STANDARD FOR THE TRANSFORMATION OF ELECTRIC POWER SECTORS (STEPS)

Environmental Resources Trust (ERT)

STEPS
Standard for the Transformation of the Electric Power Sector

VERSION 1.0 | DRAFT FOR PUBLIC COMMENT | APRIL 2026

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ABOUT STEPS

The Standard for the Transformation of the Electric Power Sector (STEPS) aims to encourage long-term structural transformation of the electric sector in emerging and developing economies and to attract carbon market finance to support the energy transition. STEPS provides a rigorous process to transparently register, verify, and issue high integrity greenhouse gas emission reduction credits for Participants that achieve earlier and deeper electric power sector emission reductions contributing to Paris Agreement climate targets, requiring higher ambition over time, and ensuring energy security, energy equity and a just energy transition.

ACKNOWLEDGEMENTS

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[1] Recognition of the Expert Advisors does not imply endorsement of the Standard or individual elements or approaches as presented in the draft publication.

ACRONYMS

AER	Annual Emissions Rate
BAU	Business as Usual
COP	Conference Of Parties
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
CP	Crediting Period
CPS	Country-Specific Performance Standard
CSI	Commercially Sensitive Information
EP	Electricity Producer
ER	Emission Reduction
ESG	Environmental, Social, and Governance
ESMF	Environmental Social Management Framework
ESMS	Environmental Social Management System
EESB	Enhanced Energy System Balance
ETS	Emissions Trading Scheme
FPIC	Free, Prior, and Informed Consent
GHG	Greenhouse Gas
GIS	Geographic Information System
GWP	Global Warming Potential
ICAO	International Civil Aviation Organization
IPCC	Intergovernmental Panel on Climate Change
MEP	Major Electricity Producer
NDC	Nationally Determined Contribution

NGO	Non-Governmental Organization
OEP	Other Electricity Producer
QA/QC	Quality Assurance/Quality Control
SIS	Safeguard Information System
SOP	Standard Operating Procedure
SPER	Starting Period Emissions Rate
UNFCCC	United Nations Framework Convention on Climate Change
VVB	Validation and Verification Body

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1 INTRODUCTION

1.1 BACKGROUND

Over the past fifty years, electricity supply has been the major driving force of both economic development and emissions of greenhouse gases throughout the developing world. Especially in Asia, electricity consumption and GDP have grown in parallel fashion, bringing large populations out of poverty and improving livelihoods throughout the economies. Simultaneously, coal-fired electricity generation has been a large (often the single largest) source of growth in GHG emissions in those countries. Today, the International Energy Agency estimates that coal and natural gas combustion represents about 66% of total GHG emissions, the bulk of which is used for the production of electricity.

To stem the growth in GHG emissions it is critical that the world economies transition swiftly away from fossil-fuel-fired electricity production and toward renewable energy. Many of the emerging economies are taking steps in that direction, but many also lack the financial resources to quickly support the transition.

The transition will require countries to revise existing laws and regulations that were developed to stimulate the development of fossil fuel power plants and replace them with new policies that encourage their retirement and the development of non-fossil generation. Key elements of the transition involve low-cost regulatory and policy changes to create long-term stimulus and stability for the development of renewable energy sources. Other changes are more costly, including building out the transmission infrastructure and developing utility-scale and smaller, distributable renewable energy supplies and retiring existing coal-fired electric power plants.

Finance and investment are critical not only to build out infrastructure and new generation capacity, but also to cover the significant costs of the just energy transition for impacted populations and to ensure energy security, access and affordability.

1.1.1 The Standard for the Transition of the Electric Power Sector - STEPS

At COP27, the U.S. Department of State, Bezos Earth Fund and the Rockefeller Foundation announced the Energy Transition Accelerator (ETA), an initiative to support developing and emerging economies in achieving earlier and deeper GHG emission reductions in the electricity sector.

A critical element of the ETA was the development of a sectoral crediting approach[2] to utilize carbon markets to unlock new long-term financial flows to accelerate the transition to a net zero emissions power sector. ERT was selected by the ETA Partners to develop the standard, which is now referred to as the Standard for the Transition of the Electric Power Sector, or STEPS.

Developing a standardized crediting approach for the electric sector is extremely complex and involves trade-offs based on a number of key factors. First is that energy security is paramount as has been reinforced by recent world events, therefore, governments must be granted the flexibility to decarbonize while retaining infrastructure for this end. Second is that electricity demand continues to grow around the world, and any approach to crediting at the sectoral level must not jeopardize – rather enhance energy access and affordability. Third is that developing a standard approach to crediting is challenging based on the complexity and diversity of electric grids, the political and economic circumstances of countries, the economic reliance on fossil fuels and the quality of the renewable resources available in each county.

To address these myriad differences, ERT's approach has been to develop a standard to credit at the sector level. A focus on performance at the sector-level encourages long-term structural transformation by incentivizing the implementation of a broad range of policy and regulatory changes to support the energy transition. The goal is to ensure high quality results while allowing flexibility for implementation of sectoral decarbonization plans as nationally appropriate.

STEPS provides a credible and rigorous process to transparently register, verify, and issue high integrity greenhouse gas emission reduction credits for Participants that achieve earlier and deeper electric power sector emission reductions beyond a Paris Agreement aligned declining temperature trajectory requiring higher ambition over time, while ensuring energy security, energy equity, and a just energy transition.

1.2 STEPS GOVERNANCE

STEPS is built on principles of transparency, environmental and social rigor and participatory processes. STEPS is governed by Environmental Resources Trust (ERT), a wholly-owned nonprofit subsidiary of Winrock International. The ERT Board of Managers assumes fiduciary responsibility for the organization and ensures activities contribute to its mission of harnessing the power of markets to improve the environment. Staff of ERT / ACR will be responsible for the operation of the crediting program including overseeing the development and implementation of STEPS for the registration, verification and issuance of credits on a transparent registry.

[2] The term "sectoral crediting" is used to address the entire electric power industry within the country. Also called a "jurisdictional" crediting system, it is designed to cover all electric generating power sources within each country, including captive plants that are not grid connected as well as renewable energy sources, whether grid-connected or not. It also includes the power producing portion of combined heat and power facilities.

1.3 DEVELOPMENT PROCESS FOR STEPS

ERT has availed itself of the best minds and resources in the world in developing STEPS including expert advisors from the International Energy Agency (IEA), the Electric Power Research Institute (EPRI) and The World Bank Group; economics, finance and mathematics professors from Georgetown University; and former governmental employees of Energy Information Administration (EIA) and the Council on Environmental Quality who provided input, guidance and technical and policy analysis to inform the crediting approach and other aspects of the Standard. In addition to expert advisors, ERT received valuable feedback from key stakeholders including the ETA Partners and members of the ETA High-Level Consultative Group.

1.4 ADOPTION OF AND REVISIONS TO STEPS

ERT will conduct a review of STEPS at a minimum every five years and update the Standard if deemed necessary, including incorporation of relevant UNFCCC decisions as well as input from technical expert committees and global stakeholders.

ERT will solicit broad stakeholder input to STEPS and future revisions to STEPS through a public comment process. STEPS will be posted publicly for stakeholder review and consultation for at least 60 days. ERT will prepare responses, update the Standard accordingly, and post the comments and responses along with the approved version of the Standard on the STEPS website.

When a new version of STEPS is published, current Participants will have three options:

1. Continue to use the version of the Standard that was in place at the time of initial submittal of documentation to STEPS for the remainder of the crediting period. At the start of the next crediting period, the latest version of STEPS must be adopted.
2. Continue to use the version of the Standard that was in place at the time of initial submittal of documentation to STEPS for the current crediting period except where the new STEPS explicitly specifies where new or revised provisions may be adopted that do not affect the performance standard / index. Adopted provisions must be in place at the time of next reporting to STEPS. At the start of the next crediting period, the latest version of STEPS must be fully adopted.
3. Begin a new crediting period upon publication of the new version of STEPS and update to all provisions and requirements of the new version of STEPS, including any changes to the crediting level.

1.5 CONFLICT OF INTEREST

To ensure ERT Board members and staff are held to the highest standards for ethics and professional conduct and for avoidance of conflicts of interest, All ERT Board members and staff are subject to the Conflict of Interest policy as detailed in Winrock's Code of Conduct, including disclosure, review, mitigation and approval by Winrock's Chief Risk and Compliance Officer. Each ERT Board member and staff member is required to regularly affirm in writing that they are in compliance with this policy, that they disclose, avoid and mitigate all Conflicts of Interest, and that they take reasonable action to avoid circumstances that create the appearance of a Conflict of Interest. Winrock staff with potential conflicts are recused from any involvement in ACR activities or decisions where a conflict might arise.

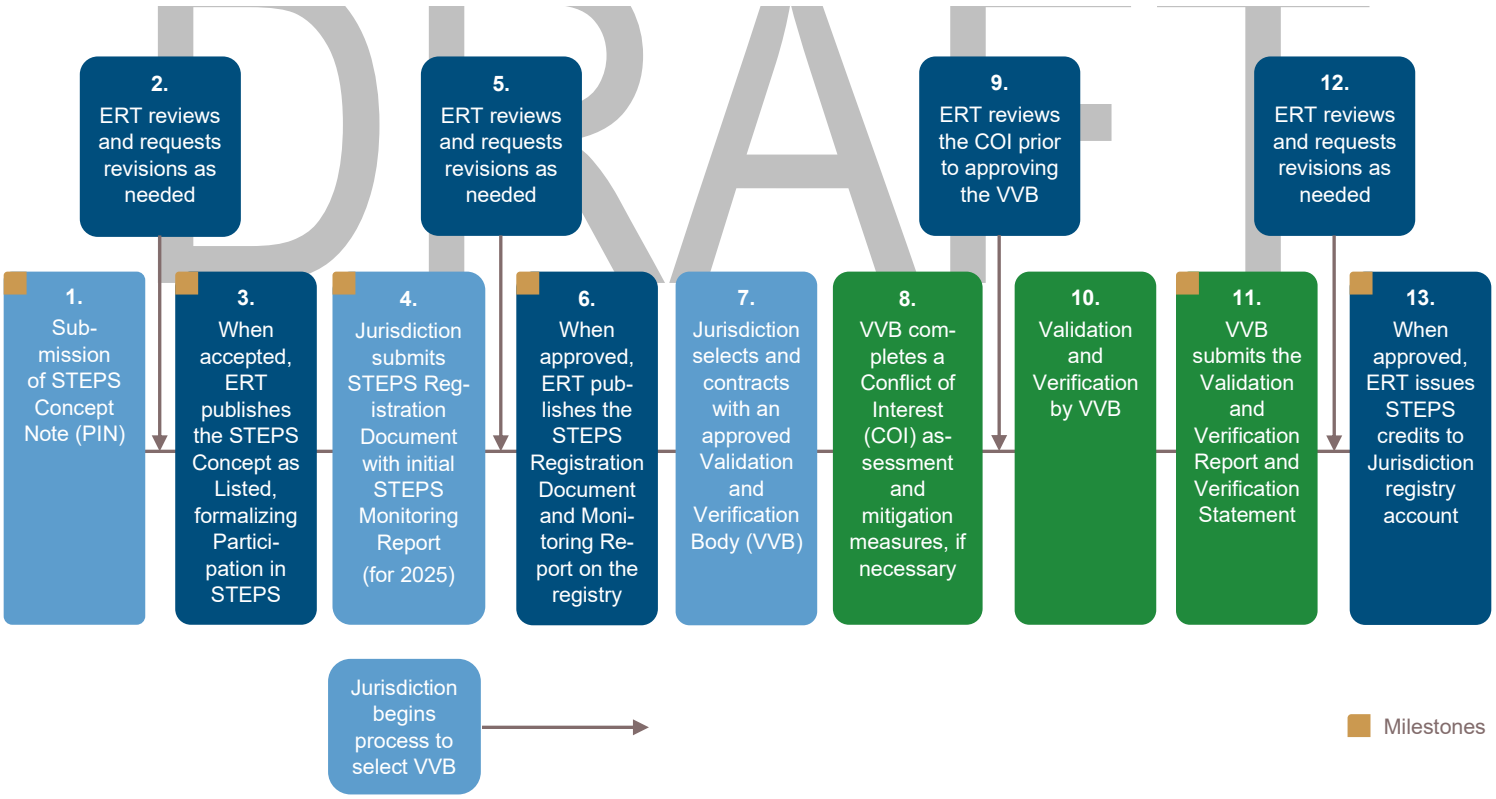
In addition to Winrock's Conflict of Interest policy for the Board and staff, STEPS requires that all approved Validation and Verification Bodies meet comprehensive Conflict of Interest requirements as detailed in the Attestation of Validation and Verification Body, which they must execute to be a STEPS approved VVB. STEPS-approved Validation and Verification Bodies must also execute a Participant-specific STEPS Validation and Verification Conflict of Interest Document for each reporting period verified, which ERT reviews and approves.

2 STEPS CYCLE

2.1 PROCESS FOR INITIAL REGISTRATION, VALIDATION, VERIFICATION, AND ISSUANCE

The process to participate in STEPS requires submission and acceptance of a STEPS Concept, a successful initial Validation and Verification of the STEPS Registration document and STEPS Monitoring Report. An applicant shall be a national government entity or an authorized designee thereof in accordance with the requirements set forth in Section 3 and will hereafter be referred to as a Participant. Each Participant shall complete the following actions prior to receiving credits.

Figure 1: STEPS Process for Initial Registration to Issuance



1. The Participant submits a STEPS Concept Note for review using the most recently published template on the STEPS website, which includes a non-technical summary of the GHG Program and other relevant information as listed in Appendix A.
2. ERT reviews the STEPS Concept for completeness and alignment with STEPS and conducts the BAU test. This screening results in (a) Program Listing with approval to proceed to Validation/Verification Body (VVB) selection, (b) requests for clarifications or corrections, or (c) rejection because the Program is ineligible or does not meet requirements of STEPS. If the screening includes requests for clarifications or corrections, the Participant may re-submit the STEPS Concept for further review. ERT reserves the right, in its sole discretion, to accept or reject a STEPS Concept at any time and for any reason during the review.
3. ERT accepts the STEPS Concept and posts the document publicly. Following posting, the Participant's STEPS Program is referenced as Listed.
4. The Participant submits the STEPS Registration Document, including BAU disclosures, and the initial STEPS Monitoring Report covering the initial calendar year(s) for a completeness check. The STEPS Registration Document and the STEPS Monitoring Report include information listed in Appendix A.
5. ERT reviews the STEPS Registration Document and STEPS Monitoring Report for completeness and will request revisions as needed.
6. Once accepted, the STEPS Registration Document and STEPS Monitoring Report are ready for validation and verification. ERT will publish the STEPS Concept on the STEPS website along with the Program name, ID#, and location for a thirty (30) day public comment period for local and global stakeholders. Comments can be submitted via email to STEPS@winrock.org with an email subject line: "Comments on STEPS [PROGRAM NAME and/or PROGRAM ID#]". Comments will be forwarded to the Participant, the Validation and Verification Body (VVB) and reviewed by ERT.
7. The Participant selects a Validation and Verification Body from the list of approved STEPS Validation and Verification Bodies maintained on the STEPS website.

   The Participant solicits bids and negotiates contracts directly with the selected Validation and Verification Body.
8. The VVB completes a Conflict of Interest Assessment and mitigation measures, if conflicts are identified.
9. ERT reviews the COI Assessment and approves the VVB. ERT must approve the VVB prior to the start of validation and verification services based on proper accreditation, conflict of interest review, and rotation requirements.
10. The VVB conducts the validation of the STEPS Registration Document and the verification of the STEPS Monitoring Report in accordance with STEPS requirements in Section 10. Validation and the initial verification may occur simultaneously and must occur prior to issuance of STEPS Credits.
11. The VVB submits a validated GHG Program, verified Monitoring Report, Validation Report, Validation Opinion, Verification Report, and Verification Opinion to ERT.

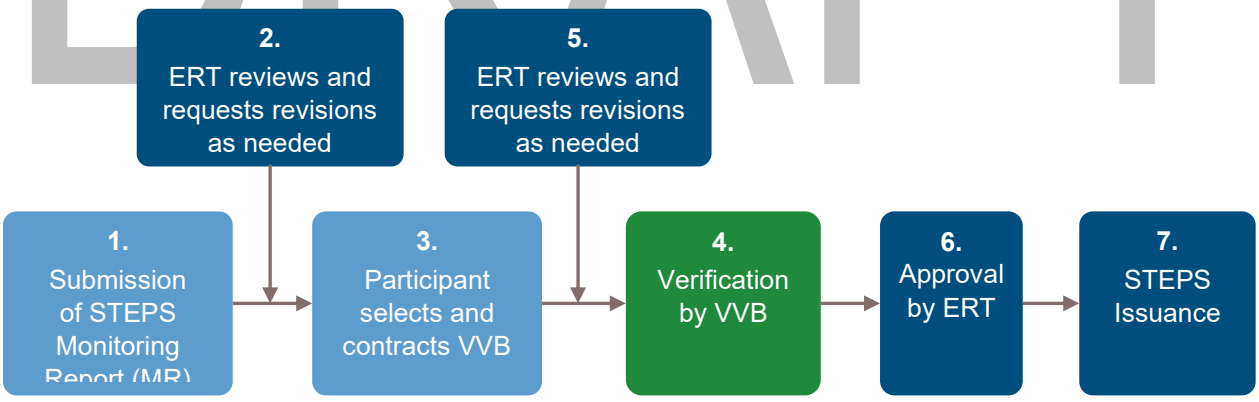
12. ERT reviews the GHG Program validation and verification documents as well as comments received from stakeholders. This results in (a) acceptance, (b) acceptance contingent on requested corrections or clarifications, or (c) rejection.

Upon acceptance of the submitted documents, ERT publishes the final validated GHG Program documents, verified Monitoring Report, Validation Report and Validation Opinion, Verification Report, Verification Opinion, and Supplemental Project Description (optional) on the registry. These documents contain the content necessary to enable third parties to assess the social and environmental safeguards and replicate the GHG emission reductions calculations (including baseline quantification). All content is made publicly available except for content deemed to be Commercially Sensitive Information (i.e., subject to confidentiality, proprietary, privacy and data protection restrictions).

13. ERT issues serialized credits to the Participant's registry account of the verified volume of emission reductions (less any deductions), and the Program is referenced in the Registry as Registered. The vintage year of the STEPS Credits corresponds to the year the GHG emission reductions occurred. The Participant can activate, transact, retire or cancel the issued STEPS credits (per the published fee schedule).

2.2 PROCESS FOR ONGOING VALIDATION, VERIFICATION, AND ISSUANCE

Figure 2: STEPS Process for ongoing validation, verification and issuance



The Participant submits a STEPS Monitoring Report to ERT for review following calendar years [1],[3] and [5] of each crediting period. A STEPS Monitoring Report may optionally be submitted following calendar years 2 and 4. At the start of each new crediting period, an updated STEPS Registration Document must also be completed and submitted by the Participant. The revised STEPS Registration Document is then also included in all following steps and is validated rather than verified.

The process steps 6-13 from section 2.1 are repeated.

2.3 CREDITING PERIOD AND RENEWAL

STEPS has a maximum of five fixed Crediting Periods (CPs) from calendar years 2026 to 2050. Fixed crediting periods do not preclude a Participant from starting mid-period (i.e. in Year 2 of CP-1) or starting in a future crediting period (CP-3), provided the Participant can obtain and prepare all historic data required to compile the Starting Period Emissions Rate. The applicable start and end dates for the five Crediting Periods are in **Table 1: STEPS Crediting Periods - Start & End** Dates below.

Table 1: STEPS Crediting Periods - Start & End Dates

STEPS CREDITING PERIODS	START	END
CP-1	01/01/2026	12/31/2030
CP-2	01/01/2031	12/31/2035
CP-3	01/01/2036	12/31/2040
CP-4	01/01/2041	12/31/2045
CP-5	01/01/2046	12/31/2050

MINIMUM PARTICIPATION

- Participants must remain enrolled in STEPS for a minimum of ten (10) consecutive years falling over two or more Crediting Periods; where Minimum enrollment includes inter alia completion of Monitoring, Reporting and Verification requirements and other applicable requirements as established under the Standard.
- Leaving the crediting program earlier than 10 years explicitly or through failure to adhere to the requirements required by the Standard will result in cancellation of Participant Credits held in the Performance Reserve, in a quantity determined by STEPS.

2.4 DOCUMENTATION REQUIREMENTS

Participants shall use the latest version of the template for each of the documents listed below when submitting documents to STEPS. Revised templates will be published three (3) months prior to the date that they are required for use and version updates will not be required once a document has been submitted to ERT or the Validation and Verification Body.

Templates of all forms are available on the STEPS website. All sections of the template must be completed. In some instances, an alternative form of reporting may be acceptable for certain portions of the requirements to prevent a Participant from duplicating efforts. Approved exceptions are noted in the templates and when appropriate, a reference to the alternative reporting may be included.

The STEPS documents are:

1. STEPS Concept Note
2. STEPS Registration Document
3. STEPS Monitoring Report
4. STEPS Validation and Verification Conflict of Interest Document
5. STEPS Validation Report
6. STEPS Verification Report
7. STEPS Variance Request Form

A summary of the information required in each is provided in Appendix A. Instructions and additional information are included in each document template.

