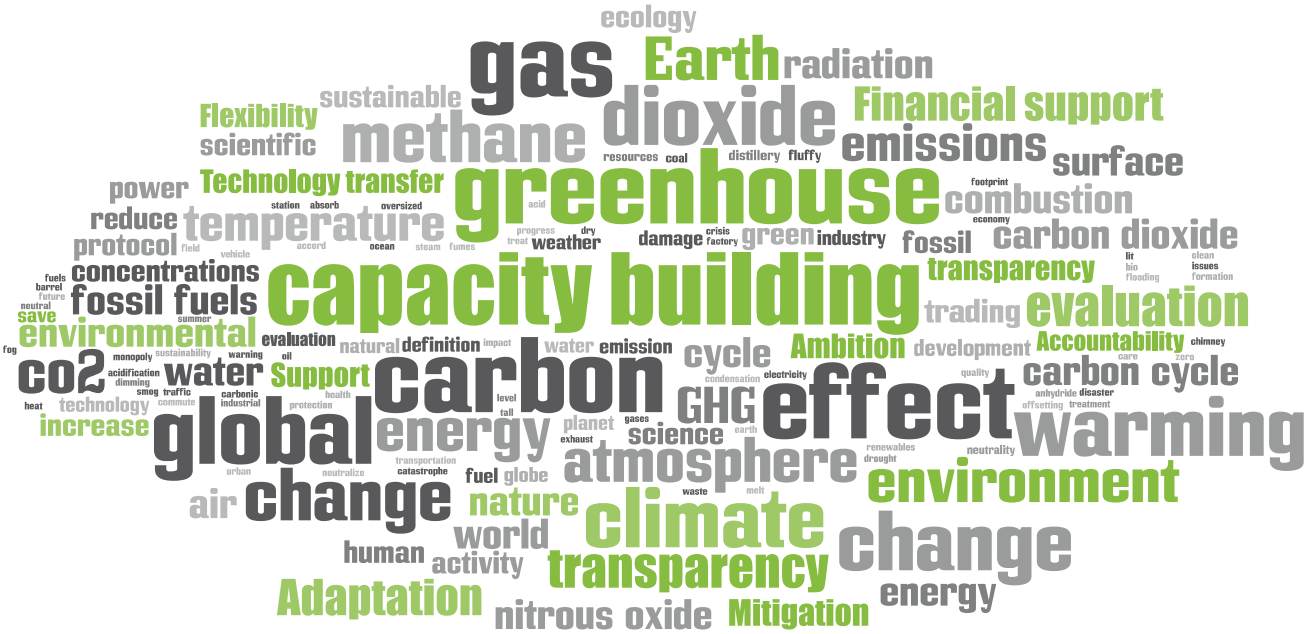


Executive summary

The need to monitor and evaluate capacity-building efforts for climate transparency is increasingly recognised to ensure the effectiveness of those efforts and to approach future capacity-building needs strategically. Since it is a newer area, it is important to build our knowledge around available monitoring and evaluation (M&E) methodologies. We compare the status quo of the two existing M&E methodologies, Capacity-Building Assessment Matrix (CBAM) and Greenhouse Gas Inventories (GHGI) Capacity Indices, both of which are aimed at quantitative assessments, with an example of capacity building for the preparation of national greenhouse gas inventories.

We observed that the ultimate goal of the two M&E approaches was the same, but they were intended to serve different M&E objectives. Also, there exist conceptual and methodological similarities between the two M&E methods and certain aspects (dimensions and indicators) of the M&E approaches were important for transparency capacity.

Recommendations

1. A country or a donor willing to conduct M&E for capacity building should carefully select M&E approaches which are suitable for the purposes of conducting M&E, e.g., to understand the status and change of a country's capacity across time or compared to other countries or to identify the country's critical capacity gaps, inadequate support or retention issues, and needs that are not addressed or identified.

2. When conducting M&E, it is crucial to be aware of which dimensions of transparency capacity are being assessed. Currently, there is no common understanding of what constitutes transparency capacity, so each approach has established its own definition. Also, since capacity building is a country-driven process, these dimensions and indicators need regular updating depending upon the changes in the reporting guidelines as well as domestic priority.

3. To promote M&E methodology development and practices widely, the international community can work together to build a common understanding of what constitutes transparency capacity. It can start from the dimensions which were commonly recognised by and are related to the two approaches, such as institutional, knowledge and technical, and completeness of disclosures in submitted greenhouse gas inventories (GHGIs).

4. The international community can also start monitoring certain capacity indicators that are obviously important for transparency capacity, such as the existence of a coordinative body, presence of formal legal frameworks, defined roles and responsibilities of relevant entities, choice and application of Intergovernmental Panel on Climate Change (IPCC) guidelines and methodologies, and the quality of GHGIs. Monitoring them globally will help us to understand how capacity building and its outcomes are made under the Paris Agreement.

> **The international community needs to build a common understanding of what constitutes transparency capacity.**

1. Introduction

The need to monitor and evaluate capacity-building efforts for climate transparency is increasingly recognised in literature (Umemiya and White 2020) and policy discourse (UNFCCC 2020). Climate transparency broadly relates to the measurement, reporting and verification (MRV)[1] of climate change actions and support.