2.5 TIMELINE AND DEADLINES

Proposed Participants may submit the STEPS Concept at any time. ERT will conduct a desktop review of the STEPS Concept and either accept the documentation or provide a request for revision within [20] business days of receipt.

Following acceptance and publication of the STEPS Concept, the Participant may submit the STEPS Registration Document and initial STEPS Monitoring Report.

The STEPS Registration Document must be submitted within eighteen (18) months after the acceptance of the STEPS Concept.

The initial STEPS Monitoring Report may cover multiple calendar years if the Participant submits a STEPS Concept with a start date prior to the year of submission. In all cases, each STEPS Monitoring Report shall document emission reductions (ERs) allocated to each calendar year.

Subsequent STEPS Monitoring Reports shall be submitted within twelve months following calendar years 1, 3, and 5 of each crediting period and shall document one calendar year or two calendar years. STEPS Monitoring Reports may optionally be submitted following calendar years 2 and 4 of the crediting period.

Upon submission of the Participant's documentation, ERT will conduct a desktop review of the STEPS Registration Document and/or STEPS Monitoring Report and either approve the documentation as complete or provide a request for revision within 30 business days of receipt.

The STEPS Validation and/or Verification Report and STEPS Verification Statement must be submitted to ERT within 18 months of the formal kickoff of the validation or verification unless an extension is granted in writing. Validation and verifications will follow the process outlined in Section 10.

Upon receipt of the STEPS Validation and/or Verification Report and STEPS Verification Statement, ERT will conduct a desktop review of the documents and either approve the documentation as complete or provide a request for revision within 40 business days.

Following a successful verification, ERT will issue serialized STEPS credits at the request of the Participant.

Stakeholders can submit comments and feedback to STEPS on an ongoing basis. In addition, subscribers to the STEPS listserv shall receive notification of the availability of new and relevant Participant documentation as it becomes publicly available to ensure that stakeholders have ample opportunity to submit comments to STEPS regarding these submissions. Comments submitted within 30 days of notice will be directed to the Participants to be addressed and will also be provided to the Validation and Verification Body at the beginning of Validation and Verification.

3 ELIGIBILITY REQUIREMENTS AND APPLICABILITY

3.1 ELIGIBLE ENTITIES

Eligible Participants are national governments or authorized designees thereof. The designee may be a ministry, regulatory body, electric utility, grid operator, or other entity with authority granted by the national government.

STEPS issues credits to Participants who will work with the private sector and other stakeholders to design and implement successful electric power sector transition programs, which may entail providing incentives for facility-level activities among other infrastructure and regulatory strategies that accelerate sectoral transition, ensure resilience and support national development objectives. The Standard does not prescribe how such activities must be incorporated and accounted for, and each Participant may determine the arrangement that is best suited to their national context while adhering to requirements to avoid double counting as described in Section 9 and relevant UNFCCC guidance. Participants must have policies in place to address the risk of double-issuance, i.e., that project or facility level activities and the host government do not receive emission reduction credits for the same emissions reductions.

3.1.1 National reporting requirements

The electric power sector must be included in the Participant's Nationally Determined Contributions (NDC). A specific sectoral target is not required, but the NDC must encompass electricity generation emissions.

3.1.2 Energy Transition Plan

The Participant shall submit an Energy Transition plan (Plan) as part of the initial documentation for crediting and relevant updates with each subsequent Monitoring Report. The Plan presented may be the same as or include parts of the Participant's NDC, Just Energy Transition Partnership Agreement, National Resource Management Plan or other plan.

The scope of the Plan includes relevant activities related to existing and planned grid connected plants, distributed energy/mini grids, and electricity imports and exports (hereafter encompassed in any references to "electric power sector", "the electric / grid", "grid emissions", or "grid connected").

The Plan must also include associated "Just Transition" elements, as detailed below.

The Plan should outline new and ongoing activities and initiatives to reduce electric power sector emissions including plans for the phase out of coal generation. The Plan must include specific actions, such as those listed below, the government's role in each action, the timeline for implementation, associated finance/investment needs (if known) and associated emission reductions and milestone dates. The Plan should also describe how the Actions contribute to the country's sustainable development goals. If the country does not have stated sustainable development goals, the UN Sustainable Development Goals (SDGs) can be used.

The Plan is expected to include activities to achieve improved sector-level emissions performance, such as the following (not exhaustive):

- Deployment of renewable energy generation (solar, wind, geothermal, sustainable hydropower, sustainable biomass)
- Retirement or reduced dispatch of fossil fuel generation
- Grid infrastructure improvements enabling renewable energy deployment and increased dispatch
- Demand-side efficiency measures reducing generation requirements
- Energy storage deployment to promote resilience & improve capacity factors
- Carbon Capture Use & Storage

In the Plan is expected to include a broad range of government-led policy and regulatory actions which may include the following:

- Enacting a carbon cap-and-trade, carbon tax, or similar system applied to the sources supplying electricity to the grid;
- Changing the dispatch sequence of the electric system manager, giving preference to lower emitting sources;
- Offering depreciation or other incentives and/or permitting reforms enabling the early retirement of coal-fired power plants;
- Providing enhanced financing for expansion and upgrade to the electric grid to better enable the development of large-scale renewable energy sources;
- Revising power bid and auction policies and reform of long-term power purchase agreements;
- Providing for or reforming power sector permitting to enable expedited deployment, connection, and/or upgrade of transmission lines or fast-track permitting for the development of new renewable energy supplies;
- Providing incentives (tax benefits, direct subsidies or technical assistance) for the installation of distributed renewable energy resources;
- Establishing energy efficiency standards for lighting and appliances, electric motors and updating buildings codes;
- Supporting carbon capture and sequestration technologies and activities within the Sector.

As a sectoral crediting program, STEPS aims to encourage long-term shifts in policies and regulations to accelerate the transition to a decarbonized electric sector on a trajectory consistent with Paris Agreement temperature goals. A wide range of activities can lead to lower emissions from the sector, and STEPS aims to incentivize and enable as many as feasible. All activities that reduce emissions in the electric power sector can contribute to lowering emissions to levels that would qualify for crediting.

JUST TRANSITION ELEMENTS OF THE PLAN MUST INCLUDE DETAILS REGARDING:

- Labor and Workforce Development: Retraining, upskilling, and education programs for impacted workers and communities to transition from fossil fuel industries to high quality green jobs
- Social Protection and Safety Nets: Support for vulnerable workers and communities by providing income support, pension protection and transition allowances / compensation
- Energy Access and Affordability: Ensure the transition provides affordable, reliable energy access for all by investing in new sustainable infrastructure in affected regions including repurposing existing infrastructure for decarbonization efforts

The STEPS Environmental, Governance and social safeguards in Section 8 are applicable to all of the government-led actions (STEPS Actions) as detailed in the Plan for the development and implementation of the Plan. Implementation of private sector activities is under the auspices of relevant and applicable environmental and social safeguard mechanisms (e.g. government - mandated environmental and social impact assessments; World Bank / IFC Safeguards etc).

3.2 GEOGRAPHIC SCOPE

STEPS is applicable globally for Participants that meet eligibility and other requirements as established in the Standard.

3.3 LANGUAGE

English is the operating language of STEPS. All standards, tools, Registration and Monitoring reporting templates and reports, validation and verification reports and opinions, and other documents required shall be in English.

3.4 UNIT OF MEASURE

The STEPS unit of measure is a GHG emission reduction verified pursuant to STEPS requirements, issued as serialized STEPS Credits, denominated in metric tons of CO_2e.

3.5 NO EX-ANTE CREDITING

A STEPS credit is the result of actions that yields quantifiable, verified emission reductions. ERT will not issue STEPS credits for ERs that have not yet occurred or that have not yet been verified ex-post by a STEPS-approved Validation and Verification Body.

3.6 REGULATORY COMPLIANCE

In each STEPS Monitoring Report, Participants must attest that STEPS Actions being taken under the Plan to achieve ERs comply with applicable laws and regulations. Any known instances of non-compliance or violations with laws, regulations, or other legally binding mandates directly related to STEPS Actions in the Plan must be disclosed in the STEPS Monitoring Report along with corrective or preventive plans or actions.

3.7 EARLIEST CREDITING PERIOD START DATE AND VINTAGE

Participants may claim STEPS credits that were achieved for emission reductions up to two (2) calendar years prior to the year of acceptance of the STEPS Concept, provided all other requirements under STEPS are met for each year of crediting. For example, a Participant that has its STEPS Concept accepted in 2028 can claim ERs as early as calendar year 2026 provided all other measurement, monitoring, reporting and verification (MRV) and safeguards requirements are met.

4 ADDITIONALITY AND PERFORMANCE STANDARD CREDITING

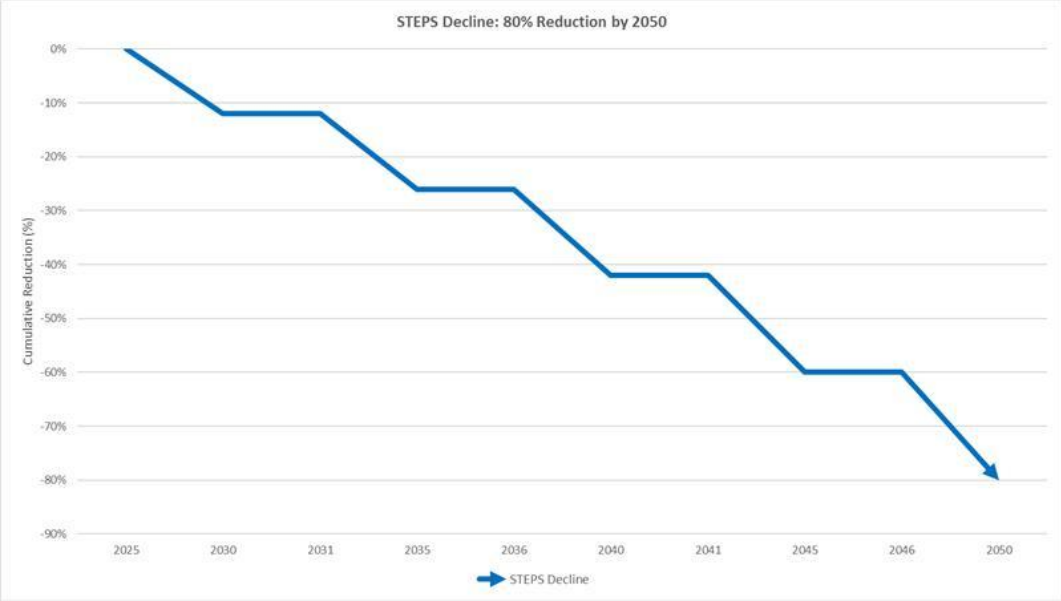
4.1 ADDITIONALITY

4.1.1 Global Performance Standard

STEPS uses a performance-based crediting approach whereby additionality is based on demonstrating improved electric power sector emission performance beyond an ambitious, continuously declining emission rate Performance Standard (crediting level or baseline), which is designed to contribute to achievement of the long-term temperature goals of the Paris Agreement. The Performance Standard is country-specific and beyond Business as Usual (BAU).

The Emission Rate Crediting Approach requires a Participant to achieve progressively lower electric power sector emission rates (in grams of CO_2 per kwh), which inevitably results in lower total emissions. The Performance Standard (crediting baseline) is based on a reduction of 80% of the starting 2025 sectoral emissions rate by 2050. See detail in **Error! Reference source not found.**.

Figure 3: STEPS Global Performance Standard



4.1.1.1 ADDITIONALITY FUNCTION OF THE INDEX ADJUSTMENT TO THE GLOBAL PERFORMANCE STANDARD AND THE BAU TESTS

A single global decline rate applied uniformly would be additional for some countries and non-additional for others. Countries with low fossil fuel dependence, abundant renewable resources, and strong institutional capacity may be capable of meeting a steeper trajectory under BAU conditions, meaning an unadjusted standard would not represent a genuine departure from expected trends. Conversely, applying a uniform ambitious rate to countries with structural constraints, high capital costs, and limited grid infrastructure risks setting a threshold that cannot be demonstrated as achievable above BAU—undermining credibility without improving environmental integrity.

STEPS seeks to address this through a combination of complementary features. The global performance standard establishes a Paris-aligned aggregate trajectory grounded in what the sector must collectively achieve by 2050. The Index then adjusts that trajectory to each country's structural position, scaling ambition to reflect genuine feasibility. The BAU tests applied forward and backward for each crediting period provide the quantitative demonstration that the resulting country-specific Performance Standard (crediting baseline) sits below projected BAU trajectories at the time of registration. Taken together and renewed at the start of each five-year crediting period as conditions and data evolve, these elements are designed to produce a performance standard that is simultaneously ambitious, country-differentiated, and defensible as additional. No single element achieves this alone; the robustness of the additionality determination rests on how they function in combination.

The Index produces a composite score on a normalized 0-100 scale. A score of 50 implies no adjustment to the global decline rate. Countries scoring above 50 indicating relatively more favourable conditions for decarbonisation are subject to a steeper required decline, whereas those scoring below 50 face a less steep requirement.

4.1.2 Country-specific Adjustment to the Global Performance Standard

The global emission reduction trajectory that establishes the performance standard is adjusted for each Participating country by applying a standardized index. The STEPS Index Score is the Participant's composite score as calculated based on three components that are the most highly correlated to the ease or difficulty to achieve sectoral decarbonization:

- **RENEWABLE ENERGY POTENTIAL.** (35% weight): Capacity for renewable energy growth based on current mix, resources, and pipeline
- **FOSSIL FUEL DEPENDENCE.** (25% weight): Degree of fossil fuel lock-in through system, economy, and planned capacity
- **TRANSITION CAPACITY.** (40% weight): Ability to execute the transition based on system, infrastructure, economics, policy, equity

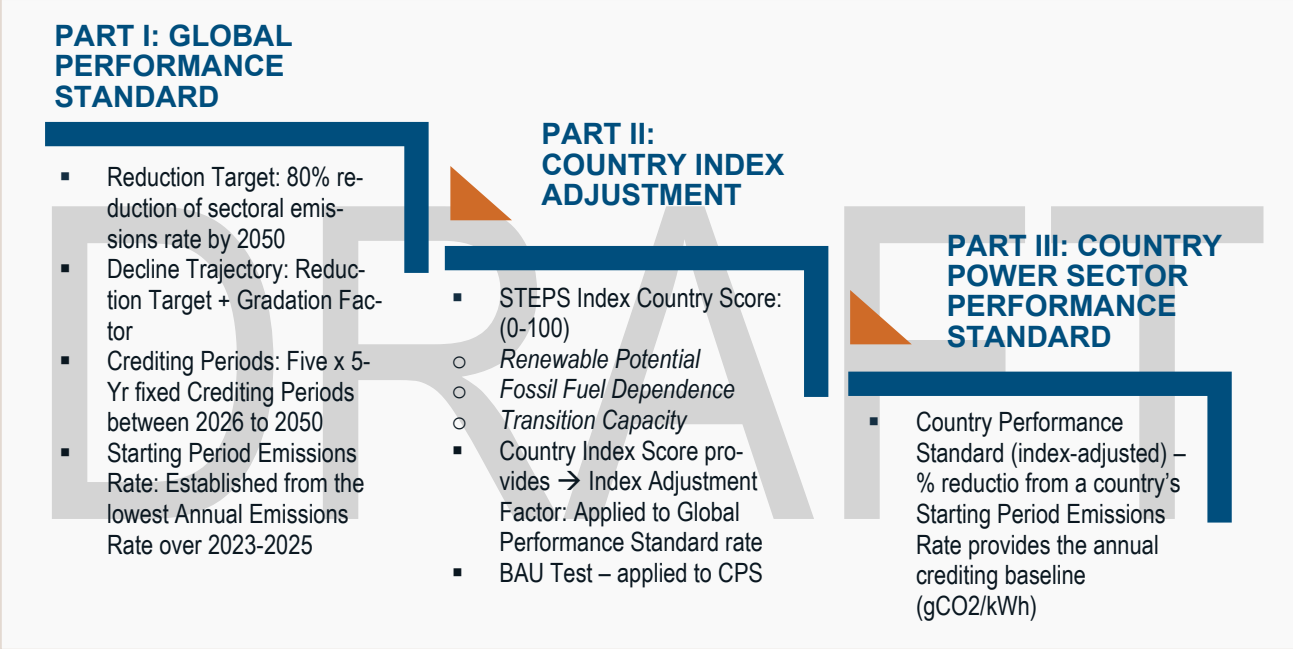
4.1.3 Beyond BAU Tests

STEPS then applies two complementary, standardized methods to demonstrate that the country-specific performance standard (crediting baseline) is below Business as Usual (BAU):

1. **HISTORIC TREND TEST.** A backward-looking assessment comparing each Participant's STEPS Performance Standard against observed historic change in electric power sector emission rates over three-, five-and ten-year reference periods.
2. **CAPACITY PIPELINE TEST.** A forward-looking assessment that projects each Participant's electric power sector emissions rate over the relevant crediting period based on existing and projected change in electricity generation capacity.

4.2 ESTABLISHING THE COUNTRY-SPECIFIC PERFORMANCE STANDARD (BASELINE)

The country-specific performance standard (crediting baseline) is calculated as detailed below, taking as a starting point the Global Performance Standard (4.2.1), which is adjusted based on the STEPS Index Score for each country (4.2.2). The BAU tests (4.2.3) are applied to ensure the result of the application of the STEPS Index results in a baseline that is below BAU. As a final step, the Starting Period Emissions Rate (4.2.4) is calculated as the basis of the annual % reduction of the crediting baseline.



4.2.1 Global Performance Standard – Sectoral Emissions Rate (pre-Index Adjustment)

The Global Performance Standard (GPS) sectoral emissions rate (r_i) for a given crediting period is:

Equation 1: Global Performance Standard

$$\mathbf{r_i = r_0 + (i - 3) \times \delta}$$

WHERE

r_i	Global Performance Standard (GPS) rate for Crediting Period i
r_0	3.2% (the linear reduction rate achieving 80% reduction over 25 years)
i	Crediting Period Number (1 through 5).
δ	Graduation Delta (0.4%).

Figure 4: STEPS Global Performance Standard Rates

CREDITING PERIOD	YEAR	PRE-GRADUATION LINEAR REDUCTION RATE		GPS - POST-GRADUATION REDUCTION RATE	
		%/Yr	Cum. %	%/Yr	Cum. %
CP1	2026	3.2%	3.2%	**2.4%**	**2.4%**
	2027	3.2%	6.4%	**2.4%**	**4.8%**
	2028	3.2%	9.6%	**2.4%**	**7.2%**
	2029	3.2%	12.8%	**2.4%**	**9.6%**
	2030	3.2%	16%	**2.4%**	**12%**
CP2	2031	3.2%	19.2%	**2.8%**	**14.8%**
	2032	3.2%	22.4%	**2.8%**	**17.6%**
	2033	3.2%	25.6%	**2.8%**	**20.4%**
	2034	3.2%	28.8%	**2.8%**	**23.2%**
	2035	3.2%	32%	**2.8%**	**26%**
CP3	2036-2040	16%	48%	**16%**	**42%**
CP4	2041-2045	16%	64%	**18%**	**60%**
CP5	2046-2050	16%	80%	**20%**	**80%**

4.2.2 CALCULATING COUNTRY-SPECIFIC PERFORMANCE STANDARD

4.2.2.1 INDEX-ADJUSTED COUNTRY PERFORMANCE STANDARD (CPS)

The STEPS Index translates country-specific structural conditions into a quantitative adjustment to the global performance standard, resulting in a country-specific performance standard (crediting baseline). Its purpose is to ensure that the required emissions rate decline reflects each country's ease or difficulty of electric power sector decarbonisation, rather than applying a uniform trajectory to countries with fundamentally different resource endowments, fossil fuel dependencies and institutional capacities.

Equation 2: Country Performance Standard (CPS) – Index Adjusted

$$\mathbf{CPS_t = GPS_t \times IAF_c}$$

WHERE

$\mathbf{CPS_t}$	Country Performance Standard in year t of a Crediting Period; **%**
$\mathbf{GPS_t}$	Global Performance Standard for year t of a Crediting Period; $\mathbf{gCO_2/kWh}$ - Provided in Figure 4;
$\mathbf{IAF_t}$	Index Adjustment Factor for Country c; **Numerical**

Illustrative example →

County A's Country Performance Standard (in Figure 5) in each year of CP1 is calculated by multiplying the GPS rate for the given year (provided in Figure 4) by Country A's IAF (Index Adjustment Factor) for CP1 = ***0.943*** *(per Equation 3).*

Figure 5: CPS Reduction Rate - Illustrative Example Country A

CREDITING PERIOD	YEAR	GPS - POST-GRADUATION REDUCTION RATE		EXAMPLE - CPS – INDEX ADJUSTED REDUCTION RATE	
		%/Yr	Cum. %	%/Yr	Cum. %
CP1	2026	2.4%	2.4%	***2.26%***	***2.26%***
	2027	2.4%	4.8%	***2.26%***	***4.52%***

	2028	2.4%	7.2%	***2.26%***	***6.78%***
	2029	2.4%	9.6%	***2.26%***	***9.04%***
	2030	2.4%	12%	***2.26%***	***11.3%***

A country-specific index-adjusted Country Performance Standard (crediting baseline) for a given year is:

$$\text{Index-Adjusted Rate}_t = r_i\ t \times (\text{STEPS Index Score} \div 50)$$

Equation 3: Index Adjustment Factor

$$IAF_{CPi} = IS_{CPi,} / 50$$

WHERE

IAF_{CP}	Country-specific Index Adjustment Factor for Crediting Period i; **Numerical**
IS_{CP}	Country-specific Index Score for a Crediting Period i; **0-100**
50	Mid-point normalization

Where the STEPS Index Score is the Participant's composite score from the STEPS Index applicable for the given Crediting Period. The Participant Index scores are updated at the start of each crediting period to reflect changes in underlying data and are available on the STEPS website or directly from ERT.