In this report, we refer to capacity building for the preparation of national greenhouse gas inventories (GHGIs) in developing countries. A GHGI is the compilation of national anthropogenic GHG emissions and removals (IPCC 2006), and is necessary for understanding our sectoral impact, developing pathways towards decarbonising it, and assessing the progress towards achieving the goals of the Paris Agreement adopted in 2015 (UNFCCC 2018).

Prior to the Paris Agreement, there was a clear differentiation of GHGI reporting provisions between developing and developed countries, the former with less stringent provisions for reporting. Contrarily, the Paris Agreement, under its Enhanced Transparency Framework (ETF), requires all countries, including both developing and developed, to prepare a GHGI as part of a biennial transparency report (BTR). With the ETF, a single set of transparency rules are, in principle, applied to all countries, with flexibility[2] to those developing countries that need it in the light of their capacity. The least developed countries (LDCs) and Small Island Developing States (SIDS) can submit BTRs at their discretion. As the existing capacity of developing countries to prepare GHGIs varies highly, the ETF indicates the crucial role of capacity building, and its effectiveness becomes our central concern.

Moreover, capacity-building efforts for climate transparency, including for GHGIs, are ongoing for almost 20 years in developing countries since the inception of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992. In addition to domestic efforts made by developing countries themselves, a considerable amount of technical assistance and financial support has been provided from developed countries through multilateral and bilateral

1. The concept of MRV has been discussed under Bali Action Plan.
2. Flexibility in the scope, frequency, level of details of reporting, and scope of the review.

channels (Umemiya, Ikeda, and White 2020). As a result, the expectation is that we have evidence from these past and existing efforts, based on which we can strategically approach future capacity building. However, in reality, we hardly know what kind of impacts those capacity-building efforts, both at domestic and international levels, and either individually or collectively, have made and under which conditions. M&E to answer these important questions was often not a part of capacity-building initiatives/projects for climate transparency.

Recognising this knowledge gap, stakeholders have started to pay more attention to M&E (UNFCCC 2020). For example, the UNFCCC Secretariat organised an event as part of the 9th Durban Forum on Capacity-building in June 2020, where relevant stakeholders, including policymakers, donors and practitioners who actively work in the field, were asked to share what they knew of existing M&E methodologies. Surprisingly or not, discussions at the event revealed that most of the stakeholders were not aware of methodologies or cases with M&E applied in capacity building for climate transparency, including GHGIs. Instead, the meeting highlighted the importance of building knowledge around available M&E methodologies (UNFCCC 2020).

Although M&E is clearly a new area within capacity building for climate transparency, some research efforts have been made to develop and apply M&E methodologies in the field. Such efforts include the two methodologies: namely, the Capacity-Building Assessment Matrix (CBAM) (CEEW 2019) and the GHGI Capacity Indices (Umemiya and White 2020). This report discusses and compares the status quo of the two methodologies stated above, both of which are aimed at quantitative assessments of capacity-building efforts. It is important to highlight that the two methodologies discussed in this paper are not the only ones that exist. Rather, the objective of this study is to activate discussions around development of M&E methodologies within climate transparency capacity building, by using the examples of the two methodologies.

Section 2 provides an overview of the two methodological approaches. Section 3 and 4 compare the two methodologies covering dimensions, indicators, assessment procedures, and outcomes. Section 5 and 6 discuss relevant lessons, and the way forward.

M&E of capacity building efforts is important to answer critical questions on it impact and effectiveness.

2. Overview of the approaches

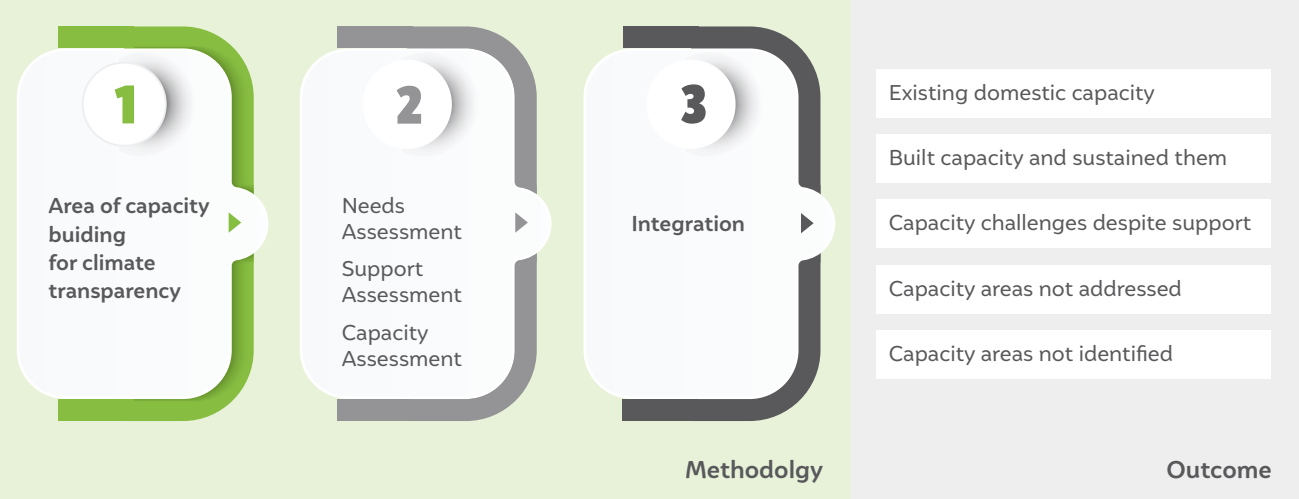
This section compares the two methodologies' overall approach, CBAM and GHGI Capacity Indices, across different aspects: goal, objective, target audience, scope and geographical scale and coverage. The two approaches have the same broad goal, which is to understand areas where additional capacity-building efforts are needed, so that countries and donors supporting them can plan and implement subsequent efforts effectively. To reach this goal, the immediate objective of CBAM is to establish a national baseline capacity, identify gaps and determine flexibilities and improvement plans. GHGI Capacity Indices aims to establish the status and changes of countries' capacity over time. The target audience for both approaches are developing countries, the UNFCCC, which provides rules and requirements for reporting and transparency capacity building and support, and donors, which include financial institutions and technical assistance providers, both multilateral and bilateral. CBAM has wider scopes of reporting[3] compared to GHGI Capacity Indices, as the latter focuses only on GHG inventories. Finally, both approaches assess transparency capacity at the national level, and while CBAM analyses the capacity of individual countries in a detailed manner, GHGI Capacity Indices provide comparative assessment of capacities across a large number of countries, for example, across developing countries.