4.2.2.2 CALCULATING COUNTRY INDEX SCORE

The STEPS Index score for each country is computed as a hierarchical weighted sum of normalized indicator values, with a conditional system-size adjustment applied at the sub-category level. The Index aggregates upward from indicators to sub-categories to pillars to the final country score:

Equation 4: STEPS Total Index Score

$$S_c = (RE_c \times 35\%) + (FF_c \times 25\%) + (TC_c \times 40\%)$$

WHERE

S_C	Country-specific Index Adjustment Factor for Crediting Period i; **Numerical**
RE_C	Renewable Energy Potential pillar score for country c; **0-100**
FF_C	Fossil Fuel Dependence pillar score for country c; **0-100**
TC_C	Transition Capacity pillar score for country c; **0-100**

Equation 5: Index Scoring Equations

$$\mathbf{STEPS_c = \sum_{p=1}^{3} W_p \times \sum_{s=1}^{n_p} w_{p,s} \times S_{(c,p,s)}}$$

Each sub-category score is the indicator-weighted average of its normalized indicator values, optionally multiplied by a country-specific System Size Factor where the sub-category captures size-dependent characteristics:

$$S_{c,p,s} = \left(\sum_{i=1}^{m_{p,s}} w_{p,s,i} \times \tilde{n}_{c,p,s,i} \right) \times \left[1 + A_{p,s}(SSF_c - 1) \right]$$

where $A_{p,s} \in \{0, 1\}$ is a binary application flag determining whether the System Size Factor multiplier is applied to sub-category *s* of pillar *p*. The application matrix is fixed by the methodology and is shown below.

The System Size Factor itself is a country-specific multiplier computed from the country's total electricity generation:

$$SSF_c = 1 + \alpha \times \frac{\log G_c - \log \tilde{G}}{(\log G_{max} - \log G_{min})}$$

Centering on the panel-wide median means SSF = 1 for the median-sized system (no adjustment). Larger systems receive an upward adjustment (SSF > 1); smaller systems receive a downward adjustment (SSF < 1). The taking of the logarithm of generation reflects the diminishing marginal effect of size — the difference between a 100 TWh and a 1,000 TWh system is treated as comparable in significance to the difference between 10 TWh and 100 TWh.

WHERE

$STEPS_c$	STEPS Index score for country **c** (range 0–100)
W_p	Weight of pillar **p** (W_{RE} = 0.35, W_{FF} = 0.25, W_{TC} = 0.40)
$w_{p,s}$	Weight of sub-category s within pillar **p**.
$w_{p,s,i}$	Weight of indicator **i** within sub-category **s** of pillar **p.**
$S_{c,p,s}$	Sub-category score for country **c** (after any system size adjustment).
$\tilde{n}_{c,p,s,i}$	Normalized value (0–100) of indicator **i** for country **c**
$A_{p,s}$	Application flag (1 = SSF applied to this sub-category, 0 = not applied)
SSF_c	System Size Factor for country **c**
α	System Size Sensitivity parameter (currently α = 0.5)
G_c	Total electricity generation (TWh) of country **c**
$\tilde{G}, G_{min}, G_{max}$	Panel-wide median, minimum, and maximum of total generation
n_p	Number of sub-categories in pillar **p**
$m_{p,s}$	Number of indicators in sub-category **s** of pillar **p**

All weight tiers sum to 100% within their parent: pillar weights sum to 1 across the three pillars; sub-category weights sum to 1 within each pillar; and indicator weights sum to 1 within each sub-category. Sub-category and indicator weights are documented in the data and methods section.

4.2.2.3 INDEX PILLAR STRUCTURE AND RATIONALE

The Index is built from three pillars, each capturing a distinct dimension of relevant to assessing country conditions for power sector decarbonization.

PILLAR	DESCRIPTION	WEIGHT

RENEWABLE ENERGY POTENTIAL	Captures the country's existing renewable generation footprint, the underlying physical resource base, and the forward-looking renewable capacity build. Higher scores indicate greater potential for clean electricity expansion.	**35%**
FOSSIL FUEL DEPENDENCE	Measures the country's lock-in to fossil fuels through its current generation mix, fiscal exposure to coal and gas rents, and the fossil capacity already in development. The pillar is constructed so that a higher score indicates lower dependence — i.e., better positioned to transition.	**25%**
TRANSITION CAPACITY	Reflects structural and institutional readiness to execute the power sector transition — covering demand and access trajectory, grid and market infrastructure, financing conditions, the policy enabling environment, and broader human development.	**40%**

RENEWABLE ENERGY POTENTIAL (35% WEIGHT) measures a country's potential for increasing its share of electricity generation from renewable technologies. It combines the current renewable share of generation and its recent growth trajectory (the system profile), the physical endowment of solar, wind, and undeveloped hydropower resources, and the share of renewable capacity currently under construction. The rationale is that countries with abundant resources, growing RE deployment, and an active development pipeline face lower structural barriers to meeting a demanding performance standard.

FOSSIL FUEL DEPENDENCE (25% WEIGHT) measures the degree of lock-in to fossil generation across three dimensions: the current and trending fossil share of generation and average age of the fossil fleet (system profile), the economic reliance on coal and gas rents as a share of GDP (economic reliance), and the share of fossil capacity currently under construction (pipeline). Fleet age is included because an aging fossil fleet is closer to retirement and thus represents diminishing lock-in; conversely, large new-build pipelines represent deepening structural entrenchment. GDP reliance on fossil rents captures the political economy constraints on transition beyond the power sector alone.

TRANSITION CAPACITY (40% WEIGHT) is the broadest pillar and assesses whether a country has the prerequisite conditions to execute a transition, regardless of resource endowment or current fuel mix. It comprises five equally weighted sub-categories: the system profile (electricity demand growth rate, electricity access), infrastructure quality (transmission and distribution losses, market structure, supply diversity), economic conditions (GDP per capita, cost of capital

as measured by solar WACC), policy environment (RISE regulatory score, existence and coverage of carbon pricing), and equity considerations (Human Development Index, ND-GAIN readiness, per capita electricity consumption, and per capita emissions). Transition Capacity receives the highest weight because empirical analysis of historical grid decarbonization rates indicates that institutional and financial capacity is the binding constraint in most cases—countries with strong enabling environments decarb faster even when resource endowments are similar.

4.2.2.4 WEIGHTING

Category and indicator weights are set in the STEPS Index Technical Document and are not subject to participant modification. The pillar weights—RE Potential 35%, FF Dependence 25%, Transition Capacity 40%—reflect the relative explanatory importance of each dimension for observed variation in historical decarbonization rates. Within pillars, category weights are generally equal, with indicator weights reflecting data availability, reliability, and conceptual distinctness. Index scores and underlying data are published by ERT and have been subjected to a review process undertaken by ERT during the development of STEPS.

4.2.2.5 DATA METHODS AND SOURCES

4.2.2.5.1 Indicator normalization

Raw indicator values are not directly comparable: they have different units, ranges, and conventions for which direction represents better performance. Each indicator is rescaled to a common 0–100 range using min-max normalization across the country panel, with the direction inverted for indicators where lower values represent better performance:

Equation 6: Index normalization

$$\tilde{n}_{c,p,s,i} = \begin{cases} 100 \times \dfrac{x_{c,p,s,i} - x_{min,p,s,i}}{x_{max,p,s,i} - x_{min,p,s,i}} & \text{if } d_{p,s,i} = +1 \\ 100 \times \dfrac{x_{max,p,s,i} - x_{c,p,s,i}}{x_{max,p,s,i} - x_{min,p,s,i}} & \text{if } d_{p,s,i} = -1 \end{cases}$$

WHERE

$x_{c,p,s,i}$	Raw value of indicator i for country c.
$x_{min,p,s,i}$, $x_{max,p,s,i}$	Panel-wide minimum and maximum of indicator i across all countries.

$d_{p,s,i}$	Direction flag: +1 where higher values are better, –1 where lower is better.

Indicator data are drawn from a range of international data sets that are published under a Creative Commons license. ERT will undertake periodic reviews of data sources for suitability and coverage and update accordingly.

A. RENEWABLE ENERGY POTENTIAL

SYSTEM PROFILE – 50%
System Size Factor Adjustment Applied – Y
Current share of generation from renewable sources and the recent growth trajectory of renewable output.

ID	INDICATOR	WEIGHT	UNIT	INVERTED	DATA SOURCE	YEAR
RE A.1	**Gen Mix (RE %)**	50%	% of total generation	Yes	Ember	Latest available (2022–2024)
Share of total electricity generation from renewable sources.						
RE A.2	**RE Trend (CAGR)**	50%	% (CAGR)	No	Ember	5-yr period ending in latest available year (2022–2024)
Five-year compound annual growth rate of renewable electricity generation, in TWh.						

RESOURCE ENDOWMENT – 20%
System Size Factor Adjustment Applied – Y
Natural availability of solar, wind, and hydro resources, reflecting the physical ceiling on renewable expansion.

ID	INDICATOR	WEIGHT	UNIT	INVERTED	DATA SOURCE	YEAR
RE B.1	**Solar Potential**	40%	kWh/kWp/day	No	ESMAP / WBG — Global Solar Atlas	Latest available
Average practical photovoltaic potential (PVOUT Level 1), accounting for terrain, land use, and typical system losses.						
RE B.2	**Wind Potential**	40%	Score (unitless, GW × CF)	No	NREL — CFDDA Wind Supply Curves	Latest available

Quality-adjusted onshore and near-shore wind score weighting installable capacity by capacity factor and proximity to load centers (onshore: 0–50 mi from load; offshore: 5–20 nm from shore).

RE B.3	**Hydro Potential**	20%	% of feasible potential developed	No	World Bank	2021

Share of economically feasible hydropower potential currently developed. Lower values indicate greater remaining headroom for new hydro build.

PIPELINE – 30%
System Size Factor Adjustment Applied – Y
Renewable capacity currently under construction relative to the operating fleet – a forward-looking signal of build momentum.

ID	INDICATOR	WEIGHT	UNIT	INVERTED	DATA SOURCE	YEAR
RE C.1	**RE Pipeline (%)**	100%	% of operating capacity	No	Global Energy Monitor (GEM)	Latest available (March 2026 release)

Renewable capacity under construction as a percentage of total operating capacity.

B. FOSIL FUEL DEPENDENCE

SYSTEM PROFILE – 50%
System Size Factor Adjustment Applied – Y
Current fossil generation share, the recent change in fossil output, and the average age of the operating fossil fleet (an older fleet is closer to end-of-life retirement).

ID	INDICATOR	WEIGHT	UNIT	INVERTED	DATA SOURCE	YEAR
FF A.1	**Gen Mix (FF %)**	40%	% of total generation	Yes	Ember	Latest available (2022–2024)

Share of total electricity generation from fossil fuels — coal, gas, oil, and other manufactured fuels.

FF A.2	**FF Trend (Change)**	40%	% change over 5 years	Yes	Ember	5-yr period ending in latest available year (2022–2024)

Five-year percentage change in fossil electricity generation. A decline indicates the country is already moving away from fossil generation.

FF A.3	**Fleet Age**	20%	Years	No	Global Energy Monitor (GEM)	Latest available

Capacity-weighted average age of the operating fossil generation fleet. Older fleets are nearer to retirement and easier to displace.

Economic reliance – 20%
System Size Factor Adjustment Applied – Y
Macroeconomic exposure to coal and natural gas extractive rents — a structural barrier to phase-down.

ID	INDICATOR	WEIGHT	UNIT	INVERTED	DATA SOURCE	YEAR
FF B.1	**Coal Rent (% GDP)**	50%	% of GDP	Yes	World Bank	2021
Coal rents as a percentage of GDP, capturing macroeconomic dependence on coal extraction.						
FF B.2	**Gas Rent (% GDP)**	50%	% of GDP	Yes	World Bank	2021
Natural gas rents as a percentage of GDP, capturing macroeconomic dependence on gas extraction.						

PIPELINE – 30%
System Size Factor Adjustment Applied – Y
Fossil capacity under construction relative to the operating fleet — a forward-looking signal of continued fossil build.

ID	INDICATOR	WEIGHT	UNIT	INVERTED	DATA SOURCE	YEAR
FF C.1	**FF Pipeline (%)**	100%	% of operating capacity	Yes	Global Energy Monitor (GEM)	Latest available (March 2026 release)
Fossil capacity under construction as a percentage of total operating capacity.						

C. TRANSITION CAPACITY

SYSTEM PROFILE – 20%
System Size Factor Adjustment Applied – Y
Forward-looking electricity demand growth and the current level of household electricity access.

ID	INDICATOR	WEIGHT	UNIT	INVERTED	DATA SOURCE	YEAR
TC A.1	**Demand CAGR**	80%	% (CAGR)	Yes	Ember	2017–2022
Five-year compound annual growth rate of national electricity demand. Lower growth indicates a more manageable transition challenge.						

TC A.2	**Electricity Access**	20%	% of population	No	World Bank	2022
Share of population with access to electricity.						

INFRASTRUCTURE – 20%
System Size Factor Adjustment Applied – Y
Quality and structure of the existing power system: grid losses, market design, and supply diversification.

ID	INDICATOR	WEIGHT	UNIT	INVERTED	DATA SOURCE	YEAR
TC B.1	**T&D Losses**	33%	% of output	Yes	World Bank	2022
Transmission and distribution losses as a percentage of total electricity output. Lower losses indicate a more efficient grid.						
TC B.2	**Market Structure**	33%	Score (1–10)	No	World Bank — Power Market Structure Database	Latest available
Composite score (1–10) of power market organization, capturing degree of unbundling, third-party access, and competitive market design.						
TC B.3	**Supply Diversity**	34%	Shannon Index	No	Ember	2012–2022
Shannon Diversity Index of the generation mix. Higher values indicate a more diversified portfolio and greater resilience to fuel-specific shocks.						

ECONOMIC – 20%
System Size Factor Adjustment Applied – N
Income level and the cost of capital for renewable investment — the financial conditions enabling the transition.

ID	INDICATOR	WEIGHT	UNIT	INVERTED	DATA SOURCE	YEAR
TC C.1	**GDP per Capita**	25%	USD PPP per capita	No	World Bank	2022
GDP per capita in PPP terms (current international dollars), as a proxy for fiscal and institutional capacity.						
TC C.3	**Cost of Capital (WACC)**	75%	% (WACC)	Yes	IRENA	2024
Weighted average cost of capital for utility-scale solar in the country, capturing financing conditions for renewable build-out.						

POLICY – 20%
System Size Factor Adjustment Applied – N
Strength of the renewable energy regulatory environment and the presence and coverage of carbon pricing instruments.

ID	INDICATOR	WEIGHT	UNIT	INVERTED	DATA SOURCE	YEAR
TC D.3	**RISE Score**	50%	Score (0–100)	No	ESMAP — RISE	Latest available
Regulatory Indicators for Sustainable Energy — Renewable Energy pillar score, measuring the strength of the renewable energy regulatory framework.						
TC D.4	**Carbon Price**	50%	Composite (Yes/No + % coverage)	No	World Bank — Carbon Pricing Dashboard	Latest available
Composite score reflecting whether a national carbon pricing instrument is in place and the share of national emissions covered.						
EQUITY – 20% System Size Factor Adjustment Applied – N Human development, climate readiness, and per-capita energy and emissions intensity — contextualizing the transition within development needs.						
ID	**INDICATOR**	**WEIGHT**	**UNIT**	**INVERTED**	**DATA SOURCE**	**YEAR**
TC E.1	**HDI Score**	25%	Index (0–1)	No	UNDP	Latest available
UNDP-HDI - Human Development Index, a composite of life expectancy, education, and income.						
TC E.2	**ND-GAIN Readiness**	25%	Index (0–1)	No	ND-GAIN	Latest available
Notre Dame – Global Adaptation Initiative Country Index Readiness score, measuring a country's ability to convert investment into adaptation actions.						
TC E.3	**Electricity Generation per Capita**	25%	MWh per capita	No	Ember	2022
Annual electricity demand per capita.						
TC E.4	**Emissions per Capita**	25%	tCO_2 per capita	No	Ember	2022
Annual power-sector CO_2 emissions per capita.						

4.2.3 Demonstration of Below Business-as-Usual (BAU)

STEPS demonstrates that the country-specific performance standard (crediting baseline) is below-BAU through two complementary methods, applied in sequence:

- **HISTORIC TREND TEST.** A backward-looking assessment comparing each Participant's STEPS Performance Standard against observed historic change in electric power sector emission rates over three-, five-and ten-year reference periods.
- **CAPACITY PIPELINE TEST.** A forward-looking assessment that projects each Participant's electric power sector emissions rate over the relevant crediting period based on existing and projected change in electricity generation capacity.

Both tests are required to support the below-BAU determination, and involve analysis first conducted by ERT and then a Participant during development of Program Documentation. Each test is described in detail below.

4.2.3.1 HISTORIC TREND TEST

- **DESCRIPTION:** ERT shall calculate the historical rate of decline in electric power sector emissions rate for all STEPS Countries using data from publicly available sources Ember Global Electricity Review. Each country's Index-Adjusted Performance Standard (measured in %, as set out in Section **Error! Reference source not found.**) is compared against observed change (%) over 3, 5 and 10-year historic reference periods prior to 2025.
- **UPDATE FREQUENCY:** ERT shall provide both country results and methodology at start of each CP, as part of the STEPS Index Technical Documentation
- **RESULTS:** ERT shall provide one of three possible determinations for each country, as described in **Error! Reference source not found.**

Table 2: STEPS Historic Trend Test

ERT DETERMINATION	LABEL	CONSEQUENCE
A Country-specific Performance Standard is steeper than all 3 reference periods	**PASS**	No further information required in Concept Note. Country proceeds directly to BAU-Pipeline Test in Registration Document
B Country-specific Performance Standard is steeper than 1 or 2 reference periods	**FLAG**	Country Participant must provide narrative explanation in Concept Note to explain influencing factors over historic reference periods (e.g. one-off plant closure).
C All three reference period rates are steeper than Country Performance Standard	**CHECK**	In addition to narrative explanation in the Concept Note, Country Participant is required to complete BAU-Pipeline Test at the Concept Note stage before proceeding to Registration Document.

4.2.3.2 CAPACITY PIPELINE TEST

- **DESCRIPTION:** At submission of Program Registration Document, or earlier at Concept Note (subject to determination of Historic Trend Test)
- ERT operates the STEPS Pipeline BAU Test. The test is based on publicly available global plant-level data from Global Energy Monitor's Global Integrated Power Tracker, latest quarterly release supplemented by Ember for calibration. For each country, the Test calculates projected BAU grid emissions rate over the forthcoming five-year period by:
    1. Assembling the current installed generation fleet, disaggregated by fuel type and technology, with associated nameplate capacity, historic capacity factors, emission factors and pipeline capacity additions and retirements.
    2. Applying status-tiered pipeline realization rates to plants in the construction and permitting pipeline to estimate expected capacity additions by fuel type within the projection time period;
    3. Applying confirmed public retirement dates to existing fleet assets to reflect expected capacity retirements; and
    4. Calculating projected annual electric sector emissions rate as projected annual CO_2 emissions divided by projected annual generation, expressed in gCO_2/kWh
- **UPDATE FREQUENCY:** ERT shall provide both country results and methodology at start of each CP, as part of the STEPS Index Technical Documentation
- **RESULTS:** ERT shall provide one of three possible determinations for each country, as described in Table 3: Capacity Pipeline Test.

Table 3: Capacity Pipeline Test

ERT DETERMINATION	LABEL	CONSEQUENCE
A Country Performance Standard is steeper than Capacity Pipeline projected rate	**PASS**	Indicates pass. Participant proceeds to provide required declarations
B Country Performance Standard is within 10% (+/-) of the Capacity Pipeline projected rate	**FLAG**	Conditional pass – subject to post-declaration determination (+/- 10%)
C Capacity Pipeline projected rate is steeper than Country Performance Standard (by more than 10%)	**CP1 Ineligible**	Participant is ineligible for the relevant crediting period. Either eligibility is reassessed at the next crediting period or the Participant may agree to a steeper target.

4.2.3.2.1 Participant Disclosure Requirements for the Capacity Pipeline Test

The scope of Participant disclosure is limited to information necessary to ensure the accuracy and completeness of the Capacity Pipeline Test calculation. Disclosure during the development stage supplements the global plant-level dataset used by ERT and corrects for known gaps or errors in that dataset.