2.1 Capacity-Building Assessment Matrix

The Council on Energy, Environment and Water has developed an Excel-based tool called Capacity-Building Assessment Matrix (CBAM). The tool is one-of-its-kind, using which one can undertake the three assessments (need, support and capacity) and ascertain (i) the national baseline capacity that exists related to transparency of climate change reporting; (ii) the capacity needs that have been expressed and

3. Along with inventory, CBAM also cover nationally determined contributions, national circumstances, mitigation, adaptation and support (capacity building, finance, and technology).

Figure 1 Building blocks of Capacity Building Assessment Martix



Source: Authors' compilation based on CEEW's CBAM study

supported internationally; and (iii) the capacity needs that have not been identified, nor addressed. This research helps address current concerns of developing countries, the UNFCCC Secretariat and international donors by supporting the transition to ETF, inputs to the technical analysis process of international consultation and analysis (or technical expert review process and facilitative multilateral consideration of progress of the Paris Agreement), the development of improvement plans, determining flexibilities and tracking the progress of capacity-building efforts (CEEW 2019).

The approach towards the formulation of CBAM comprises three building blocks. The most important building block is defining the areas of capacity building[4] for climate transparency (ACB-CT) (see Block 1 in Figure 1). It establishes a common reference on which three assessment procedures (see Block 2 in Figure 1) are defined: needs assessment, support assessment, and capacity assessment. In the end, the outcomes of the three assessments are integrated (see Block 3 in Figure 1) to reflect the areas where: capacity is built with or without the help of support; areas with inadequate support or retention issues; and areas where needs are not addressed or identified. These three assessments and their integration leads to a comprehensive understanding of a country's capacity to adhere to the enhanced transparency framework.

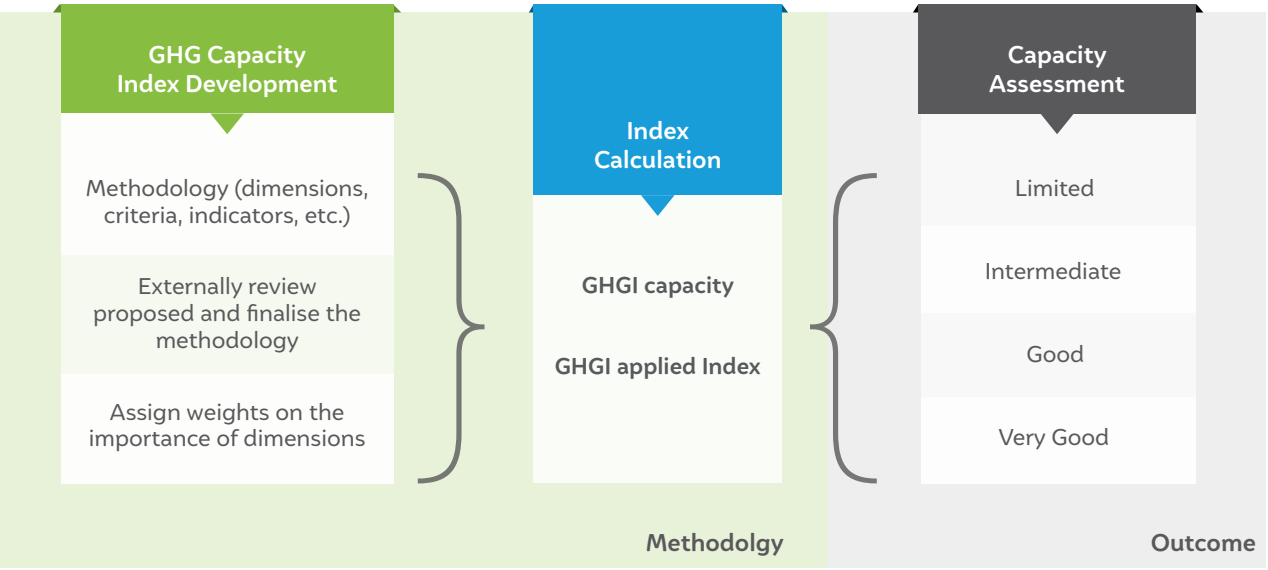
2.2 GHGI Capacity Indices (GHGI Capacity & GHGI Applied)

GHGI Capacity Indices consists of two indices, namely the GHGI Capacity index and the GHGI Applied index (Umemiya and White 2020). The two indices can be used to assess the evolving capacity of developing countries to prepare national GHGIs (see figure 2). While the GHGI Capacity index represents the inherent capacity of countries, the GHGI Applied index represents the country's capacity that was actually performed in the quality of submitted GHGIs. By quantifying and assessing both indices for 133 developing countries and across three GHGI submission times, we can trace the evolution of GHGI capacity worldwide in an explicit and quantifiable manner. By its nature, the indices are not suitable for representing the comprehensive picture of GHGI capacity of a particular country.

> **Both approaches have the same goal, which is to understand areas where additional capacity-building efforts are needed.**

4. Areas of capacity-building covers institutional, knowledge and procedural aspects.

Figure 2 Building blocks of Greenhouse Gas Inventories Capacity Indices



Source: Authors' compilation based on Umemiya and White (2020)

3. Dimensions, elements and indicators associated with methodologies

Both the M&E approaches have defined dimensions that represent a broad category/theme for capacity building to prepare GHGIs.

3.1 Capacity-Building Assessment Matrix

The dimensions of CBAM are ascertained by answering two fundamental questions: What are the key reporting areas and its sub-elements? And what type of capacity would any country need to report them? (CEEW 2019). There are literatures such as UNFCCC reporting obligations and training modules prepared by the Consultative Group of Experts (CGE) which help in understanding the key areas of reporting and best practices adopted by countries to report them (UNFCCC 2022). These literatures and disclosures led to the formulation of three dimensions and their key elements termed as capacity indicators which define the area of capacity building for climate transparency (ACB-CT).

The three capacity dimensions are as follows:

- **Institutional capacity** – A formal arrangement which is mainly the institutional structure or legal mandates needed for reporting on climate actions.
- **Knowledge capacity** – Refers to technical aspects, methodologies, tools and templates and other essential skill sets needed for performing specific tasks which would facilitate reporting on climate actions.
- **Procedural capacity** – Indicates enforcement capacity (enforcing the existing processes and procedures to report) and/or the political willingness of the government to disclose information on climate actions. It is analysed based on the country's ability to disclose information on climate actions[5].

Across these dimensions, there are about 100 capacity indicators for inventory which in some cases are hierarchical in nature (sub-indicators with broad indicators). These capacity indicators are applicable to sectors such as energy, industrial processes, agriculture, LULUCF (Land use, land-use change, and forestry), and waste. Table 1 summarises the key indicators for inventory capacities.

5. National communication, biennial update report, and biennial transparency report defined under the Paris Agreement (Decision 18/CMA.1). Source: https://unfccc.int/sites/default/files/resource/CMA2018_03a02E.pdf

Table 1 Examples of indicators for CBAM

Institutional capacity indicators	Knowledge capacity indicators	Procedural capacity indicators
• National co-ordinating body • Presence of formal legal framework: defined roles and responsibilities, procedures to internalise the processes, formal approval process and flow of information	• IPCC Guidelines • Approach (Methodology) - Quality Assurance/ Quality Control (QA/QC), uncertainty, key category analysis • Templates & tools	Disclosure on the following elements: • Institutional arrangement, QA/QC, key category analysis, and uncertainty and other sectoral analysis • Activity data, emission factors and overall emission

Source: Authors' analysis based on CEEW's CBAM study

3.2 GHGI Capacity Indices

The research team first defined the dimensions of GHGI capacity, for which a preliminary list of criteria and indicators were established based on existing literature. Four external experts then reviewed this list. After incorporating expert input, the finalised list of GHGI Capacity Indices dimensions, criteria, indicators, and data sources were generated for two indices. GHGI Capacity consists of three broad dimensions: 1) Country context, 2) Institutional structure, and 3) Technical skills and knowledge.

- Country context describes the basic development and demographic conditions a country has for preparing GHGIs, e.g., Gross Domestic Product (GDP), national statistical capacity and scientific capacity. This dimension represents capacity within a country at a system level that is expected to exist regardless of the emergence of climate change issues, including preparation of GHGIs.
- Institutional structure is a measure of national management systems that specifically influence or allocate for preparing a GHGI, e.g., national climate change policy, institutional roles and responsibilities.
- Technical skills and knowledge measures the capabilities of individuals operating within the institutional structure or country context, necessary for preparing a GHGI, e.g., GHGI compiler for understanding of methods or reporting requirements.

We assume these three dimensions, combined, represent a country's GHGI Capacity at a given point in time: [GHGI Capacity] = [Country context] + [Institutional structure] + [Technical skills and knowledge]

GHGI Capacity is calculated by the sum of three weighted dimensions of nine criteria and indicators (see table 2).

GHGI Applied is a measure of the quality of submitted GHGIs, following the principles of the Intergovernmental Panel on Climate Change (IPCC) (IPCC 2006) and the ETF reporting requirements. For this index, applied capacity (a single dimension) was examined through a separate set of five criteria and seven indicators.

4. Assessment procedures associated with methodologies

Across the indicators associated with the dimensions of CBAM and GHGI Capacity indices, assessments are conducted that help us understand the capacity of a country/countries. In this section, the assessment procedures of both methodologies are discussed.