Participants are not required to provide original generation or emissions monitoring data at this stage. Disclosure requirements are satisfied by the categories of information specified in Appendix A.

4.2.3.2.2 Validation of the Capacity Pipeline Test

VVBs are required to validate the completeness and accuracy of Participant's disclosures in the Below BAU Capacity Pipeline Test. The BAU validation scope includes:

- Confirming that all grid-connected and in-scope captive generation assets within the Participant's Sectoral Boundary (Chapter 5) are reflected in the disclosure;
- Confirming that pipeline plants reported are consistent with publicly available project documentation (commissioning records, grid connection agreements, power purchase agreements, or equivalent);
- Confirming that reported retirement dates are supported by regulatory or decommissioning documentation; and
- Confirming that reported capacity factors are consistent with technology norms and Participant-specific grid conditions, or that deviations are adequately justified.

Where the VVB identifies material discrepancies, the Participant must revise the disclosure and resubmit. The VVB Determination is documented in the Validation Report (Chapter 10)

4.2.4 Starting Period Emissions Rate and Annual Crediting Baseline

The Starting Period Emissions Rate (SPER) establishes the baseline level against which the required rate of reduction is calculated under the Performance Standard. The SPER is determined as the lowest of the country's Sectoral Annual Emissions Rate (AER) occurring in three calendar years 2023-2025.

Equation 7: Starting Period Emissions Rate

$$\mathbf{SPER} = \min\left(AER_{2023}, AER_{2024}, AER_{2025}\right)$$

WHERE

SPER	Starting Period Emissions Rate; $\mathbf{gCO_2/KWh}$
AER_{2023}	Annual Emissions Rate in **2023**; $\mathbf{gCO_2/KWh}$
AER_{2024}	Annual Emissions Rate **2024; $\mathbf{gCO_2/KWh}$**
AER_{2025}	Annual Emissions Rate in year **2025**; $\mathbf{gCO_2/KWh}$

Equation 8: Crediting Baseline in Year t (gCO2/kWh)

$$\mathbf{CB_t = SPER \times (1 - CPS_t)}$$

WHERE	
$\mathbf{CB_t}$	Crediting Baseline in year t of the Crediting Period; $\mathbf{gCO_2/kWh}$
$\mathbf{SPER}$	Starting Period Emissions Rate, fixed at Registration; $\mathbf{gCO_2/kWh}$
$\mathbf{CPS_t}$	Index-Adjusted Country Performance Standard for year t; **%**

5 CARBON ACCOUTING

STEPS has been developed in alignment with the 2006 Intergovernmental Panel on Climate Change (IPCC) guidance and guidelines endorsed by the Conference of the Parties to the UNFCCC (including subsequent refinements), except where other methods are explicitly allowed under the Standard.

5.1 GENERAL REQUIREMENTS

Within the energy sector, emission estimates are primarily derived by combining activity data with emission factors, supplemented, where applicable, by additional parameters such as the oxidation factor. The general calculation relationship is expressed as:

$$\text{Greenhouse Gas Emissions } (tCO_2e) = \text{Activity Data (units of activity)} \times \text{Emission Factor} \times \text{Oxidation Factor}$$

Where Activity Data is fuel consumption (in TJ, NCV basis), Emission Factor is in tCO_2/TJ, and Oxidation Factor accounts for incomplete combustion.

5.1.1 Sectoral Boundary

The STEPS Sectoral Boundary encompasses all electricity generation and associated CO_2 emissions within the national territory of the STEPS Program. This includes electricity generated for supply to the interconnected grid, electricity generated for own use by industrial or commercial facilities, and electricity generated by distributed sources. Where an electricity system involves cross-border trade, imports and exports of electricity are subject to adjustments to both generation and emissions totals in accordance with Section 5.4.

The Sectoral Boundary defines the scope of generation and emissions that are accounted for in the Annual Emissions Rate. The boundary is not static, it reflects the Participant's electricity sector as it exists in each calendar year. The Generation Capacity Register (see Table 8) tracks all installations within the boundary and records changes over time, including new installations entering commercial operation and retirements.

All electricity generation within the Participant's national territory is within the Sectoral Boundary, as described below:

a. **GRID-CONNECTED GENERATION.** All electricity generating installations connected to the interconnected grid, regardless of fuel type, technology, or size — including main activity

producers, combined heat and power installations, autoproducers, waste-to-energy installations, landfill gas and biogas installations, and installations combusting solid biomass, liquid biofuels, or waste.

b. **OFF-GRID – CAPTIVE INDUSTRIAL GENERATION.** Electricity generating installations with nameplate capacity of 1 MW or greater, regardless of fuel type, including captive industrial installations;

c. **OFF-GRID – DISTRIBUTED GENERATION.** Electricity generating installations with nameplate capacity below 1 MW, regardless of fuel type. Distributed generation is within scope and shall be accounted for at the aggregate level. Where aggregate distributed generation represents more than 5% of national electricity production, it shall be quantified using documented estimation methods proposed by the Participant in the Registration Document.

The 1 MW threshold distinguishes individually identifiable installations (at or above 1 MW) from distributed generation accounted for in aggregate (below 1 MW). The Participant may propose an alternative threshold where this would better support the objective of comprehensive coverage of the Sectoral Boundary, for example, a lower threshold in a small-island system where sub-1 MW generators are collectively material, or a higher threshold where data collection infrastructure does not yet extend to all installations above 1 MW, subject to a documented plan to extend coverage. Any alternative threshold is subject to approval by ERT and validation by the VVB.

Imports and exports of electricity and associated emissions are not within the Sectoral Boundary as defined (which covers domestic generation). They are subject to adjustments applied to the AER calculation (per section 5.4).

The activities within the STEPS Sectoral Boundary correspond principally to IPCC source category 1.A.1.a (Main Activity Electricity and Heat Production) and, for autoproducers, to portions of 1.A.2 (Manufacturing Industries and Construction) and 1.A.4 (Other Sectors). The data used under STEPS is the same data used for national inventory reporting, fuel consumption by type and electricity generation by source. The difference is organisational, where IPCC convention attributes autoproducer emissions to the sector in which the generation occurs, whereas STEPS includes all electricity generation within a single boundary to ensure the AER reflects total national electricity production.

5.1.2 Scope of Gases

Carbon dioxide (CO_2) is the primary greenhouse gas quantified under STEPS. Methane (CH_4) and nitrous oxide (N_2O) emissions from fuel combustion for electricity generation are typically less than 1% of CO_2 emissions from the same source and are excluded from the Sectoral Boundary.

Excluded from the Sectoral Boundary: indirect emissions, including upstream fuel production and processing emissions, transmission and distribution losses (as an emission source), and construction-related emissions.

5.1.3 Accounting Principles

STEPS affirms a set of guiding principles, based on the International Organization for Standardization (ISO) 14064 Part 2 (2019) were utilized in the development of this standard.

Table 4: Core GHG Accounting Principles

RELEVANCE	Select the GHG sources, GHG sinks, GHG reservoirs, data, and methodologies appropriate to the needs of the intended user.
COMPLETENESS	Include all relevant GHG emissions and removals. Include all relevant information to support criteria and procedures.
CONSISTENCY	Enable meaningful comparisons in GHG-related information. Use consistent methodologies for meaningful comparisons of emissions over time. Transparently document any changes to the data, boundary, methods, or any other relevant factors.
ACCURACY	Reduce bias and uncertainties as far as is practical.
TRANSPARENCY	Disclose sufficient and appropriate GHG-related information to allow intended users to make decisions with reasonable confidence. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.
CONSERVATIVENESS	Use conservative assumptions, values, and procedures to ensure that GHG emission reductions or removals are not overestimated.

Table 5: Core GHG Accounting Principles (Adapted for STEPS)

RELEVANCE	Activity data, emission factors, and methodologies shall be appropriate to the electricity sector and to the Participant's national context
COMPLETENESS	All electricity generation and all associated CO_2 emissions within the Sectoral Boundary shall be accounted for, either through plan-level monitored data or at the national level through the EESB.
CONSISTENCY	The same methodologies shall be used across all years within a crediting period. Where methodological changes are necessary, they shall be documented transparently and subject to audit.
ACCURACY	Bias and uncertainties shall be reduced as far as is practical. Uncertainty in calculating annual electricity sector emissions shall be quantified for individual parameters and subject to maximum permissible uncertainty thresholds.
TRANSPARENCY	Data sources, calculation methods, assumptions, and any deviations from requirements established by STEPS, or standard practice, shall be disclosed. Documentation shall be sufficient for the VVB to replicate all relevant calculations.
CONSERVATIVENESS	Where data is incomplete or uncertain, conservative assumptions, values, and procedures shall be applied such that GHG emission reductions are not overestimated.

5.1.4 Relationship to International Reporting Frameworks

STEPS recognizes the importance of international reporting of national greenhouse gas emissions by sector and the use of best practices in compilation and disclosure, whether for regulatory purposes (including the UNFCCC Enhanced Transparency Framework and Nationally Determined Contributions) or for voluntary reporting.

The IPCC 2006 Guidelines for National Greenhouse Gas Inventories provide the internationally accepted methodological framework for developing national GHG inventories. STEPS draws on the IPCC Guidelines for calculation methodologies, emission factors, and quality practices.

There is significant overlap between the IPCC framework and STEPS, and the Participant is encouraged to use consistent underlying data for both purposes. However, national inventories and carbon crediting scopes are not always the same. Where STEPS deviates from the IPCC Guidelines or from prior practice in developing national inventories - for example, in the treatment of imports and exports, or in the inclusion of autoproducer generation within a single sectoral boundary. Such choices are for the purpose of ensuring that the STEPS boundary is fit for the specific requirements of carbon crediting.

STEPS uses its own defined operative terms and nomenclature when describing dimensions of the electricity sector. In some cases, these align precisely with terms used in the IPCC Guidelines, the International Recommendations for Energy Statistics (IRES), or the IEA/Eurostat energy balance framework. In other cases, STEPS terms are defined specifically for this Standard.

Where differences arise between STEPS crediting data and national inventory data reported elsewhere, the Participant shall transparently disclose and document those differences. The disclosure shall be sufficient to enable reconciliation between the two datasets.

STEPS data, once verified and used for credit issuance, is final. Subsequent revisions to national inventory data or changes in national reporting methodology do not affect verified STEPS data.

5.2 LEAKAGE

Leakage, known as the displacement of anthropogenic GHG emissions from inside the accounting boundary to sources outside it because of the crediting activity, is not a material risk under STEPS and no leakage deduction is applied.

This determination follows directly from the design of the STEPS sectoral boundary defined in (Section 5.1). The boundary is jurisdictional and sector-complete, capturing all electricity generation within the national territory of the Participant, including grid-connected, captive generation, and qualifying distributed generation, together with electricity imports and exports. Because crediting is performance-based against the entire sector rather than against an individual installation, project, or sub-jurisdiction, the principal channels through which leakage typically arises in project-based crediting are absent:

ACTIVITY SHIFTING is not possible: emissions cannot be displaced from a credited installation to an uncredited installation within the same country, as both fall within the same accounting boundary.

MARKET LEAKAGE from new replacement capacity is internalized: any fossil generation built to replace retired capacity is captured in the Participant's reported sectoral emissions in the year it operates. Furthermore, any new unabated coal generation results in a deduction from gross GHG reductions equal to the quantity of total emissions from the new plant.

CROSS-BORDER DISPLACEMENT of electricity is captured through the treatment of imports and exports under Section 5.4, which adjusts the Annual Emissions Rate to prevent reductions being claimed on the basis of emissions exported to neighboring grids.

UPSTREAM fuel-supply leakage is not within the STEPS sectoral boundary as a matter of accounting scope, consistent with IPCC Energy sector treatment of upstream fossil fuel emissions.

5.3 DATA COMPILATION AND THE ENHANCED ENERGY SECTOR BALANCE

5.3.1 Purpose and Function of the EESB

The Enhanced Energy Sector Balance (EESB) is the Participant's annual accounting of energy flows in the electricity sector. It consolidates fuel inputs by SIEC fuel type, gross and net electricity generation, own-use, fuel imports/exports, and losses, prepared in accordance with the International Recommendations for Energy Statistics (IRES) and shall follow the IEA/Eurostat structure or another methodology consistent with IRES.

The EESB serves the following functions under this Standard:

- Source of pre-adjusted total emissions and total generation values that feed the AER calculation (see 5.7.2)
- It is the framework through which the internal consistency of compiled activity data is tested via the three-layer reconciliation (see 5.3.3); and
- It is the Participant’s bridge between the requirements of this Standard and the country’s national energy and emissions inventory reporting obligations.

5.3.2 Full vs Partial Energy Sector Balance

The Participant may elect to compile either a full economy-wide energy balance or a partial balance specific to the electricity sector. While a full economy-wide balance is recommended as it provides stronger reconciliation cross-checks and supports the Participant’s broader national reporting obligations, a partial electricity-sector balance is acceptable provided that:

a. The Participant adopts the same approach consistently across the Crediting Period - switching between a full and partial balance between years is not permitted where this would introduce material differences in the resulting AER;

b. Where the Participant already compiles a full economy-wide energy balance on an annual basis, it shall continue to do so and draw the EESB from the relevant electricity sector rows; and

c. The partial balance meets the quality requirements set out in this Standard, including the statistical difference tolerance and the three-layer reconciliation.

5.3.3 Three-Layer Reconciliation

The Participant shall perform reconciliation across three layers to demonstrate internal consistency of the compiled emissions and generation data. Maximum possible statistical differences are set out in Appendix 12.3B.10.2.

Layer 1: Fuel Balance Integrity

Fuel inputs to electricity generation, by SIEC fuel type, shall reconcile with national fuel supply data: production + imports − exports − stock change − non-power use = fuel available for power. The residual after this reconciliation is the input to electricity transformation and shall match the EESB Transformation-row inputs by fuel.

Layer 2: Fuel-to-Generation Efficiency

Implied conversion efficiency at each generator, calculated as gross electricity output (TJ) ÷ fuel input (TJ NCV), shall fall within bounds appropriate to the fuel and prime-mover technology. Generators outside these bounds shall be flagged for investigation.

Layer 3: Reported Total vs Compiled Total

The sum of installation-level reports from MEPs and the class-level aggregates for EPs and OEPs shall reconcile with the EESB consolidated totals. The reconciliation residual shall be reported in the Monitoring Report.

5.3.4 Statistical Difference

Where the EESB shows a statistical difference between supply and demand sides of the balance, the absolute statistical difference shall not exceed 2% of total electricity generation in any calendar year monitored. Statistical differences exceeding this threshold shall be investigated and resolved through one of the following;

(i) Resolve and revise in accordance with the requirements of this standard (see Section 5.4.6 on treatment of missing or estimated data), and clearly document the resolution procedure in the Monitoring Report for the period; OR

(ii) Revised compilation in accordance with the requirements for Variance (in Section 7);

Persistent breaches in successive years trigger material amendment of the Monitoring Plan.

5.4 MEASUREMENT FRAMEWORK

STEPS quantifies CO_2 emissions from fuel combustion for electricity generation, calculated from the quantity of fuel consumed by fuel type (classified in accordance with the Standard International Energy Product Classification (SIEC), Table 3.1 of the UN-International Recommendations for Energy Statistics (IRES)[3]), and gross electricity generation in MWh measured at generator terminals. These two inputs – emissions and generation provide the numerator and denominator of the Annual Emissions Rate.

Two calculation methods are recognized: (i) the default **Standard Method**, the **Mass Balance Method**, as described in this section.

This subsection sets out the measurement framework:

- The activity data collected
- Classification of generators and Monitoring Levels that determine reporting requirements
- Calculation Parameters
- Treatment rules for specific generation types
- Mid-year commissioning
- Missing or estimated data

5.4.1 Activity Data

Activity data under STEPS is the quantity of fuel consumed for electricity generation, by SIEC fuel type, expressed on a net calorific value basis; and the quantity of electricity generated, expressed in MWh on a gross-at-generator-terminals basis.

5.4.1.1 DETERMINATION OF FUEL CONSUMPTION

Fuel consumption shall be determined in one of the following ways:

- Continuous metering at the process which causes the emissions; or
- Aggregation of metering of quantities delivered separately, taking into account relevant stock changes. The quantity of fuel processed during the reporting period equals the quantity received during the period, minus the quantity moved out, plus the quantity in stock at the start of the period, minus the quantity in stock at the end of the period.

Where it is not feasible to determine stock quantities by direct measurement, the installation may estimate stocks on the basis of (i) data from previous years correlated with output for the

[3] https://unstats.un.org/unsd/energystats/methodology/documents/IRES-web.pdf

reporting period, or (ii) documented procedures and respective data in audited financial statements for the reporting period.

5.4.1.2 UNITS AND CONVERSIONS

Fuel input shall be collected in mass units (metric tonnes) for solid and liquid fuels and in normal cubic meters (Nm^3) for gaseous fuels and converted to energy units (TJ) using the applicable NCV (5.5.3). Where data is collected in other units, conversion shall use IEA conversion factors. Conversion conventions for Sm^3, GCV-to-NCV, and other unit transformations are set out in Appendix B.

5.4.1.3 DETERMINATION OF ELECTRICITY GENERATION

Gross electricity generation shall be measured at the output terminals of each generator, before deduction of station auxiliary load. This convention follows the IRES gross production definition. Net generation (after auxiliary load deduction) shall not be used. Transmission and distribution losses are not subtracted from generation. Auxiliary load consumed by an installation for its own operation (cooling water pumps, fans, control systems, etc.) is part of gross generation as defined above and is not separately deducted. Pumped storage hydropower generation is included at the gross-at-terminals reading.

5.4.2 Classification of Electricity Producers and Monitoring Levels

STEPS classifies all electricity generating installations within the Sectoral Boundary into three classes: Major Electricity Producer (MEP), Electricity Producer (EP), and Other Electricity Producer (OEP), by reference to four threshold criteria reflecting each installation's contribution to total CO_2 emissions and capacity in the electricity sector. MEP installations are the largest contributors and are subject to the most rigorous reporting requirements; EP installations are mid-sized; OEP installations are smaller installations monitored at the aggregate level.

The four MEP threshold criteria, the EP and OEP definitions, the Level definitions, and the matrix that assigns the Level applicable to each class × fuel combination are set out in Appendix 12.3B.3, Appendix B.3, and Appendix B.4.

Classifications are fixed at the start of each Crediting Period and do not change within a period unless a material change occurs.

5.4.3 Calculation Parameters

Net calorific value (NCV), CO_2 emission factor (EF), oxidation factor (OF), and where applicable carbon content (CC) shall be determined per the Monitoring Level assigned to the (class × fuel) combination per Appendix (12.3B.3).

5.4.4 Treatment of Specific Generation Types

The rules below modify activity-data collection or emissions calculation for the specified generation types. They apply in addition to the general rules of this subsection.

5.4.4.1 COMBINED HEAT AND POWER (CHP)

Fuel input at CHP installations shall be allocated between electricity output and heat output using the IPCC efficiency method (IPCC 2006 Vol. 2, 2.2.4). Where heat output cannot be reasonably estimated, the entire fuel input shall be allocated to electricity generation (conservative).

5.4.4.2 BIOMASS AND BIOLIQUIDS.

Solid biomass, liquid biofuels, and biogas are within the Sectoral Boundary as a generation source. CO_2 emissions from biomass combustion are zero-rated where all of the following are demonstrated:

- The Participant's most recent Biennial Transparency Report (BTR) submission to the UNFCCC indicates total national emissions including LULUCF are equal to or lower than total national emissions excluding LULUCF.
- Sustainability criteria are met per STEPS 5.6.4.
- Lifecycle GHG emission savings, relative to fossil fuel comparators, are at least 80% for biomass fuels and at least 65% for biofuels, bioliquids, and biogas.

Where these conditions are not met, biomass shall be treated using the emission factor specified in IPCC 2006 Vol. 3, Table 2.1.

Peat, xylite, and the fossil fraction of mixed fuels are not biomass and shall not be zero-rated. Where the biomass fraction of a mixed fuel is at or above 97%, the installation may apply biomass-only methodologies.

5.4.4.3 WASTE-TO-ENERGY (MUNICIPAL SOLID WASTE)

Combustion of MSW is within the Sectoral Boundary. The biogenic and fossil-derived shares of CO_2 emissions shall be separated. The fossil-derived share enters the AER numerator; the

biogenic share is excluded (in accordance with Section 5.4.4.2). The Participant shall apply the IPCC 2006 default biogenic share (50% by mass for unsegregated MSW) unless a country-specific share is documented through periodic waste composition surveys.

5.4.4.4 CARBON CAPTURE AND STORAGE (CCS)

For purposes of the New Unabated Coal adjustment in 5.3.2, an installation is considered abated if its annual mean capture rate is at least 90% of total CO_2 emissions from the installation. CO_2 captured at a fossil-fueled installation may be netted from the AER numerator only where all of the following apply: capture is metered with calibration consistent with Level 3 requirements; transport and storage are subject to a regulatory regime providing for monitoring and reporting of stored CO_2 over the long term; and storage is independently verified. The captured-and-stored quantity is the value netted; CO_2 captured but not permanently stored is not netted.

5.4.4.5 PUMPED STORAGE HYDROPOWER (PHS)

PHS contributes to electricity generation in the year. Round-trip losses are reflected in the gross-at-terminals reading and require no separate adjustment. Electricity drawn for pumping is recorded as own-use within the system and is not separately deducted from total generation provided it is measured on a gross basis at all generator terminals.

5.4.5 Mid-Year Commissioning and Retirement

Where an installation enters commercial operation during a calendar year, only the operational fraction of the year shall be counted in the Sectoral Boundary for that year. The operational fraction begins on the date of first synchronization to the grid (for grid-connected installations) or first commercial fuel use (for off-grid installations). Activity and generation data prior to that date shall not be included.

Where an installation is retired mid-year, only the operational fraction shall be counted. The operational fraction ends on the date of permanent shutdown, evidenced by formal decommissioning documentation, regulatory deregistration, or — where neither is available — the last date of recorded fuel consumption.

Commissioning and retirement dates are recorded in the Generation Capacity Register (Section 6.5).

5.4.6 Conservative Treatment of Missing or Estimated Data

Where activity data, NCV, EF, OF, or generation data is missing, incomplete, or below the Monitoring Level required by the installation's classification, the rules below apply.

5.4.6.1 MISSING EMITTING GENERATION

Where fuel consumption or generation from a fossil-fueled installation is missing or unrecorded, the data shall be substituted with the higher of (a) the highest fuel-specific value recorded for any installation of the same fuel and technology type in the same year in the national fleet, scaled by nameplate capacity and a conservative capacity factor of 85%; or (b) the most recent verified value for the same installation, where available. Conservativeness applies in the direction that increases the AER numerator.

5.4.6.2 MISSING NON-EMITTING GENERATION

Where generation from a non-emitting installation is missing or unrecorded, the data may be omitted from the AER denominator. Conservativeness applies in the direction that decreases the AER denominator. The omitted generation, and the reason for omission, shall be documented in the Monitoring Report.

5.4.6.3 MAXIMUM ALLOWABLE SUBSTITUTION

Aggregate generation subject to substitution under either rule shall not exceed 5% of total generation in the year. Where the threshold is exceeded, the Participant shall not be eligible for credit issuance for that year and the year shall be reported as a non-credit year.

5.4.6.4 TREATMENT OF MISSING OR ESTIMATED DATA IN THE SPER

When preparing data for the Starting Period Emissions Rate (SPER), the Participant shall apply in the first instance the method specified in this STEPS for calculating the AER of any given year. Missing or estimated data shall be treated such that emissions are not overstated and generation is not understated, producing the lowest SPER value in the Registration Document, subject to Validation by the VVB. Any and all variations in methods applied shall be submitted for review in accordance with Section 7, subject to the acceptance of ERT.

5.4.7 Uncertainty

The Participant shall quantify the combined uncertainty of the AER, covering both activity data and emission factors. Uncertainty shall be assessed using IPCC error propagation methods as

a minimum. The combined AER uncertainty shall be reported in each Monitoring Report and is subject to verification.

5.5 TREATMENT OF IMPORTS AND EXPORTS OF ELECTRICITY

Where a Participant's electricity system involves cross-border trade, the AER shall be adjusted to reflect the imported and exported electricity and associated emissions. The EESB's Transformation sector rows record domestic production (fuel consumed domestically and electricity produced domestically). Imports and exports appear as separate rows in the energy balance. The following STEPS adjustment rules apply:

EXPORTS TO A NON-STEPS COUNTRY The exported electricity and its associated emissions remain in the Participant's AER calculation. The generation (MWh) remains in the denominator and the emissions (tCO_2) remain in the numerator. This reflects the territorial principle: the fuel was combusted within the Participant's boundary, and the environmental attribute is retained by the Participant.

EXPORTS TO A STEPS COUNTRY An accounting adjustment shall be applied to avoid double counting. The Participant shall subtract the exported generation from the AER denominator and the associated emissions from the AER numerator. The Participant shall document the basis for determining the emissions associated with the exported electricity and demonstrate that the method is consistent with the importing STEPS country's accounting. The method shall be disclosed in the Monitoring Plan and validated by the VVB.

CONTRACTUAL ALLOCATION Where a contractual arrangement (such as a power purchase agreement, guarantee of origin, or energy attribute certificate) explicitly allocates the environmental attribute of exported electricity to the buyer or retains it with the seller, the contractual allocation shall be reflected in the emissions value assigned to that electricity. For example, if the Participant exports renewable electricity but retains the emission reduction attribute, the exported generation is subtracted from the denominator but no emissions deduction is applied to the numerator. Conversely, if the buyer acquires the environmental attribute, both the generation and a zero-emission value are subtracted.

IMPORTS FROM A NON-STEPS COUNTRY The imported electricity and its associated emissions shall be added to the Participant's AER calculation. The imported generation (MWh) is added to the denominator. The associated emissions (tCO_2) are added to the numerator, calculated using in order of availability (i) the emissions factor of the exporting electricity generator, (ii) the exporting country's most recently published grid emission factor, or where this is not available, using a conservative default emission factor. The source and value of the emission factor used shall be disclosed in the Monitoring Report.

IMPORTS FROM A STEPS COUNTRY The Participant shall add the imported generation to the denominator and the associated emissions to the numerator, using the emission factor agreed

between the two STEPS countries as part of their mutual accounting adjustment. The method shall be consistent between the exporting and importing country, avoiding double counting or omission. The Participant shall document how its import accounting aligns with the STEPS Standard and the exporting country's treatment of the same transaction.

CONTRACTUAL ALLOCATION As with exports, if a contractual arrangement allocates the environmental attribute, this shall be reflected. If the Participant imports electricity from a coal-heavy source but the seller retains the right to the emission reduction (e.g., the buyer is purchasing physical electricity only, without the environmental attribute), then the emissions assigned to the imported MWh shall reflect the source's actual emission intensity, not a zero or reduced value.

5.6 ADJUSTMENTS TO CREDITING

5.6.1 Performance Reserve

STEPS features a Performance Reserve to incentivize long-term participation in the program and continued progress in decarbonization. The Performance Reserve will reward countries for continued improved emissions performance by returning all withheld credits in full alongside new credit issuances, as an incentive to maintain participation requirements in STEPS.

Participants are required to contribute 20% of verified emission reductions at each issuance into the Performance Reserve. At each subsequent successful verification of emissions results during the performance period, 20% of credits in the Reserve are eligible to be released from the Reserve and issued to the country.

If a country stops performing annual monitoring requirements for two or more years or elects to withdraw earlier than the minimum 10-Yr participation period, then the balance of any Credits held in the Reserve will be cancelled.

5.6.2 New Unabated Coal

STEPS requires negative adjustments to compensate for unabated emissions from coal-fired power plants that were not under construction at the date of submission of the STEPS Registration document. If construction is initiated on a new coal-fired power plant after this date, there will be a deduction from the Credits issued to any Participant equal to the total emissions from the new coal-fired power plant. A Participant can avoid this deduction by retiring twice as much existing coal-fired generating capacity that is less than 30 years old. Thus, if a new 500 MW coal-fired generating plant is constructed, the Participant must retire at least 1000 MW of existing coal-fired generation that is less than 30 years old.

5.6.3 Project-level Crediting

To avoid double counting through the issuance of STEPS credits and project-based credits, Participants must comply with double counting requirements as detailed in Section 9.1 such that verified ERs from any project or facility-level activities that are directly related to electric sector emissions performance that are from activities that are being accounted for as part of the sectoral crediting (as identified in the Plan) and are authorized by the Participant will be deducted from the volume of STEPS ERs prior to issuance.

5.6.4 Sources Not Eligible to Contribute to Emissions Performance

The following are not eligible to contribute to improved emissions performance for crediting:

- New impoundment (dam-based) hydroelectric power plants above 25MW in capacity unless certified to the International Hydropower Association's Hydropower Sustainability Standard[4]
- New Biomass facilities unless biomass is from a source that maintains Roundtable on Sustainable Biomaterials (RSB) certification[5] using the RSB Standard for Advanced Fuels (RSB, 2023[6], or more recent approved version).

5.7 CALCULATION OF EMISSION REDUCTIONS

The Annual Emissions Rate (AER) is the ratio of total annual CO_2 emissions from electricity generation to total annual gross electricity generation within the Sectoral Boundary, after STEPS adjustments. The AER is calculated for each calendar year.

5.7.1 Calculating Total Emissions

Total CO_2 emissions from domestic electricity generation are derived from the EESB. The EESB's Transformation sector input rows record fuel consumption for electricity generation by fuel type. CO_2 is calculated by applying the appropriate calculation method to each fuel.

CO_2 emissions from electricity generation are calculated outside the EESB, drawing on the consolidated fuel inputs in the EESB Transformation rows. Two methodology rules apply at the installation level, the Standard Method (default) and the Mass Balance Method (alternative, MEP only). The Participant then consolidates installation-level results with class-aggregate calculations to produce the national total.

[4] https://www.hydropower.org/sustainability-standard
[5] https://rsb.org/certification/
[6] https://rsb.org/wp-content/uploads/2024/06/RSB-STD-01-010-RSB-Standard-for-advanced-fuels.pdf

Equation 9: Standard Method – Installation-level Methodology

For an individual installation i and an individual fuel k, the Standard Method calculates CO_2 emissions as:

$$\mathbf{E_{i,k,t} = AD_{i,k,t} \times NCV_{k,t} \times EF_{k,t} \times OF_{k,t} \times (1 - FB_{i,k,t})}$$

WHERE

$\mathbf{E_{i,k,t}}$	CO_2 emissions from fuel $\mathbf{k}$ at installation $\mathbf{i}$ in year $\mathbf{t}$	tCO_2
$\mathbf{AD_{i,k,t}}$	Fuel quantity (mass for solids and liquids; Nm³ for gases)	t or Nm³
$\mathbf{NCV_{k,t}}$	Net calorific value of fuel $\mathbf{k}$	TJ per unit
$\mathbf{EF_{k,t}}$	Emission factor of fuel $\mathbf{k}$	tCO_2 / TJ
$\mathbf{OF_{k,t}}$	Oxidation factor (default 1.0)	dimensionless
$\mathbf{FB_{i,k,t}}$	Biomass fraction zero-rated under §5.5.4	fraction

Equation 10: Mass Balance Method – Installation-level Methodology

At MEP installations with continuous or per-batch laboratory measurement of fuel carbon content (CC) from an ISO 17025-accredited laboratory or laboratory with demonstrated equivalent technical competence (Appendix B.6), the Mass Balance Method may be applied in place of the Standard Method:

$$\mathbf{E_{i,k,t}^{MB} = AD_{i,k,t} \times CC_{i,k,t} \times 3.664 \times (1 - FB_{i,k,t})}$$

WHERE

$\mathbf{E_{i,k,t}^{MB}}$	CO_2 emissions (mass balance calculated) from fuel $\mathbf{k}$ at installation $\mathbf{i}$ in year $\mathbf{t}$	tCO_2
$\mathbf{AD_{i,k,t}}$	Fuel quantity (mass for solids and liquids; Nm³ for gases)	t or Nm³
$\mathbf{CC_{i,k,t}}$	Carbon content of specific fuel (k) determined in accordance monitoring approaches applicable for specific electricity generator, expressed in mass percentage of carbon (%C) in specific fuel k.	(%C)
$\mathbf{FB_{i,k,t}}$	Biomass fraction zero-rated (where applicable)	fraction

Equation 11: National-level Consolidation – Standard Method (Per-fuel Total Emissions, All Classes)

The Participant calculates national domestic CO_2 emissions fuel by fuel. For each fuel k, the contribution from each generator class is calculated separately and summed:

$$\mathbf{CO2_{k,t} = CO2_{k,t}^{MEP} \times CO2_{k,t}^{EP} \times CO2_{k,t}^{OEP}}$$

The MEP stratum is the sum of installation-level Standard Method results (Equation 9) reported by each MEP through its STEPS Annual Emission Report:

$$\mathbf{CO2_{k,t}^{MEP} = \sum_{i} \in MEP\ E_{i,k,t}}$$

The EP and OEP strata are calculated by the Participant by applying Equation 9 to the consolidated class-level fuel input for fuel k, using NCV, EF and OF values at the Level assigned to the class per Appendix B:

$$\mathbf{CO2_{k,t}^{EP} = AD_{k,t}^{EP} \times NCV_{k,t}^{EP} \times EF_{k,t}^{EP} \times OF_{k,t}^{EP} \times (1 - FB_{k,t}^{EP})}$$

$$\mathbf{CO2_{k,t}^{OEP} = AD_{k,t}^{OEP} \times NCV_{k,t}^{OEP} \times EF_{k,t}^{OEP} \times OF_{k,t}^{OEP} \times (1 - FB_{k,t}^{OEP})}$$

$\mathbf{AD_k^{EP}}$ and $\mathbf{AD_k^{OEP}}$ are the consolidated EP and OEP fuel inputs for fuel k. The three class fuel-input values sum to the EESB Transformation-row entry for fuel k.

Equation 12: National-level Consolidation – Mass Balance Applied to Subset (MEP Stratum with Mass Balance Subset)

Where the Mass Balance Method is applied to one or more MEP fuel-installation pairs, the MEP stratum is itself a sum of two streams:

$$\mathbf{CO2_{k,t}^{MEP} = \sum_{i} \in MEP_{SM}\ E_{i,k,t} + \sum_{i} \in MEP_{MB}\ E_{i,k,t}^{MB}}$$

WHERE

$\mathbf{MEP_{SM}}$	MEP fuel-installation pairs calculated under the Standard Method (Equation 9)
$\mathbf{MEP_{MB}}$	Pairs calculated under the Mass Balance Method (Equation 10)

EP and OEP strata are unaffected, as Mass Balance is not available at those classes.

Equation 13: National Domestic CO_2 Emissions

Total CO_2 emissions from domestic electricity generation in year t are the sum across all fuels:

$$\mathbf{CO^2_{domestic,t}} = \sum_{\mathbf{k}} \mathbf{CO^2_{k,t}}$$

WHERE

$\mathbf{CO^2_{domestic,t}}$	
$\sum_{\mathbf{k}} \mathbf{CO^2_{k,t}}$	

This value is the input to the import/export adjustment in 5.4.6.

Equation 14: CO_2 Emissions from Desulphurization – Carbonate Basis

Where an installation uses SO_2 desulphurization equipment, CO_2 emissions from desulphurization shall be added to combustion emissions, calculated as follows. Carbonate-based method (where the activity data is the quantity of carbonate consumed):

$$\mathbf{CO_{2_{FGD}}} = \mathbf{AD_{CaCO_3}} \times \mathbf{0,44}[\mathbf{ktCO_2}]$$

Equation 15: CO_2 Emissions from Desulphurization – Gypsum Basis

Gypsum-based method (where the activity data is the quantity of gypsum produced):

$$\mathbf{CO_{2_{FGD}}} = \mathbf{AD_{Gypsum}} \times \mathbf{0,256}[\mathbf{tCO_2}]$$

WHERE	
$CO_{2_{FGD}}$	CO_2 emissions from desulphurization (tCO_2)
$\mathbf{AD_{Gypsum}}$	Amount of gypsum produced ($CaSO_4$ $2H_2O$)
AD_{CaCO_3}	Amount of limestone consumed (t $CaCO_3$)

5.7.2 TOTAL GENERATION

Total electricity generation for the AER calculation is the sum of gross-at-terminals generation across all in-scope installations, scaled for partial-year operation, with cross-border adjustments (per Section 5.5).

Equation 16: Total Generation

$$G_{total,t} = \Sigma_{class}\Sigma_i \left(G_{i,t} \times f_{op,i,t} \right) + G_{import,t} - G_{export,t}$$

WHERE

$G_{total,t}$	Adjusted total electricity generation in year **t** (domestic generation plus imports minus exports where applicable); **GWh**
$\Sigma\_class\ \Sigma\_i\ G\_i,t$	Sum of gross-at-terminals generation across all MEP, EP, and OEP installations within the Sectoral Boundary in year t (GWh); **GWh**
$f_{op,i,t}$	Operational fraction of year t for installation i ; (=1 for full-year operation; partial value for installations commissioned or retired mid-year)
$G_{import,t}$	Imported electricity generation in year t; **GWh** (applied in accordance with Section 5.5)
$G_{export,t}$	Exported electricity generation in year t; **GWh** (applied in accordance with Section 5.5)

5.7.3 ANNUAL EMISSIONS RATE

Equation 17: Annual Emissions Rate

$$AER_t = \frac{\text{Total } CO_2 \text{ Emissions}_t}{\text{Total Electricity Generation}_t} \left[\frac{AER_t}{G_t}\right]$$

WHERE

AER_t	Annual Emissions Rate in year **t**; **gCO2/kWh**
Total CO_2 Emissions$_t$	Adjusted total CO_2 emissions in year **t** (including imports and exports where applicable); **tCO_2**
Total Electricity Generation$_t$	Adjusted total electricity generation in year **t** (domestic generation plus imports minus exports where applicable); **GWh**

5.7.4 GROSS GHG REDUCTIONS

Gross GHG Emission Reductions in year t is calculated by reference to the Crediting Baseline established in Section 4 and the AER calculated in Section 5.6:

Where the result is negative in any year, ERt for that year is zero. Negative values are not calculated and do not carry forward to subsequent years.

Generation data reported in MWh shall be converted to GWh by dividing by 1,000 prior to applying this equation.

Equation 18: Gross GHG Emission Reductions

$$\mathbf{GHG_{ERt} = (CB_t - AER_t) \times G_t - CAF_t - UNC_t, where\ ER_t \geq 0}$$

WHERE

$\mathbf{GHG_{ERt}}$	Gross GHG Emission Reductions in year t; **$tCO2/kWh$**
$\mathbf{CB_t}$	Crediting Baseline in year t; **gCO_2e/kWh** (**Error! Reference source not found.**)
$\mathbf{AER_t}$	**Annual Emissions Rate in year t;** % (Equation 17)
$\mathbf{G_t}$	Electricity Generation in year t, GWh
$\mathbf{CAF_t}$	Coal Adjustment Factor in year t, tCO2
$\mathbf{UNC_t}$	Uncertainty deduction in year t; tCO2

Where AER exceeds CB in any year, GHG_{ER} for that year is zero. Negative values do not carry forward to subsequent years.

Equation 8: Crediting Baseline in Year t (gCO2/kWh)

$$\mathbf{CB_t = SPER \times (1 - CPS_t)}$$

WHERE

$\mathbf{CB_t}$	Crediting Baseline in year t of the Crediting Period; $\mathbf{gCO_2e/kWh}$
$\mathbf{SPER}$	Starting Period Emissions Rate, fixed at Registration; $\mathbf{gCO_2e/kWh}$
$\mathbf{CPS_t}$	Index-Adjusted Country Performance Standard for year t; $\mathbf{\%}$

5.7.5 TOTAL STEPS CREDITS

Equation 19: Total STEPS Credits

$$\mathbf{SC_t = GHG_{ER_t} - PRW_t + PRR_t}$$

WHERE

$\mathbf{SC}$	STEPS Emission Reduction Credits in calendar year $\mathbf{t}$; $\mathbf{tCO_2e}$
$\mathbf{GHG_{ER_t}}$	GHG Emission Reductions in year $\mathbf{t}$; $\mathbf{tCO_2e}$ (Equation 18)
$\mathbf{PRW_t}$	STEPS Reserve withholding in year $\mathbf{t}$; $\mathbf{tCO_2e}$ (Section 5.6.1)
$\mathbf{PRR_t}$	STEPS Reserve release in year $\mathbf{t}$; $\mathbf{tCO_2e}$ (Section 5.6.1)

6 MONITORING AND REPORTING

6.1 SCOPE AND APPROACH

Monitoring under STEPS is the set of activities the Participant undertakes to collect, compile, quality-control, and report the data required for the calculation of the Annual Emissions Rate and the determination of emission reductions. The Participant is responsible for monitoring. The only external assessment of the Participant's monitoring is the validation and verification conducted by a VVB (Section 10).

Monitoring encompasses:

- **a.** collection of fuel consumption data and electricity generation data from all sources within the Sectoral Boundary;
- **b.** compilation and quality control of these data in the EESB;
- **c.** where required, the approval and oversight of Installation Monitoring Plans at individual electricity generating installations;
- **d.** collection of Annual Emission Reports from generators with approved IMPs;
- **e.** calculation of the AER, emission reductions, and applicable adjustments and deductions;
- **f.** preparation of the STEPS Monitoring Report for submission to ERT and for verification.

The Monitoring Plan (Section 6.2) is the Participant's document describing how it performs these activities.

6.2 MONITORING PLAN

The Participant shall submit a Monitoring Plan with its Registration Document. The Monitoring Plan describes the arrangements the Participant has in place, or will put in place, to perform the monitoring activities listed in Section 6.1.

STEPS does not prescribe the institutional form of the Participant's monitoring arrangements. Different Participants will organize differently depending on their legal, regulatory, and statistical infrastructure. The Standard prescribes the outputs the Monitoring Plan must deliver complete, quality-controlled data of specified accuracy not the institutional means of delivery. The VVB validates whether the Participant's chosen approach is adequate for STEPS purposes.