Table 2 Examples of indicators and data sources used for each dimension in GHGI Capacity

Indicator (Associated dimension)	Source
Government effectiveness indicator (Country context)	The Worldwide Governance Indicators, 2019
Existence of legal/formal arrangements for climate change policies (Institutional structure)	Submitted GHG inventories by countries
Number of nominated experts to the UNFCCC (Technical skills and knowledge)	UNFCCC's database of nominated experts, 2020

Source: Authors' analysis based on Umemiya and White (2020)

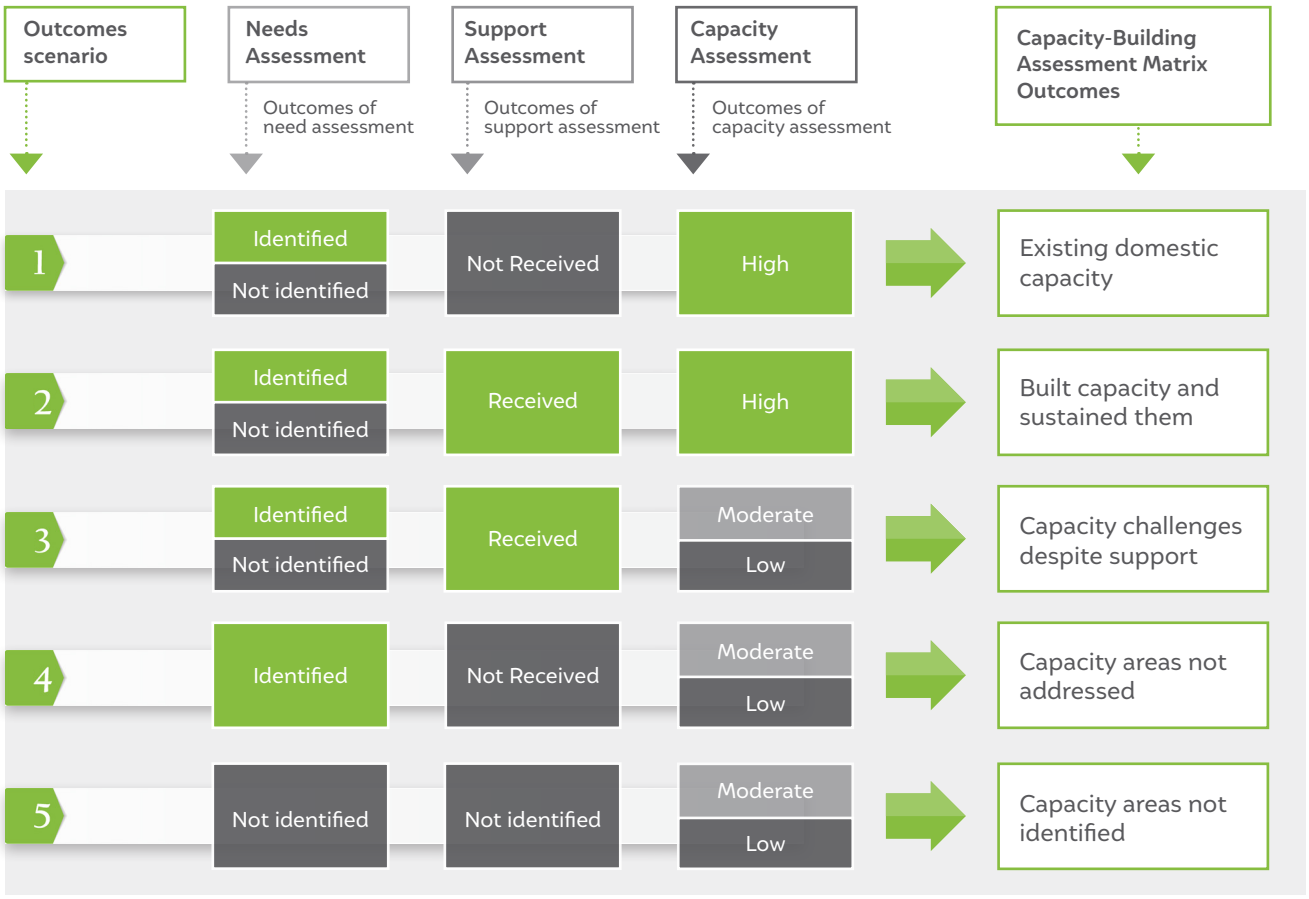
4.1 Capacity-Building Assessment Matrix

The assessment procedures in CBAM comprises of four steps:

- **Capacity assessment**: The sectoral expert would assess the indicators based on the quality of information (evidence) available in the public domain. A Likert scale, with a maximum of one and a minimum of zero, is used to indicate capacity (high: 1, moderate: 0.5 and low: 0) with respect to specific indicators.
- **Need assessment**: The historical needs (submitted in national communications/biennial update report) identified by the country are mapped to the capacity indicators depending on the kind of capacity it aims to build across the area of reporting. This would help understand key national priorities and areas where needs are not expressed.
- **Support assessment**: The activity/outcome of all the supported projects-related transparency is mapped to the capacity indicators depending on the kind of capacity it aims to build. This would lead to a better understanding of the coverage of support received across all capacity indicators.
- **Integration**: The outcomes of the three assessments for each capacity indicator are analysed jointly (see figure 3). Based on this, the outcomes of CBAM can be reduced to five possible combinations:

1. Existing domestic capacity (indicators where no support is received but capacity exists)
2. Built capacity and sustained them (indicators where support is received and capacity is built)
3. Capacity challenges despite support received (indicators with low or moderate capacity, despite the identification of needs and support being received)
4. Capacity areas not addressed (indicators with low and moderate capacity whose needs are identified but support is lacking)
5. Capacity areas not identified (indicators against which support is lacking and also needs are not identified despite visible gaps in capacity)

Figure 3 CBAM assessments and its integration



Source: Based on CEEW's CBAM study

GHGI Capacity Indices

The assessment procedures for GHGI Capacity Indices includes these three steps:

1. **Data collection and aggregation**

   The core data source were the GHGIs submitted to the UNFCCC, under the reporting sections of national communications (NCs) and biennial update reports (BURs) of non-Annex I (developing) countries. GHGIs submitted across different submission times were used (GHGI1, 2 and 3+). To collect data from a large sample number of submitted GHGIs (n = 369), a template was developed for researchers to collect data and score indicators between the values of 0 and 1. All values from non-GHGI sources were also used and normalised into a score between 0 and 1. The average indicator score was calculated within each dimension and then weighted based on expert allocation weighting.

2. **Classifying GHGI capacity status for GHGI Capacity**

   The aggregated GHGI Capacity scores were equally distributed across four quartiles and assigned an overarching categorical description representing GHGI capacity status: Limited, Intermediate, Good and Very Good. In addition, the status of "Not submitted" was used when countries did not submit GHGI3+.

3. **Comparing GHGI capacity status and GHGI Applied**

   The average GHGI Applied scores of each GHGI capacity status were calculated and compared to examine how countries with different GHGI capacity status actually performed in the quality of submitted GHGIs.

Table 3 Comparison between CBAM and GHG capacity indices

	CBAM	GHGI Capacity Indices
Goal	**Understand areas where additional capacity-building efforts are needed to improve and strengthen countries' transparency capacity**	
Objective (Expected output)	Establish baseline capacity related to climate reporting, identify capacity gaps, determine flexibilities and develop improvement plans for enhanced transparency framework	Identify where additional capacity-building efforts are needed and in which aspect related to GHG inventories through understanding the status and change of GHGI capacity over time
Target audience	**Developing countries, UNFCCC, donors**	
Scope	Inventory, nationally determined contributions, national circumstances, mitigation, adaptation and support (capacity building, finance, and technology)	Inventory
Scale/coverage	National scale, individual country (Pilot study: India)	National scale, global coverage (almost all developing countries)
Approach to the formation of methodology	Literature review of UNFCCC reporting obligations and training modules prepared by Consultative Group of Experts (CGE) Stakeholder consultation	Literature review of UNFCCC reporting obligations, IPCC guidelines and academic papers Creation of GHGI capacity indices Expert consultation
Dimensions of capacity	Institutional capacity Knowledge capacity Procedural capacity	Country context Institutional structure Technical skills and knowledge Applied capacity
Assessment methods	Capacity assessment (Likert scoring) Need assessment (Mapping need expressed) Support assessment (Mapping support activities) Integration	Document review Scoring and aggregation Capacity status classification Comparison of GHGI and Applied indices
Core data sources subject to assessment	Submitted NCs and BURs UNFCCC – technical analysis reports Databases – Global Environment Facility (GEF), United Nations Development Programme (UNDP), World Bank	Submitted NCs and BURs UNFCCC – Roster of experts Databases – World Bank

Source: Authors' analysis based on CEEW's CBAM study (2019) and Umemiya and White (2020)

5. Discussions on the two approaches

By comparatively reviewing the two methodologies, we draw some key findings/lessons relevant for the future development of M&E methodologies and their practices in the climate field. Table 3 compares the two M&E methods across various aspects.

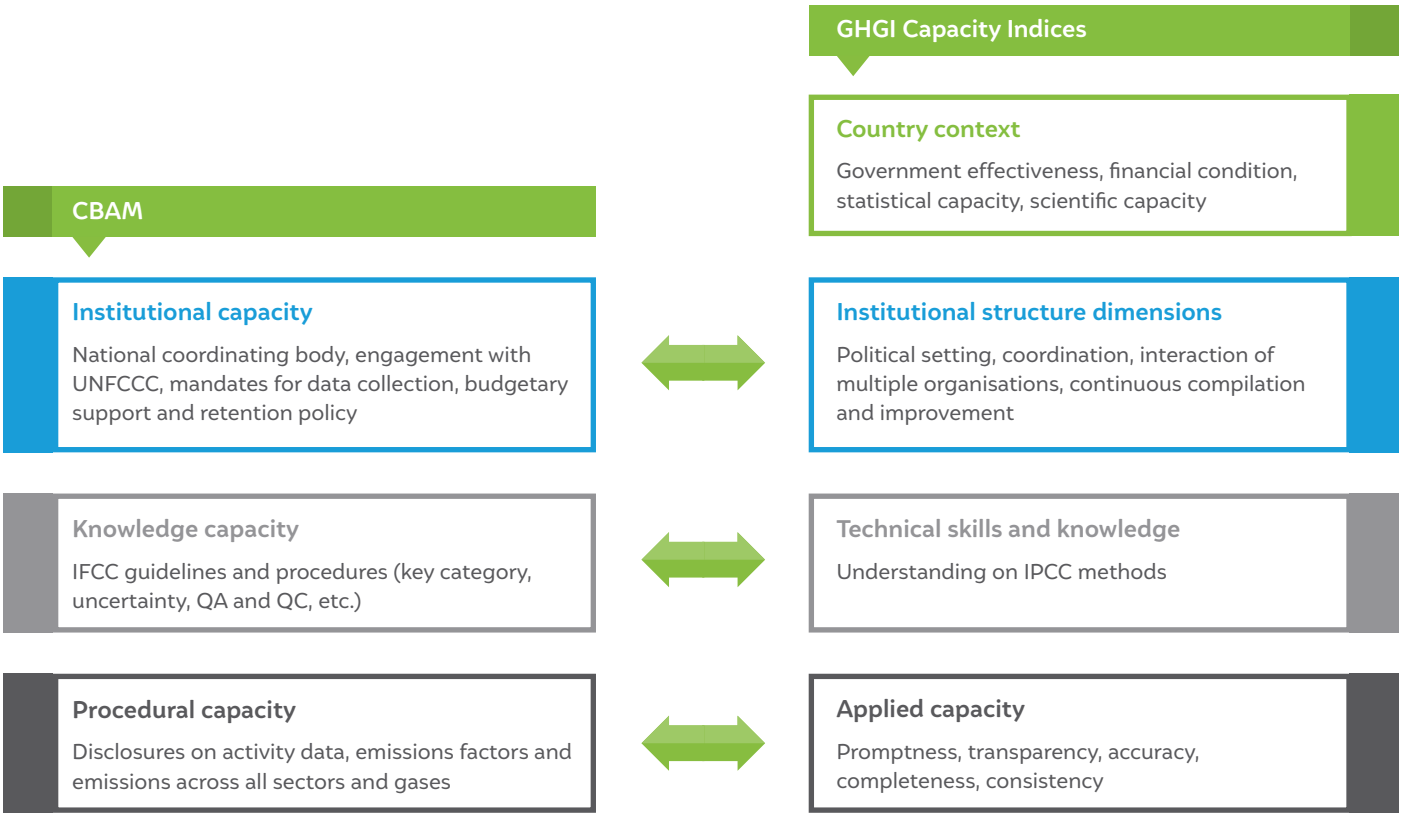
5.1 While their ultimate goal was the same, the two methodologies were intended to serve different M&E objectives

Both approaches assess transparency capacity at the national level for UNFCCC reporting requirements, including under the Paris Agreement's ETF. But the GHGI Capacity Indices provide a comparative assessment of capacities across a large number of countries (developing countries) to establish the status and changes of countries' capacity over time, while CBAM analyses the capacity of individual countries in a detailed manner (a pilot study for India has been conducted). If one is interested in knowing how a particular country's capacity is different compared with others or has changed over time, GHGI Capacity Indices can be used. On the other hand, the granular indicator of CBAM is more effective for national-level exercises to understand the country's critical capacity gaps, inadequate support or retention issues, and needs that are not addressed or identified.

5.2 Conceptual and methodological similarities exist between the two methodologies

The two methodologies are similar across the dimensions of transparency capacity, including aspects related to institutional aspects, knowledge and technical aspects, and completeness of disclosures (procedural aspects) in submitted GHGIs (Figure 4). Also, they exhibit similar methodological steps, including the development of the concept of dimensions, indicators, and the quantification of those indicators. Further, both methodologies largely rely on publicly available (and often the same) information sources for quantification of the indicators. This is despite the fact that the two methodologies have been developed by independent research groups.

Figure 4 Dimension, element and indicator comparison across methodologies



Sources: Authors' analysis, based on CEEW's CBAM study (2019) and Umemiya and White (2020)

This suggests that there is potential for these and other methodologies to work together to build a common understanding of what constitutes transparency capacity and how it can be monitored and evaluated.

5.3 Choice of capacity dimensions needs to be clearly explained to ensure the adequate usage of M&E results

While there exist considerable similarities between the two methodologies, we also noticed differences between them in the choice of capacity dimensions. For example, GHGI Capacity Indices consider the country context dimension as one of the elements constituting transparency capacity. GHGI Capacity Indices assume that general scientific and statistical capacity, irrespective of climate issues, affects the transparency capacity of a country, while this is not considered in the dimensions of CBAM.

Currently, there is no common or clearly defined understanding of what constitutes capacity. It is, therefore, not a surprise that the two approaches adopted different sets of dimensions on their own. However, this could also potentially mislead stakeholders to use their results, because the two methodologies are, strictly speaking, assessing different capacity dimensions or elements. Clearly, explaining which dimensions of transparency capacity are subject to assessment will help stakeholders use M&E results appropriately.

5.4 Certain capacity indicators seem to be obviously important for transparency capacity M&E

Certain indicators used in the approaches were overlapping between the two approaches. Continuously monitoring these common indicators and sharing the results in an open public forum (e.g., UNFCCC website) might be beneficial to inform transparency capacity-building efforts globally. Based on the current comparative study with an example of GHGI, such core sets of indicators can include: existence of coordinative body, presence of formal legal frameworks, defined roles and responsibilities of relevant entities, choice and application of IPCC guidelines and methodologies, and the quality of GHGIs.