The Monitoring Plan shall address, at minimum:

- **a.** the basis under which in-scope generators provide data to the Participant, and the entity or entities responsible for data collection and aggregation;

b. how the Participant collects electricity generation data from all generators within the Sectoral Boundary, including the data channels used (grid operator settlement data, energy statistics collection, renewable energy registries, direct reporting from generators with IMPs) and how gross generation is determined or estimated for each channel;

c. how the Participant collects fuel consumption data for the EESB, from both individually monitored generators and from generators without IMPs;

d. the Generation Capacity Register — how it is compiled and maintained;

e. the Enhanced Energy Sector Balance — how it is compiled, data sources, choice of full or partial balance, and quality procedures;

f. installation-level monitoring — which generators require IMPs, the process for approving IMPs, and the arrangements for collecting Annual Emission Reports;

g. the method for calculating CO_2 emissions from the EESB, including which NCV and EF values are used for each fuel and their source;

h. the method for determining the fossil/biogenic split for any waste-to-energy installations;

i. the treatment of imports and exports and any contractual allocation of environmental attributes;

j. completeness and conservative estimation procedures;

k. quality assurance and quality control procedures;

l. data management and record retention;

m. the Progressive Coverage Plan; and

n. the arrangements for preparing and submitting the STEPS Monitoring Report to ERT

The Monitoring Plan shall be updated at the start of each Crediting Period and whenever a material change occurs in the Participant's monitoring arrangements. Material changes include: new legislation affecting data collection, significant changes in the generation fleet (e.g., commissioning or retirement of MEPs), changes in the EESB compilation method, or changes to the institutional arrangements for data collection.

6.2.1 Installation-Level Monitoring

This section sets out the monitoring requirements applicable to individual electricity generating installations that are required to have Installation Monitoring Plans. These are: all MEPs that combust fuel; and all EPs assigned Level 2 or above under Section 5.3.

Non-emitting MEPs (nuclear, hydroelectric, wind, solar, geothermal) are not required to prepare IMPs. Their generation data is collected through the channels described in Section 6.4.

6.2.2 Installation Monitoring Plans

Each generator required to have an IMP shall prepare the plan and submit it to the Participant for approval before reporting emissions under STEPS. The IMP is a document produced by the generator and approved by the Participant. It is not submitted to or approved by ERT. The VVB may examine IMPs during validation and verification as part of its audit of the Participant's monitoring arrangements.

The IMP shall contain, at minimum:

- **a.** a description of the installation — emission sources, fuels used, a process flow diagram, and information sufficient to confirm there are no data gaps or double counting with other installations;
- **b.** the calculation methodology selected (Standard Method, Equation 5; or Mass Balance Method, Equation 6) and the monitoring level assigned for each fuel per Section 5.3;
- **c.** measurement systems for fuel consumption — description, range, location, and calibration status of all metering and weighing devices used to determine fuel quantities, including the method for determining fuel consumption (continuous metering or stock-change method per Equation 7);
- **d.** measurement systems for electricity generation — description and location of generation meters (gross and net), calibration schedule, and uncertainty;
- **e.** procedures for fuel balance integrity — how fuel delivered is reconciled with fuel consumed, including documentation of deliveries (weighbridge tickets, shipping manifests, supplier invoices), stock measurement methodology (survey method, assumed densities, calibration), and the treatment of stock changes;
- **f.** procedures for data management — data flow from measurement through calculation to reporting, allocation of responsibilities, competence requirements for personnel;
- **g.** where Level 2+: evidence of ISO/IEC 17025 accreditation of the fuel supplier's laboratory, or an equivalence demonstration per Appendix B.5;
- **h.** where Level 3: the sampling plan per Appendix B.4, including sampling frequency, location, method, sample preparation, and laboratory arrangements (Appendix B.5);
- **i.** where the installation uses carbonate-based flue gas desulphurization: the calculation method for FGD CO_2, the measurement of carbonate reagent consumption, and whether the Participant has elected to include FGD CO_2 in the AER;
- **j.** where the installation combusts biomass or mixed waste: the methodology for determining the biomass fraction and any sustainability documentation (Section 5.6.3);
- **k.** for CHP installations: the fuel allocation methodology between electricity and heat production (Section 5.8.4); and
- **l.** version control — date, version number, and record of amendments.

6.2.3 IMP Approval and Maintenance

The Participant shall review submitted IMPs and issue a decision. The approval shall confirm: the generator and installation covered; the fuels and activities in scope; the monitoring level for each fuel; the obligation to monitor per the IMP; and the obligation to submit Annual Emission Reports.

The Participant shall review each approved IMP periodically and require amendment where circumstances change materially — including changes in fuel type, capacity additions, changes in metering systems, or changes to the Standard's requirements.

The Participant shall terminate an IMP approval where the installation has been permanently decommissioned or activity has ceased with no prospect of resumption within a reasonable timeframe. Seasonal, standby, and reserve generators are exempt where the installation remains operable.

6.2.4 Annual Emission Reports

Each generator with an approved IMP shall submit to the Participant an Annual Emission Report covering the preceding calendar year. The report shall be structured as follows:

SECTION	CONTENT
1. IDENTIFICATION	Generator name, location, unique identifier from Generation Capacity Register (see Table 8). Reporting year. IMP version number and date of most recent approval.
2. CLASSIFICATION	MEP or EP designation. Significance level (% of national emissions). Monitoring level for each fuel.
3. FUEL CONSUMP-TION	For each fuel: quantity consumed (tonnes or Nm^3); deliveries received; opening stock; closing stock; stock measurement method. Fuel balance reconciliation showing deliveries + opening stock − closing stock = consumption. References to supplier invoices and weighbridge records.
4. CALORIFIC VALUES	NCV (or GCV with conversion factor) for each fuel. Source: IPCC default (Level 1/2), supplier declaration (Level 2), ISO 17025 lab certificate with batch data (Level 2+/3). Where batch data: weighted-average annual NCV with supporting batch records.
5. EMISSION FACTORS	EF for each fuel. Source: IPCC default (Level 1/2), supplier ISO 17025 per batch (Level 2+), generator-specific analysis (Level 3).

	For Level 3: laboratory certificates, sample identification, and analytical results.
6. OXIDATION FACTOR	OF for each fuel. Default = 1.0. Where Level 3 fuel-specific OF is calculated: method, supporting data (carbon in ash/slag analysis), and calculated value per Appendix B.6.
7. BIOMASS FRACTION	FB for each fuel. Documentation of zero-rating conditions (Section 5.6.3). For WtE: fossil/biogenic split method and results.
8. CO_2 CALCULATION	CO_2 per fuel using Equation 5 or 6, showing each input value. Total combustion CO_2. FGD process CO_2 where applicable. Grand total.
9. ELECTRICITY	Gross generation (MWh) and net generation (MWh), metered at the installation. Own-use consumption. Meter identification, calibration status, and uncertainty. For CHP: fuel allocation method and electricity/heat split with supporting calculation.
10. DEVIATIONS	Any deviations from the approved IMP during the reporting year — e.g., metering failures, fuel supply changes, methodology changes — with justification and impact assessment.
11. DECLARATION	Statement by an authorized representative of the generator that the report is complete and accurate to the best of the generator's knowledge.

The timing and format of submission are at the Participant's discretion, but the data shall be available to the Participant in time for compilation of the EESB and the STEPS Monitoring Report.

6.2.4.1 GENERATION DATA FROM ALL GENERATORS

The AER denominator requires gross generation from every source within the Sectoral Boundary, including generators that do not have IMPs. It is the Participant's responsibility to ensure that all generators within scope are able to provide, and do provide:

a. **GROSS ELECTRICITY GENERATION (MWH)** — Measured at the generator terminals before subtracting auxiliary consumption. Where gross metering is not installed (as is common for non-thermal generators connected via inverters or at the grid connection point), the metered output may be accepted as a proxy where own-use is less than the metering uncertainty, or converted to gross using documented own-use factors (Section 5.7.1); and

b. **OWN-USE CONSUMPTION (MWH)** — the electrical energy consumed by the installation's own auxiliaries (pumps, fans, compressors, control systems, transformer losses). This enables verification that gross = net + own-use.

In addition, generators that combust fuel shall provide:

c. **FUEL CONSUMPTION BY FUEL TYPE** — in physical units (tonnes, Nm^3), classified per SIEC, which can be corroborated and cross-checked against national fuel supply data when compiling the EESB.

The Participant's Monitoring Plan shall describe how data is collected from each category of generator:

GENERATOR CATEGORY	GENERATION DATA SOURCE	FUEL DATA SOURCE
MEP's and EP's with IMP's	Reported in the Annual Emission Report — gross and net metered at the installation.	Reported in the Annual Emission Report — fuel balance per Equation 7.
Non-emitting generators ≥ 1 mw (wind, solar, hydro, nuclear, geothermal)	Grid operator settlement data; RE registries; statistics surveys. Converted to gross where necessary.	Not applicable — no fuel.
Emitting EP's at level 1 (no IMP)	Grid operator settlement data; statistics surveys.	National energy statistics collection (surveys, administrative records). Enters EESB directly.
Captive generators ≥ 1 mw (no IMP)	Participant's data collection arrangements (surveys, industrial permits, administrative records).	As above.
Distributed generation < 1 mw (OEP's)	Aggregate estimate: installed capacity × modelled CF; distribution network injection data.	Estimated at aggregate level where emitting and material.

The Participant shall ensure that data from all sources is available in time for EESB compilation. Grid operator settlement data, in particular, is typically the highest-quality and most comprehensive source for generation data from grid-connected generators and should be obtained under formal arrangement.

6.3 COMPLETENESS AND CONSERVATIVE ESTIMATION

The Participant shall ensure that data used to calculate the AER is complete. Total accountability is 100% - the sum of all monitored and aggregate data shall cover all emissions and all generation within the Sectoral Boundary.

Where data is missing or non-compliant:

- **a.** For a generator with an IMP that has failed to submit an Annual Emission Report or whose report does not comply: the Participant shall apply a conservative estimate, overstating that generator's CO_2 emissions and understating its generation, such that the resulting AER is no lower than would be obtained from accurate data.
- **b.** For the SPER calculation: CO_2 emissions shall be estimated downward (understated) and generation estimated upward (overstated), such that the resulting SPER is no higher than would be obtained from accurate data. A lower SPER is harder to beat, which is conservative.
- **c.** For non-emitting generation that is missing from the data: this understates the denominator and raises the AER. Missing non-emitting generation is conservative for crediting. The Participant is not required to conservatively estimate missing non-emitting generation, but shall note the omission in the Monitoring Report.
- **d.** For emitting generation that is missing from the data: this understates both the numerator (missing emissions) and the denominator (missing generation). The net effect depends on the emission intensity of the missing generators relative to the national average. The Participant shall identify known missing emitting generators in the Monitoring Report and apply conservative estimates.

Conservative estimates shall be documented in the Monitoring Report. Completeness and conservative estimation are subject to verification by the VVB.

6.4 QUALITY ASSURANCE AND QUALITY CONTROL

The Monitoring Plan shall describe QA/QC procedures covering data collection, aggregation, and reporting. At minimum:

COMPLETENESS CHECKS — all in-scope generators accounted for; EESB covers all fuel types and generation sources.

INTERNAL CONSISTENCY — supply and demand balance within prescribed tolerance (Section 5.10.4); fuel inputs consistent with generation outputs through plausible transformation efficiencies (Layer 2 of the three-layer reconciliation).

CROSS-CHECKS — comparison of EESB fuel data with independent sources: customs and trade statistics for fuel imports/exports; pipeline operator records for gas consumption; grid operator records for generation; satellite-derived estimates (e.g., Climate TRACE) where available. Note: Ember, IEA, and OWID are derived from the same national statistics reporting chain and cannot serve as independent verification sources.

TIME-SERIES CONSISTENCY — year-on-year comparison of fuel consumption, generation, implied emission factors, and AER. Investigation of breaks or implausible trends. Methodological changes documented and, where feasible, back-cast.

FUEL BALANCE INTEGRITY — for generators with IMPs: reported fuel consumption reconciled with supplier invoices and delivery records. For the national level: total fuel consumed for electricity (EESB) cross-checked against total fuel supply available for electricity (Layer 1 reconciliation).

The Participant shall maintain records of QA/QC procedures applied, anomalies detected, and corrective measures undertaken. Documentation shall be accessible for VVB review. Detailed QA/QC procedures and tolerance thresholds are in Appendix B.9.

6.5 PROGRESSIVE COVERAGE

The Monitoring Plan shall include a Progressive Coverage Plan describing how the Participant will achieve and maintain individually monitored coverage of a sufficient share of total electricity sector CO_2 emissions during the Crediting Period.

At the time of registration, the Participant shall disclose:

- **a.** existing monitoring and reporting arrangements, including use of IPCC tiers for national inventory reporting;
- **b.** the classification of all generators using the STEPS classification criteria, identifying which are currently individually monitored;
- **c.** the proportion of total emissions currently covered by individually monitored generators;
- **d.** identified gaps in monitoring coverage, data quality, and institutional capacity; and
- **e.** a plan setting out target coverage, interim milestones demonstrating increasing coverage between successive verifications, the sequence in which generators will be brought into individual monitoring (largest emitters first), and any constraints with remediation plans.

At each verification, the VVB shall assess whether the Participant has met its milestones, whether coverage has improved, and whether any shortfalls are adequately justified. Persistent failure to improve coverage may result in a qualified or adverse Verification Opinion.

6.6 DATA MANAGEMENT

The Participant shall retain records of generator-level data, IMPs, Annual Emission Reports, EESB working files, QA/QC documentation, and supporting correspondence for at least ten years from the date of the Monitoring Report. Records shall be made available to the VVB during validation and verification. The Participant may designate information as Commercially Sensitive Information; such information remains available to ERT and the VVB under appropriate confidentiality arrangements.

6.7 STEPS MONITORING REPORT

The Participant shall submit a STEPS Monitoring Report to ERT following calendar years 1, 3, and 5 of each Crediting Period. Optional Monitoring Reports may be submitted following years 2 and 4; where verified, optional reports enable annual credit issuance. Each report shall cover at least one calendar year and be submitted within twelve months of the year end, using the most recently published template.

The Monitoring Report shall contain:

- **a.** identification of the Participant, Crediting Period, and Reporting Period;
- **b.** the EESB for each year covered, with fuel inputs, generation outputs, imports, exports, losses, and statistical difference;
- **c.** the AER calculation showing: CO_2 domestic,y from the EESB (Equation 16); import/export adjustments (Equations 2 and 3); G total,y; resulting AER y (Equation 1);
- **d.** the three-layer reconciliation results;
- **e.** emission reductions (Equation 9) and deductions (Section 5.13), resulting in net STEPS Credits (Equation 10);
- **f.** completeness assessment — coverage percentages, conservative estimates applied;
- **g.** progressive coverage update — coverage achieved vs milestones, new generators brought into individual monitoring;
- **h.** QA/QC summary — procedures applied, anomalies, corrective actions;
- **i.** material changes since the previous report — new installations, retirements, IMP amendments, Monitoring Plan updates;
- **j.** safeguards conformance per Section [12]; and
- **k.** Participant declarations.

7 VARIANCE

Participants may propose variances to STEPS requirements where they do not negatively affect the conservativeness of the ER estimate or they improve the accuracy of the data used. Variances may not be proposed regarding eligibility criteria or crediting level determination and may only apply to methodological or monitoring requirements. Participants shall submit proposed variances to ERT for review and approval or rejection.

Variances apply to a specific Participant and will be published publicly in the Participant's STEPS documentation. A full list of approved variances will not be made public as they are not modifications to the Standard and do not serve as precedent. Participants shall provide evidence that the proposed variance is conservative or represents an improvement in data accuracy.

Participants shall request a variance by using the STEPS Variance Request Form template.

8 ENVIRONMENTAL, SOCIAL, AND GOVERNANCE SAFEGUARDS

8.1 PURPOSE AND SCOPE

STEPS supports a diverse set of government-led actions, each with its own potential to generate both positive and negative environmental and social impacts. Positive impacts can contribute to sustainable development objectives; negative risks and impacts can be identified, evaluated, and managed through appropriate safeguard procedures.

STEPS's environmental and social safeguards requirements reflect the acknowledgment in the eleventh preambular paragraph of the Paris Agreement that climate change is a common concern of humankind and therefore actions to address climate change should address these impacts including on human rights, the rights of indigenous peoples, local communities, children, people in vulnerable situations, as well as gender equality, empowerment of women and intergenerational equity.

Participants must adhere to environmental and social safeguards best practices to:

- Ensure that GHG actions "do no harm" by maintaining compliance with all relevant local, national, and international laws, regulations, conventions and agreements;
- Identify applicable contributions to sustainable development;
- Detail how negative environmental and social impacts will be avoided, reduced, mitigated, or compensated, and how mechanisms will be monitored, managed, and enforced;
- Ensure that the rights of affected communities and other stakeholders are recognized, and that they have been fully and effectively engaged and consulted; and
- Ensure that effective ongoing communications and grievance redress mechanisms are in place, and that affected communities will share in the Project benefits.

The STEPS Environmental and Social Safeguards are applicable to government-led actions (STEPS Actions) as detailed in the Energy Transition Plan, including Just Transition elements, to ensure activities not only do no harm but also enhance social and environmental benefits. Participants can demonstrate conformance with STEPS Actions in tandem with international finance safeguards.

Implementation of private sector activities is under the auspices of relevant and applicable environmental and social safeguard mechanisms (e.g. government -mandated environmental and social impact assessments).

8.2 STRUCTURE

This section is structured as follows:

- **SAFEGUARDS.** Each Safeguard is listed to set out the environmental, social, and governance principles Participants are expected to uphold when undertaking STEPS Actions.
- **INDICATORS.** Each indicator is meant to provide the step-wise process by which Participants can demonstrate conformance with all Safeguards while relying on progressive reporting on how the safeguards have been addressed and respected throughout STEPS Action implementation. Verification will occur against the indicators only; as such, applicability, temporality, and scope conditions are included as appropriate.

  There are three types of indicators:

  STRUCTURE. Demonstrate the relevant governance arrangements (e.g., policies, laws, and institutions) are in place and the Participant can guarantee the implementation of STEPS Actions are consistent with the Safeguards;

  PROCESS. Demonstrate that relevant institutional mandates, as well as processes, procedures, and/or mechanisms are in place and enforced by the Participant for the implementation of STEPS Actions in consistency with the Safeguards; and

  OUTCOME. Demonstrate implementation outcomes against the themes under which the Safeguards have been unpacked, in consistency with the respect of rights and fulfillment of duties in accordance with international and national legislation under STEPS.]

8.3 REPORTING REQUIREMENTS

Participants shall report on conformance with all applicable Safeguards and, in accordance with the stepwise nature of program implementation, will report in a progressive manner through indicators established for each theme.

In their STEPS Registration Document, Participants shall report and demonstrate conformance with all structure and process indicators. In addition, for the outcome indicators, Participants shall:

- Describe the context-specific desired results for any STEPS Actions that will occur during the Crediting Period to demonstrate conformance with the outcome indicator and how this information will be collected and reviewed. In their STEPS Monitoring Report, Participants shall report any changes to the information in the STEPS Registration Document regarding the structure and process indicators that occurred during the reporting period. If no changes have occurred, the Participant shall note this. For the outcome indicators, Participants shall:

- Provide a brief summary of how conformance has been demonstrated previously. The Participant shall note and explain if no new Actions were required during the reporting period to maintain conformance with the indicator.
- Summarize the information collected through the context-specific desired results monitoring outlined in the STEPS Registration Document for any STEPS Actions that occurred during the reporting period. The Participant shall note any changes to the monitoring that occurred. The Participant shall also note any changes to either STEPS Actions or the outcome monitoring that are planned because of the review of this information.
- Describe the context-specific desired results, monitoring approach, and information collected for any STEPS Actions that were new or changed during the reporting period and not included in the STEPS Registration Document.

In their STEPS Monitoring report, Participants will disclose applicable negative environmental or social impacts as a result of the government-led actions (STEPS Actions) as detailed in the Energy Transition Plan and the appropriate mitigation measure applied. They shall also attest to no undisclosed or unmitigated adverse environmental or social impacts as a result of the government-led actions (STEPS Actions) as detailed in the Energy Transition Plan.

In both the STEPS Registration document and each Monitoring report, the Participant will describe how it's the STEPS Actions contribute to sustainable development. If a government does not have its own published sustainable development goals, it can report against relevant UN Sustainable Development Goals (SDGs).

8.4 SAFEGUARDS

All indicators shall be implemented in accordance with relevant international conventions and agreements ratified by the Participant or the Participant's country and be anchored in domestic and if applicable, subnational, legal frameworks, policies or processes.

SAFEGUARD 1: CONSISTENCY WITH THE OBJECTIVES OF RELEVANT INTERNATIONAL CONVENTIONS AND AGREEMENTS

STRUCTURE AND PROCESS INDICATOR. Participants have a domestic legal framework, policies, or programs as well as the necessary procedures and resources to recognize and promote the application of ratified relevant international conventions and agreements in the design and implementation of STEPS Actions.

OUTCOME INDICATOR. Public institutions have designed and implemented STEPS Actions consistent with or complementary to the objectives of identified, ratified and relevant international conventions and agreements.