> **In the context of transparency, capacity building is evolving because of changes in international reporting requirements.**

6. The way forward

It is important to support developing countries towards enhancing their capacity to adhere to the transparency obligations under the Paris Agreement, as it demands more granular information than before. Further, it is equally important that developing countries take ownership of the capacity-building efforts and channelise them to long-term and self-sustaining institutions.

Therefore, M&E of capacity-building efforts is needed to examine the capacity building, not just by analysing financial or technical support received but also by reflecting on the outcomes and development of standalone systems capable of learning without constant handholding.

The outcomes of the M&E could serve as critical inputs to the negotiations and support developing countries' transition to the ETF. It could be helpful during the technical expert review process and facilitate multilateral consideration of progress of the Paris Agreement towards defining flexibilities to report in a rational and country-driven manner (CEEW 2019).

Both M&E methodologies discussed in this paper developed indicators that represent theoretical capacity of a country. Based on the comparative review of the two methodologies, we recommend:

1. A country or a donor willing to conduct M&E for capacity-building should carefully select M&E approaches which are suitable for the purposes of conducting M&E, e.g., to understand the status and change of a country's capacity across time or compared to other countries or to identify a country's critical capacity gaps, inadequate support or retention issues, and needs that are not addressed or identified.

2. When conducting M&E, it is crucial to be aware of which dimensions of transparency capacity are being assessed. There is currently no common

understanding of what constitutes transparency capacity, so each approach has established its own definition of transparency capacity.

3. It is important to highlight that capacity building is a country-driven process and is based on domestic priorities. In the context of transparency, it is evolving in nature because of changes in international reporting requirements. Hence, the capacity indicators associated with dimensions need regular updating to reflect national priorities and changes in the reporting requirements.

4. To promote M&E methodology development and practices widely, the international community can work together to build a common understanding of what constitutes transparency capacity. It can start from the dimensions, which were commonly recognised by and are related to the two approaches, such as institutional, knowledge and technical, and completeness of disclosures (procedural capacity) in submitted GHGIs.

5. The international community can also start monitoring certain capacity indicators that are obviously important for transparency capacity, such as existence of coordinative body, presence of formal legal frameworks, defined roles and responsibilities of relevant entities, choice and application of IPCC guidelines and methodologies, and the quality of GHGIs. Monitoring them globally will help us to understand how capacity building and its outcomes are made under the Paris Agreement.

References

CEEW. 2019. *A Capacity Building Assessment Matrix for Enhanced Transparency in Climate Reporting: An India Assessment, A Comprehensive Evaluation of Indian Efforts*. September. https://www.ceew.in/publications/capacity-building-assessment-matrix-enhanced-transparency-climate-reporting.

Intergovernmental Panel on Climate Change (IPCC). 2006. In: Eggleston, H., L. Buendia, K. Miwa, T. Ngara, K. Tanabe (Eds.). *IPCC Guidelines for National Greenhouse Gas Inventories*. Hayama, Japan: IGES for the IPCC.

Umemiya, Chisa, Mariko Ikeda, and Molly K. White. 2020. "Lessons Learned for Future Transparency Capacity Building under the Paris Agreement: A Review of Greenhouse Gas Inventory Capacity Building Projects in Viet Nam and Cambodia." *Journal of Cleaner Production*. 245: 118881. https://doi.org/10.1016/j.jclepro.2019.118881.

Umemiya, Chisa, and Molly K. White. 2020. "Global Database of National GHG Inventory (GHGI) Capacity in Developing Countries." July: 1–33. https://www.un-gsp.org/global-database-national-ghg-inventory-ghgi-capacity-developing-countries.

UN. 2015. Paris Agreement. http://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf.

UNFCCC. 2018. Decision 18/CMA.1. Modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement.

UNFCCC. 2020. "The 9th Durban Forum on Capacity-building. Report by the secretariat". FCCC/SBI/2020/12.

UNFCCC. 2022. *Consultative Group of Experts*. https://unfccc.int/CGE.

The authors

Dr Chisa Umemiya
umemiya@iges.or.jp | @IGES_EN

Chisa is a Research Manager at IGES. She currently leads research projects that focus on the roles of international cooperation in the implementation of international climate policy frameworks, such as the Paris Agreement's enhanced transparency framework and global stocktake. She is a certified expert of the technical assessment of forest reference levels for REDD+ under the UNFCCC.

Sumit Prasad
sumit.prasad@ceew.in | @sumitprd

Sumit is a Programme Lead at CEEW in the Climate Negotiations team. His current work at The Council revolves around climate negotiations, such as examining the climate action gaps; monitoring, reporting and verification (MRV) framework, along with issues pertaining to enhanced transparency framework and implementation of the Paris Agreement rulebook.

Shikha Bhasin
shikha.bhasin@ceew.in | @shikha_bhasin

Shikha is a Senior Programme Lead at CEEW leading the research on Climate Negotiations and Cooling. Her research revolves around enhancing access to sustainable cooling in India, as well as supporting the technology and market transitions required to meet India's Kigali Amendment commitments and various mechanisms under the United Nations Framework Convention on Climate Change (UNFCCC).

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COUNCIL ON ENERGY, ENVIRONMENT AND WATER (CEEW)

ISID Campus, 4, Vasant Kunj Institutional Area
New Delhi - 110070, India
T: +91 (0) 11 4073 3300

info@ceew.in | ceew.in | @CEEWIndia | ceewindia