SAFEGUARD 2: ACCESS TO INFORMATION

STRUCTURE AND PROCESS INDICATOR. Participants have in place a legal framework, policies and/or programs as well as the necessary procedures and resources for providing access to information related to STEPS Actions, and how safeguards have been addressed and respected.

OUTCOME INDICATOR. Public institutions have provided access to information, and the public has been aware of and exercised the right to seek and receive official information on STEPS Actions as well as on how safeguards have been addressed and respected.

SAFEGUARD 3: STAKEHOLDER IDENTIFICATION

STRUCTURE AND PROCESS INDICATOR. Participants have in place a legal framework, policies, or programs as well as the necessary procedures and resources for the identification or self-identification of Indigenous Peoples, Local Communities, Afro-descendant Peoples or equivalent, including uncontacted peoples and transhumant communities, as well as other relevant stakeholders.

OUTCOME INDICATOR. Public institutions have identified all relevant stakeholders living or using resources in the areas impacted by STEPS Actions including Indigenous Peoples, Local Communities, and Afro-descendant Peoples, or equivalent, including uncontacted peoples and transhumant communities.

SAFEGUARD 4: RIGHTS OF INDIGENOUS PEOPLES, LOCAL COMMUNITIES, AND AFRO-DESCENDANT PEOPLES, OR EQUIVALENT

STRUCTURE AND PROCESS INDICATOR. Participants have in place a legal framework, policies or programs as well as the necessary procedures and resources to respect, protect and fulfill human rights of Indigenous Peoples, Local Communities and Afro-descendant Peoples, or equivalent, including uncontacted peoples and transhumant communities, in conformity with customary law, institutions, and practices, throughout the design and implementation of the Plan and STEPS Actions.

OUTCOME INDICATOR. Public institutions have respected, protected and fulfilled the rights of Indigenous Peoples, Local Communities and Afro-descendant Peoples, or equivalent, including uncontacted peoples and transhumant communities in the design and implementation of the Plan and STEPS Actions.

SAFEGUARD 5: PARTICIPATION AND CONSULTATION

STRUCTURE AND PROCESS INDICATOR. Participants have in place a legal framework, policies or programs as well as the necessary procedures and resources to respect, protect and fulfill the right of all relevant stakeholders, including women, youth and vulnerable groups, to participate fully and effectively (including timely access to information prior to consultations and access to recourse mechanisms to ensure the participation process is respected) in the design

and implementation of STEPS activities as well as in relevant decisions about the use of proceeds from participation in STEPS.

OUTCOME INDICATOR. Public institutions have respected, protected and fulfilled the right of all relevant stakeholders, including women, youth and vulnerable groups, to participate fully and effectively in the design and implementation of STEPS Actions decisions about the use of proceeds from participation in STEPS.

SAFEGUARD 6: TRANSPARENCY AND ANTI-CORRUPTION

STRUCTURE AND PROCESS INDICATOR. Participants have in place a legal framework, policies and/or programs as well as the necessary procedures and resources to prevent corruption, promote anti-corruption measures, and promote transparency, as applicable to the STEPS Actions and the use of proceeds. These reflect the principles of rule of law, proper management of public affairs and public property, and integrity.

OUTCOME INDICATOR. Public institutions have carried out STEPS Actions and the use of proceeds in a transparent and accountable manner, preventing corruption

SAFEGUARD 7: LAND TENURE RIGHTS

STRUCTURE AND PROCESS INDICATOR. Participants have in place a legal framework, policies, or programs as well as the necessary procedures and resources for the recognition, inventorying, mapping, and security of customary and statutory land and resource tenure rights relevant to the implementation of the Plan and STEPS Actions.

OUTCOME INDICATOR. Public institutions have recognized, inventoried, mapped, and secured customary and statutory land and resource tenure rights relevant to the implementation of STEPS Actions and ensured that stakeholders had access to, use of, and control over land and resources throughout the implementation of STEPS Actions. The Plan and STEPS Actions have not caused any involuntary relocation without the free, prior, and informed consent (FPIC) of any Indigenous Peoples, Local Communities, Afro-descendant Peoples or equivalent stakeholders.

SAFEGUARD 8: GRIEVANCE REDRESS MECHANISM

STRUCTURE AND PROCESS INDICATOR. Participants have in place a legal framework, policies or programs and the necessary procedures and resources for guaranteeing non-discriminatory and non-cost prohibitive grievance redress mechanisms at all relevant levels for stakeholders involved in the implementation of and/or with a recognized legal interest in the Plan or STEPS Actions, including judicial and/or administrative procedures for legal redress, which, among other things, provide access for Indigenous Peoples, Local Communities, Afro-descendant Peoples or equivalent stakeholders.

OUTCOME INDICATOR. Public institutions have resolved grievances and competing claims and provided effective recourse and remedies through non-cost prohibitive and non-discriminatory

mechanisms when there was a violation of rights, grievance, dispute or claim related to the implementation of the Plan or STEPS Actions.

SAFEGUARD 9: ENHANCE SOCIAL BENEFITS.

STRUCTURE AND PROCESS INDICATOR. Participants have in place a legal framework, policies or programs as well as the necessary procedures and resources to enhance the social benefits of STEPS Actions and the use of proceeds and ensure that women, youth and vulnerable groups can also benefit from the STEPS activities and the distribution of STEPS benefits.

OUTCOME INDICATOR. Public institutions have designed and implemented the STEPS Actions, and the use of proceeds to enhance social benefits and ensure that women, youth and vulnerable groups benefit from the STEPS Actions.

SAFEGUARD 10: PROTECT NATURAL ECOSYSTEMS, BIOLOGICAL DIVERSITY, AND ECOSYSTEM SERVICES AND ENHANCE ENVIRONMENTAL BENEFITS.

STRUCTURE AND PROCESS INDICATOR. Participants have in place a legal framework, policies or programs as well as the necessary procedures and resources to avoid adverse impacts on natural ecosystems, biodiversity, and ecosystem services in the design and implementation of STEPS Actions and to enhance their environmental benefits.

OUTCOME INDICATOR. Public institutions have designed and implemented the STEPS Actions without adverse impacts on natural ecosystems, biodiversity, and ecosystem services and enhancing their environmental benefits.

9 AVOIDING DOUBLE COUNTING

In the context of climate change mitigation, the term double counting describes situations where a single GHG Emission Reduction (ER) is used towards more than one mitigation target, pledge, obligation or other mitigation commitment or effort. Double counting must be avoided when ERs are used to meet compliance mitigation obligations, targets, pledges, commitments or efforts. Double counting can occur in a number of different ways, including double issuance, double use/double selling, and double claiming, as described below. The risks can be mitigated through operational processes, transparent registry infrastructure and oversight by crediting programs. STEPS will incorporate by reference relevant future decisions and guidance on accounting and reporting in the UNFCCC for the Paris Agreement.[7]

9.1 DOUBLE ISSUANCE

Double issuance occurs when more than one unique unit is issued for a single ER within the same program/registry or when more than one program/registry issues unique units for a single ER. To mitigate the risk of double issuance, STEPS requires the disclosure of any verified emission reductions in the accounting area, checks of duplicate registration under other programs and requirements for disclosure of other registrations, as well as for cancellation of the units on one registry prior to re-issuance on another.

To avoid double issuance, project-based activities could be integrated into a sectoral program through regulation or a contractual agreement by either 1) Allocating the Participant's Performance Standard baseline to a project activity to adjust the project baseline per Paris Agreement Article 6 methodological requirements; 2) Allocating a percentage of STEPS credits or associated revenue to the project activity noting that there are factors that may contribute to sectoral emissions performance that are not project-based such as grid enhancements, which would reduce allocations to individual facilities; or 3) Providing other non-crediting incentives to project activities such as fast track permitting and interconnection.

Verified ERs from any project or facility-level activities that are directly related to electric sector emissions performance that are from activities that are being accounted for as part of the sectoral crediting (as identified in the Plan) and are authorized by the Participant will be deducted from the volume of STEPS ERs prior to issuance.

An exception to this requirement may be granted in cases in which credits from projects located within the Sector are verified and/or issued by a GHG program and labelled as being allowed only for use in a domestic compliance market within the Participant's jurisdiction. Further, this exception is only applicable if the Participant provides assurance and verifiable evidence that

[7] And relevant provisions if approved by the International Civil Aviation Organization (ICAO) for its Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

the specified project credits are only eligible for use towards meeting obligations under a domestic compliance scheme or program, and that no entity is permitted to make claims about the use of the specified project credits towards corporate climate or net-zero targets. In the case of this exception, the volume of credits verified and issued to projects specifically for use in a domestic compliance scheme, and for which no claims are allowed to be made, will not be deducted from STEPS issuance volume.

Any proposed variances to this requirement must follow the process laid out in Section 11.

9.2 DOUBLE USE

Double use occurs when a unique unit is used twice, for example if it is 1) sold to more than one entity at a given time (also referred to as double selling) due to double issuance or fraudulent sales practices, 2) used by the same owner toward more than one obligation / target or 3) used by more than one entity towards compliance obligations such as NDCs (as ITMO) or for Other International Mitigation Purposes.

To prevent double use, STEPS requires clear proof of rights prior to issuance of STEPS Credits and tracking of rights to credits within the registry by serial number and account. In addition, double selling will be prohibited through rules in the legal Terms of Use agreement to be executed by all STEPS Registry account holders, which expressly prohibits double use of credits and prohibits the transfer of rights to credits off-registry.

9.3 DOUBLE CLAIMING

Double claiming occurs when the same ERR is used by two or more entities (e.g. Parties to the Paris Agreement, aeroplane operators under CORSIA, corporate voluntary buyers) to meet climate change mitigation obligations, targets, pledges, commitments or efforts, including international transfers under the Paris Agreement towards achievement of Nationally Determined Contributions (NDCs) and transfers for use by aeroplane operators under the ICAO CORSIA, or when voluntary market transfers are counted toward both corporate buyer pledges and supplier country NDCs. STEPS Participants may authorize transfers of STEPS Credits for compliance purposes to buyers outside of the Participant's country by submitting a Host Country Letter of Authorization to ERT[8] which must include required elements of an authorization,[9] and providing an initial report or updated initial report[10] to the UNFCCC and subsequently reporting

[8] See Host Country Authorization template on UNFCCC website: https://unfccc.int/documents/646071

[9] As referred to in decision 2/CMA.3 and -/CMA.6, Matters relating to cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement, Section I Authorization B, paragraph 5 Content of Authorization.

[10] As referred to in decision 2/CMA.3, annex, paragraphs 18–19 and -/CMA.6, Annex I Table of supplementary elements of information in initial report and any updated initial reports.

an accounting adjustment in the submission of annual information[11] and biennial transparency reports (BTR) to the UNFCCC.[12] Voluntary market transactions do not require corresponding adjustments.

Where accounting for international transfers may be required or preferred, the STEPS Registry facilitates this process for all transactions by providing the infrastructure to publish Host Country Letters of Authorization for transfer of STEPS Credits, to label STEPS Credits as associated with a Letter of Authorization, as well as to label STEPS Credits for which a corresponding adjustment has been reported to the UNFCCC. All STEPS Credit retirements and cancellations will be transparently recorded in public reports on the STEPS Registry.

9.3.1 Letter of Authorization (LoA)

The Letter of Authorization shall include the following elements:[13]

1. A unique identifier for the cooperative approach, obtained from the centralized accounting and reporting platform, where available;
2. The name(s) of the participating Party(ies) and/or entities, if known, covered by the authorization;
3. The date and duration of the authorization, including the final date for mitigation outcomes to be issued, or to be used or cancelled, in connection with the first transfer specified by the Party as per decision 2/CMA.3, annex, paragraph 2(b), as applicable;
4. The specification of the first transfer of the mitigation outcome, as specified by participating Parties, as per decision 2/CMA.3, annex, paragraph 2;
5. The uses covered by the authorization, consistent with decision 2/CMA.3, annex, paragraph 1(d) and (f);
6. The identification of or cross-reference to underlying regulations, frameworks, standards or procedures, including any specific methodologies underpinning the cooperative approach;
7. Where changes to the authorization occur, information on the circumstances in which such changes may occur and a description of the process for effecting such changes in a way that avoids double counting;
8. The quantity of internationally transferred mitigation outcomes, if applicable;
9. Identification of the registry the participating Party has, or has access to, for the purpose of tracking and recording internationally transferred mitigation outcomes;

[11] Requested in the Agreed Electronic Format referred to in decision 2/CMA.3, annex, chapter IV.B, as contained in -/CMA.6, Annex II

[12] As referred to in paragraph 77, subparagraph (d) of the Annex to decision 18/CMA.1.

[13] As referred to in decision 2/CMA.3 and -/CMA.6, Matters relating to cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement, Section B, Content of Authorization paragraph 5.

10. Identification of the relevant registry(ies) in the underlying regulations, frameworks, standards or procedures that (1) contain mitigation outcomes or inform their calculation by the participating Party(ies) and (2) transparently track the status of underlying mitigation activities and outcomes as well as participation and transactions by entities, as applicable;
11. The vintage(s) covered by the authorization;
12. The metrics and units of measurement or conversion and the greenhouse gases covered by the authorization;
13. The sector(s) covered, if applicable;
14. The activity type(s) and/or activity(ies) covered, if applicable."

9.3.2 Changes to Authorization

In the event of a change to an ITMO authorization, ERT would assess the changes to the authorization to ensure they are aligned with Article 6 requirements and any circumstances specified in the original authorization and that they have been reported to the UNFCCC. All updated authorizations will be posted on the STEPS registry.

In the event an ITMO authorization is narrowed / rescinded, ERT will remove the authorization label for the volume of issued units that have not already been first transferred, as defined in the Letter of Authorization. In the event that the Parties have specified in the authorization that the authorization can be revoked for first transferred units, and authorization for first transferred units is revoked, ERT will require that the process specified to avoid double counting is followed. ERT will not remove the authorization label from any units.

In the event the authorization is broadened, ERT will update unit labelling accordingly.

10 VALIDATION AND VERIFICATION

This chapter provides a general overview of requirements for validation of GHG Programs and ex-post verification of GHG Monitoring Reports and statements, by an accredited, competent and independent third-party VVB approved by ERT. Each GHG Program shall be validated and verified through the end of its Crediting Period for conformance with the criteria specified in STEPS (the version of STEPS against which it was validated). Each GHG Program shall be subsequently verified for conformance with STEPS. Validation and verification may be conducted by the same entity and may occur simultaneously.

Table 6: General Requirements

ITEM	DEFINITION, PROCESS OR REQUIREMENT
Validation	The systematic, independent, and documented process for the evaluation of an electric sector GHG Program against applicable requirements of STEPS and other applicable audit criteria (e.g., relevant errata and clarifications). A listing review by ERT that results in program listing shall not inform the process or determination of the subsequent validation by the selected VVB.
Verification	The systematic, independent, and documented assessment by an accredited, qualified and impartial third party of the GHG statement for a specific Reporting Period. The verification process is intended to assess the degree to which a GHG program statement complies with STEPS, eligibility criteria, requirements and specifications, environmental and social safeguards, and has correctly quantified Total and Net GHG Emission Reductions.
Materiality Threshold	Set at ±5%; STEPS requires that discrepancies between the emission reductions claimed by the Participant and estimated by the Validation and Verification Body (VVB) be immaterial. Individual or aggregation of errors or omissions greater than the materiality threshold require restating before a Verification Opinion will be accepted. The materiality threshold also applies in the event that an overstated GHG statement is discovered after credits have been issued. If the misstatement exceeds the materiality threshold, ERT will determine the volume of over-issued credits and the appropriate corrective action including 1) the cancellation of over-issued credits still held in the Program account, 2) the

	deduction of the over-issued volume amount from the verified Total GHG Emission Reductions to be issued after the next completed verification, 3) the cancellation of the over-issued volume of comparable replacement credits supplied by the Participant, or 4) other remedies as defined in the Terms of Use Agreement.
Validation and Verification Frequency	Validation occurs once per Crediting Period. Renewal of the Crediting Period requires a new validation within one (1) year from the end of the previous, expiring Crediting Period. Changes to the crediting level that occur after validation must be disclosed and validated in conjunction with the subsequent verification.
VVB Requirements	All VVBs must be approved by ERT and be accredited under ISO 14065 by an accreditation body that is a member of the International Accreditation Forum (IAF) and with which ERT has a Memorandum of Understanding (MoU) in place. VVBs shall be accredited for the electric power sector shall meet the competence requirements as set out in ISO 14065 as considered current. Prior to commencing validation or verification work, all VVBs must be in good standing; have completed the application process by submitting an application form and Attestation of Validation/Verification Body, which details requirements for conflicts of interest and makeup of the verification teams; document technical capabilities for the sectoral scope; established a VVB account on the registry; and have submitted a Program-specific Conflict of Interest Form for ERT's approval. Program-specific conflicts of interest must be disclosed and mitigated.

10.1 VALIDATION AND VERIFICATION INTERVAL

Validation of the GHG Program occurs once per Crediting Period. Renewal of the Crediting Period requires a new validation. Verification is required at specified intervals in order to issue new STEPS Credits and may begin only after the completion of the Reporting Period being verified. GHG emission reductions may be verified and issued annually, or at the Participant's request, less frequently per the schedule below.

Validation and Verification is required following calendar year 1 of each crediting period. Verification is required after calendar years 3 and 5 of each crediting period. Participants may elect to have verifications following calendar years 2 and 4 of the crediting period. If these optional verifications are conducted and a positive verification conclusion is reached, a Participant may be able to issue credits annually. If the optional verifications are not conducted, a Participant will only be able to issue credits following calendar years 1, 3, and 5, as no credits will be issued without verification.

Table 7: Verification Cycle

CREDITING PERIOD YEAR	VERIFICATION SCOPE
End of Year 1	All sections of the STEPS Registration Document and STEPS Monitoring Report, including eligibility criteria and crediting level data and calculations, monitoring data, ER calculations for calendar year 1; and conformance with social/environmental safeguards
End of Year 2 OPTIONAL	All sections of the STEPS Monitoring Report including monitoring data and ER calculations for the ERs achieved in calendar year 2, and conformance with social/environmental safeguards
End of Year 3	All sections of the STEPS Monitoring Report including monitoring data and ER calculations for the ERs achieved in either calendar year 3 only or calendar years 2 and 3 (if the optional verification was not performed), and conformance with social/environmental safeguards
End of Year 4 OPTIONAL	All sections of the STEPS Monitoring Report including monitoring data and ER calculations for the ERs achieved in calendar year 4, and conformance with social/environmental safeguards
End of Year 5	All portions of the STEPS Monitoring Report, including monitoring data and ER calculations for the ERs achieved in either calendar year 5 only or calendar years 4 and 5 (if the optional verification was not performed), and conformance with social/environmental safeguards

10.2 VALIDATION AND VERIFICATION BODY REQUIREMENTS

Validation and verification are risk-based processes carried out in conformance with ISO 14064-3 and ISO 14065, as considered current. VVBs shall be accredited for validation and verification in the applicable sector and shall meet the competence requirements as set out in ISO 14065.

All VVBs must be approved by ERT and be accredited under ISO 14065 by an accreditation body that is a member of the International Accreditation Forum (IAF) and with which ERT has a Memorandum of Understanding (MoU) in place.

Prior to commencing validation or verification work, all VVBs must be in good standing; have completed the application process described on the STEPS website, including submitting an application package and Attestation of Validation/Verification Body, which details requirements

for conflicts of interest and makeup of the verification teams; document technical capabilities for the applicable sectoral scope; establish a VVB account on the registry; and have submitted a Program-specific Conflict of Interest Form for ERT's approval. Program-specific conflicts of interest must be disclosed and mitigated. Validation and verification activities may not be conducted until the VVB has received approval from ERT. Once approved, the VVB must update ERT immediately about any changes in accreditation status or scope, enforcement activities, investigations, revocations or suspensions of the body itself, or any verifiers working on the VVB's behalf.

The VVB shall keep all documents and records pertaining to the validation and verification in a secure and retrievable manner for at least two (2) years after the end of the Crediting Period of the relevant GHG Program, even if it does not carry out verification throughout the Project's Crediting Period.

10.3 VALIDATION AND VERIFICATION SCOPE

10.3.1 Validation Scope of Assessment

The Scope of the Validation shall include an assessment of conformance with STEPS requirements as detailed in the STEPS Registration document including:

1. **ELIGIBILITY.** The Participant meets all eligibility requirements per Chapter 3 including legal authority, national reporting commitments, and designated entity status including legal title to ERs.
2. **ENERGY TRANSITION PLAN.** The Participant has submitted an Energy Transition Plan including Just Transition elements per Chapter 3 and the Plan meets the minimum content requirements.
3. **SECTORAL BOUNDARY** The Participant has correctly defined the Sectoral Boundary per Chapter 5 including all grid-connected, captive, and distributed generation. Any exclusions are justified.
4. **GENERATION CAPACITY** The Register (see Table 8) is complete, includes all installations within the Sectoral Boundary, and contains the required data fields. The VVB cross-checks against independent sources (GEM data, IEA capacity statistics, published government records).
5. **GENERATOR CLASSIFICATION** Classifications (MEP/EP/OEP) are correctly applied and monitoring levels are correctly assigned in accordance with Appendix B.
6. **SPER CALCULATION.** The AER for each of the SPER years (2023, 2024, 2025) is correctly calculated from documented data sources. The SPER value is the minimum of the three. Data sources are identified, appropriate, and consistent with available national statistics.

7. **BAU BASELINE PIPELINE TEST DISCLOSURES.** Pipeline disclosures per Chapter 4.3.3.2.2 are complete and accurate.
8. **MONITORING PLAN.** The Monitoring Plan addresses all required elements per Section 6. The arrangements described are adequate to generate data of the quality required by Section 5. The VVB assesses whether the Participant's approach — including data channels, EESB compilation, IMP processes, and QA/QC — is implementable and fit for purpose.
9. **EESB ARRANGEMENTS.** The Participant's approach to compiling the EESB is consistent with Section 5 and Appendix B. Data sources, compilation method, and quality procedures are adequate. Where the Participant uses a partial (electricity-sector-only) balance, the VVB assesses whether it meets data quality requirements.
10. **IMP ARRANGEMENTS.** The Participant's process for requiring, reviewing, and approving IMPs is adequate Appendix B. The VVB samples a representative selection of IMPs to assess quality and completeness.
11. **GENERATION DATA CHANNELS.** The arrangements for collecting generation data from non-IMP generators are adequate per Appendix B. Formal arrangements with grid operators, statistics authorities, or RE registries are in place or planned.
12. **PROGRESSIVE COVERAGE PLAN.** The Plan is realistic, with credible milestones and a coherent sequencing of generators into individual monitoring.
13. **SAFEGUARDS.** Per Chapter 8, the description of each safeguard provided in the STEPS Registration Document ensures that the implementation of STEPS Actions will be in conformance with the indicators.
14. **DOUBLE COUNTING.** Per Chapter 9 the Participant has taken steps to ensure no double counting including avoiding double issuance and double claiming.
15. **AER FOR PAST YEARS.** Where the Participant registers mid-period: AER calculations for intervening years (e.g., 2026 and 2027 for a 2028 registration) are reviewed for reasonableness, data sources, and consistency with the SPER.

10.3.2 Verification Scope of Assessment

The objective of verification is to review impartially and objectively a Participant's claimed GHG emission reductions assertion and conformance with safeguards against requirements in STEPS based on supporting evidence and GHG verification best practice including a risk-based assessment of sources and magnitude of potential errors, omissions and misrepresentations that may lead to material misstatement.

The Scope of the Verification shall include an assessment of the Monitoring Report, GHG assertion, and any additional relevant documentation provided by the Participant for conformance with STEPS requirements including:

1. **EESB.** The EESB has been compiled per Section 5 and Appendix B. Fuel inputs by type are complete and correctly classified. Generation outputs reconcile with independent

sources. The three-layer reconciliation has been performed and discrepancies investigated. Statistical difference is within [2%].

2. **ACTIVITY DATA.** Fuel consumption and generation data are accurate and complete. The VVB samples a representative selection of generators with IMPs and traces reported fuel consumption through the fuel balance (deliveries, stock records, supplier invoices). The VVB also assesses the plausibility of EESB fuel consumption data for non-IMP generators.
3. **EMISSION FACTORS AND NCVS.** Values used are consistent with assigned monitoring levels. IPCC defaults correctly applied where applicable. Country-specific or generator-specific values supported by documented evidence (lab certificates, supplier declarations).
4. **AER CALCULATION.** Re-performance of the AER calculation: data inputs from the EESB; import/export adjustments. Arithmetic checked.
5. **IMPORT/EXPORT ADJUSTMENTS.** Volumes are consistent with system operator and customs data. Emission factors for imports are from disclosed sources. Contractual attribute allocations are documented. Consistency with STEPS trading partners assessed where applicable.
6. **EMISSION REDUCTIONS.** Correctly calculated from CPS (Section 4.2.2) and AER (Section 5.7.2), (Equation 18) adjustments correctly applied (per Section 5.6). Net STEPS Credits correctly calculated (Equation 19).
7. **MONITORING PLAN CONFORMANCE.** The Participant has operated in accordance with its validated Monitoring Plan. Any deviations are identified, justified, and assessed for impact.
8. **COMPLETENESS.** Coverage percentages reported. Conservative estimates assessed for reasonableness. Missing data identified and treated appropriately.
9. **PROGRESSIVE COVERAGE.** Coverage level achieved. Milestones met or shortfalls justified. Improvement relative to previous verification.
10. **FUEL BALANCE INTEGRITY.** At sampled generators: reported consumption reconciles with delivery records and financial accounts. At national level: EESB fuel totals are consistent with fuel supply data.
11. **GENERATION DATA.** Total generation reconciles with grid operator data. Own-use factors are reasonable and correctly applied. Gross generation is not systematically overstated.
12. **SAFEGUARDS.** Evidence confirms that the implementation of the STEPS Actions was in conformance with the indicators.
13. **MATERIAL CHANGES.** New installations, retirements, IMP amendments, Monitoring Plan updates, changes in EESB methodology — identified and appropriately reflected.
14. **DOUBLE COUNTING.** Confirmation that required steps have been taken to ensure no double issuance (such as project-level crediting deduction correctly calculated, if applicable) and no double claiming.

10.4 VALIDATION REPORT AND OPINION

On completion of validation, a Validation Report and Validation Opinion shall be submitted to ERT. Validation documents shall be in English, and describe the validation process, any issues raised during the validation and their resolutions, and the conclusions reached by the VVB. The Validation Opinion must be submitted using the most recently published template available on the STEPS website. Note that since validation and verification may be conducted simultaneously, and may be conducted by the same approved VVB, it is acceptable in this instance to combine the Validation Report and Verification Report into a single report.

10.5 VERIFICATION REPORT AND OPINION

On completion of verification, the Participant shall submit a Verification Report and Verification Opinion to ERT. Verification documents shall be in English, and describe the verification process, any issues raised during the verification and their resolutions, and the conclusions reached by the VVB. The Verification Opinion must be submitted, using the most recently published template available on the ACR website. Note that since validation and verification may be conducted simultaneously, and may be conducted by the same approved VVB, it is acceptable in this instance to combine the Validation Report and Verification Report into a single report.

The Verification Report must provide a reasonable level of assurance that the GHG assertion is free of material misstatement and provides a true and fair representation of the program's net GHG emission reductions and full conformance with safeguards. The Verification Opinion must be positive.

10.6 VALIDATION AND VERIFICATION ACCEPTANCE

ERT will review the program documents and validation and/or verification documents and accept them, request corrections and/or clarifications, or reject them. If ERT requests corrections or clarifications, the Participant and VVB shall make all necessary corrections and clarifications and resubmit updated documents for subsequent review.

GHG programs must be validated and verified without reservation, with Participants having addressed all clarifications and corrections required by the VVB. ERT reserves the right to accept or reject a validation or verification statement from an approved VVB.

If ERT accepts the validation and verification documents, and the GHG Program has already completed all other required steps, then ERT will post the Validation Report, Validation Opinion, Verification Report, Verification Opinion, and other public documentation to the Registry, and

issue STEPS Credits to the Participant's Registry account. STEPS Credits will only be issued post validation and verification.

10.7 ROTATION OF VERIFICATION BODIES

ERT requires that Participants utilize a different VVB at a minimum of every five (5) years of reporting or five verifications (including both full and desk-based reviews), whichever comes first.

10.8 VALIDATION AND VERIFICATION BODY OVERSIGHT

In addition to the accreditation processes to which all ERT-approved VVB's must adhere, ERT reserves the right to conduct oversight activities during validation and/or verification performance by the VVBs operating under STEPS, and to suspend or revoke its approval of a previously approved VVB with cause. Oversight activities are conducted to ensure an adequate level of quality control and are intended to supplement accreditation body oversight and audit processes. Oversight activities conducted by ERT representatives include the following:

- Review of information and supplementary documentation submitted by VVBs regarding Program-specific conflict of interest determinations;
- Review of VVB documentation, such as data checks and verification and sampling plans;
- Review of Participant documentation, such as data sources, quantification and calculation spreadsheets or databases;
- Review of Validation Reports, Validation Opinions, Verification Reports and Verification Opinions; and
- Program-level audits.

ERT may elect to audit any validation and/or verification process conducted by an ERT-approved VVB, including attending the validation and/or verification meetings and site visits. ERT will notify the VVB and the Participant of selection for a -program level audit upon the approval of the VVB for services. Should ERT select a GHG Program for an audit, the VVB must include ERT on communications with the Participant and in substantive meetings with the Participant and make data and information subject to validation and/or verification available to ERT for review. During a program-level audit, ERT may choose to send, at its own expense, a representative to the validation and/or verification site visit to observe on-site verification activities. At the conclusion of an audit, ERT will communicate directly to the VVB, as applicable, any items of concern noted during validation and/or verification performance, including areas for improvement and non-conformities with ERT validation and verification procedures. ERT will report significant, non-remediated and/or recurring VVB performance concerns to the relevant accreditation body.

11 REGISTRY REQUIREMENTS

11.1 ACCOUNT REQUIREMENTS

All Participants will have an account in the Registry, which records:

- Participant information and program documentation (Concept, Registration, Monitoring, Validation, Verification)
- Records of serialized credit issuance, transfers, retirements, and cancellations
- Performance Reserve balances
- Host Country Authorizations and relevant UNFCCC reporting

11.2 PUBLICLY AVAILABLE DOCUMENTATION

All approved and final STEPS documents listed in Section 2 shall be publicly available through the STEPS website and/or Registry. Participants may designate certain parts of the documentation as Commercially Sensitive Information (CSI). In these cases, redacted versions of STEPS documentation can be made publicly available. However, this information—as well as any requested supporting documentation—must be available for review by ERT and the Validation and Verification Body (VVB).

For the sake of transparency, ERT shall presume Participant information is available for public scrutiny, and demonstration to the contrary shall be incumbent on the Participant. The VVB shall check that any information requested as “commercially sensitive” meets the STEPS definition of CSI. Subscribers to the STEPS listserv shall receive notification of the availability of new and relevant Participant documentation as it becomes publicly available to ensure that stakeholders have ample opportunity to submit comments to STEPS regarding these submissions. Comments submitted within 30 days of notice will be directed to the Participants to be addressed and will also be provided to the VVB at the beginning of Validation and Verification.

12 COMPLAINTS & APPEALS

12.1 SCOPE

The STEPS Complaints and Appeals procedure is for reporting instances in which the processes required by ERT have not been followed, resulting in harm to stakeholders as a result of the STEPS activities.

The STEPS Complaints and Appeals procedure is not for grievances related to the design and/or implementation of a Participant STEPS Program or for complaints regarding the conduct or decisions of the Validation and Verification Body.

Complaints regarding a Participant's STEPS program, including participatory processes, distribution of benefits, activities or communities included in the program, access to information, FPIC or any topic related to the design and implementation of the STEPS activities should be directed to the appropriate dispute resolution mechanism in the jurisdiction, which are required as outlined in Section 8. If the complainant does not feel the dispute resolution mechanisms are effective, they should report this concern to the Validation and Verification Body during the validation and verification process.

Complaints on the conduct or decisions of the Validation and Verification Body can be reported to ERT or to the Validation and Verification Body through its complaint process. If reported to ERT, ERT will forward the complaint to the VVB and, if appropriate, to the appropriate IAF accreditation member to be addressed through their process. ERT will also take the complaint into account as part of our Validation and Verification Body oversight process, but this will not be addressed through the STEPS Complaint and Appeal process.

12.2 COMPLAINTS

Complaints must meet the following requirements to be considered eligible:

- Complainants must be one or more individuals who live in the Participant's jurisdiction.
- Complainant must demonstrate harm or imminent pending harm from ERT's failure to follow its processes.
- If a Complainant is a representative organization, it must include the names of the individual or individuals being harmed and their consent to be represented by the organization.
- The complaint must represent a new issue not associated with a previous complaint.

To submit a complaint, the Complainant sends a written complaint via email to STEPS@winrock.org. The complaint must detail the following:

1. Description of the eligible complaint with specific reference to STEPS requirements that were not followed;
2. Complainant name, contact details, and organization; Description of the harm or imminent harm to the Complainant; and
3. Supporting documentation provided for consideration by the reviewer in the complaint resolution process.

ERT will maintain a list of qualified individuals not employed by ERT or Winrock who may be called upon to review any complaint received. ERT will select a reviewer based on availability and the nature of the complaint.

If a complaint is received, ERT will acknowledge receipt to the Complainant and then appoint an external reviewer to evaluate whether the complaint meets the eligibility criteria. The reviewer will notify the complainant of the eligibility decision within 20 business days of being appointed.

If the complaint is eligible, a qualified reviewer will investigate the complaint. The investigation may include interviews with relevant stakeholders, a review of documents and information, and/or consultation with external experts as needed. All involved stakeholders, including the Complainant and named individuals, will be required to sign Non-Disclosure Agreements limited to the term of the complaint review process to ensure the review process remains objective and uninfluenced by outside parties. The reviewer will submit a report summarizing the investigation and their conclusion to the ERT Board. Following the ERT Board review, the reviewer will share a copy of the report with the Complainant.

If appropriate, ERT will develop corrective and preventive actions to address the findings of the reviewer.

12.3 APPEALS

If within 30 days of the receipt of the reviewer's Complaint Report, the Complainant obtains evidence not previously considered during the Complaint process that would reasonably be expected to have impacted the decision, the Complainant may file an appeal including the evidence that was not considered. An appeal may not be filed only to dispute the outcome and must be filed by the same organization and affected individuals that filed the Complaint.

To file an appeal, the Complainant sends a written appeal via email to STEPS@winrock.org. The appeal must provide a detailed description of the appeal with specific reference to evidence that was not considered during the complaint review process.

If an appeal is received, ERT will acknowledge receipt to the Complainant and then appoint an external reviewer based on availability and the nature of the complaint. The reviewer will evaluate whether the appeal meets the eligibility criteria and will notify the complainant of the eligibility decision within 20 business days of being appointed. The reviewer for the appeal will be a different individual than reviewed the complaint.

If the appeal is eligible, a qualified reviewer will investigate the appeal. The investigation may include interviews with relevant stakeholders, a review of documents and information, and/or consultation with external experts as needed. All involved stakeholders, including the Complainant and named individuals, will be required to sign Non-Disclosure Agreements limited to the term of the appeal review process to ensure the review process remains objective and uninfluenced by outside parties. The reviewer will submit a report summarizing the investigation and their conclusion to the ERT Board. Following the ERT Board review, the reviewer will share a copy of the report with the Complainant.

If appropriate, ERT will develop corrective and preventive actions to address the findings of the reviewer.

The conclusion of the appeal reviewer will be considered final and subsequent appeals will not be accepted.

DEFINITIONS

Cancel or Cancellation	The permanent removal of a STEPS credit from the Registry so that it cannot be transferred, transacted, retired or applied towards any emission reduction targets. If the carbon credit has been cancelled so that the equivalent can be reissued by another carbon crediting program, ERT no longer tracks the credit.
Commercially Sensitive Information	CSI comprises trade secrets, financial, commercial, scientific, technical, or other information whose disclosure could result in a material financial loss or gain, prejudice the outcome of contractual or other negotiations, or otherwise damage or enrich the person or entity to which the information relates.
Crediting Period	The five-year period for which a Participant can generate carbon emission reduction credits against the crediting baseline. The performance standard (baseline) must be updated for each new Crediting Period.
Do no harm	STEPS Actions must be in compliance with applicable local, national, and international laws and regulations.
Double Counting	In the context of climate change mitigation, double counting consists of situations where a single GHG ER, removal, avoidance, or other mitigation outcome is used more than once to demonstrate achievement of mitigation targets or pledges. Double counting can occur in different ways, including double issuance, double use, and double claiming.
Intergovernmental Panel on Climate Change (IPCC)	The "international body for assessing the science related to climate change. The IPCC was set up in 1988 by the World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP) to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation."[14]
Issue or Issuance	The creation of serialized STEPS Credits equivalent to the number of verified GHG reductions for an approved STEPS program over a specified period of time denominated in metric tons of CO_2 equivalent.

[14] https://www.ipcc.ch/site/assets/uploads/2021/07/AR6_FS_What_is_IPCC.pdf.

	STEPS Credits are issued as serialized units on the Registry Account Holder's Account for transfer, retirement, surrender or cancelation.
Emissions Rate	The Emissions Rate is a measure of the CO_2 emissions intensity of the Sector, or components thereof, expressed as a ratio of CO_2 emissions to electricity generation.
Emissions Factor	The quantity of CO_2 released from combustion of fuel(s) based on their carbon content per unit of mass (kg/tonne) or calorific value (gCO_2/Tj)
Installation	QA/QC actions required of, or taken by, the Participant to establish the validity of reported activity.
Local Communities	In alignment with international law, this term refers to communities that have a long association with, and depend on, the lands and waters that they have traditionally lived on or used; Sometimes these communities are also referred to as "traditional communities." Specific application of the definition will vary according to each Participant's ratified international legal frameworks and agreements and national legislation regarding local communities, or equivalent.
Participant	The Participant is the legal entity designated by a national government with full authorization to interface with STEPS.
Reporting Period	The period of 12 months, corresponding to a calendar year, for which STEPS Monitoring Reports must be submitted to STEPS.
Retire or Retirement	The permanent removal of a STEPS credit from circulation as a transactable unit so that it represents a permanent reduction or removal of CO_2e from the atmosphere. A retired credit may be applied toward the emission reduction target of the STEPS Account Holder (towards its NDC achievement) or on behalf of a third party towards an emission reduction target (including NDC achievement).
STEPS Credit	The STEPS unit of exchange is a greenhouse gas emission reduction denominated in metric tons of CO_2e, quantified and verified pursuant to STEPS, that is serialized and issued on the Registry as a STEPS Emission Reduction (ER).
Title	A legal term representing rights and interests in a carbon credit(s) and/or a future stream of credits.
Unabated Coal Generation	Burning coal for electricity without technologies like Carbon Capture, Utilization, and Storage (CCUS) to remove emissions. "Abated" requires capturing 90–95% of lifecycle emissions.

Validation	Validation is the systematic, independent, and documented process for the evaluation of a STEPS Registration Document against applicable requirements of STEPS.
Validation/ Verification Body	The Validation and Verification Body is a competent and independent firm responsible for performing the validation and/or verification process. A Validation and Verification Body must be duly accredited and STEPS-approved to conduct validations and verifications.
Verification	Verification is the systematic, independent, and documented assessment by a qualified and impartial third party of the ER assertion for a specific reporting period. The verification process is intended to assess the degree to which a STEPS program complies with STEPS requirements and has accurately quantified net GHG reductions. Verification must be conducted by an accredited, independent third-party verification body.

APPENDIX A: STEPS DOCUMENTS

A summary of the information required in each STEPS Document is provided below.

Instructions and additional information are included in each document template available on the STEPS website.

A.1 STEPS CONCEPT

The STEPS Concept includes preliminary information about the proposed Participant and demonstrates how the proposed Participant meets the eligibility criteria. Information contained in the STEPS Concept is based on information available at the time of submission and are expected to be elaborated in the STEPS Registration Document as more detailed analyses and calculations are conducted. ERT will review the Concept for completeness and general eligibility screening, but approval of the Concept does not constitute formal STEPS registration or formal validation or verification of the submitted information.

1. **PARTICIPANT CONTACT INFORMATION AND ELIGIBILITY.** Identify the Participant(s) and primary STEPS contact, including all contact information. Describe the eligibility of the Participant including the basis of the authority of the Participant(s) to represent the jurisdictional electric power sector for crediting.
2. **PROGRAM PARTNERS.** A summary of any other organizations and individuals who have or will assist in preparing the STEPS documentation, if any, including additional government agencies, non-governmental organizations (NGOs), and/or additional technical consultants.
3. **CREDITING PERIOD [ANTICIPATED START DATE YEAR].**
4. **BAU TEST DISCLOSURES**. Provide narrative responses as required in section 4.3.
5. **EMISSIONS DATA.** Provide information on the availability, collection methods and QA/QC procedures for emissions data within the accounting boundary or the plan and timing for having these in place to meet requirements.
6. **DESCRIPTION OF OWNERSHIP RIGHTS TO THE ISSUED STEPS CREDITS.**

Provide a brief summary of the Participant's rights to the ER's generated from the accounting area (regulatory frameworks, laws or administrative orders) or a description of how rights will be obtained in accordance with domestic law. It may not necessary for the Participant to establish or enact new legislation or a legal framework to address carbon rights. However, the Participant must explain how, under existing constitutional or legal frameworks, carbon rights and/or related intangible property interests, are established and addressed. This explanation should include how such carbon rights and/or intangible property interests would be established, the legal basis for creating such rights and interests, and how claims to such rights from private parties,

Indigenous Peoples or subnational entities will be resolved. To address the latter, the Participant must describe any agreements in place or that will be in place, for the transfer of STEPS credits or benefit allocation arrangements that exist between the Participant and GHG project owners and/or other collective rights holders (including indigenous peoples and other traditional communities). STEPS credits will only be issued once clear ownership or rights have been demonstrated. Participants may provide this demonstration at a later date, within the same crediting period or during a subsequent crediting period (provided the crediting periods are adjacent).

7. **SAFEGUARDS OVERVIEW.** For each indicator in Section 8 Environmental, Social, and Governance Safeguards, identify whether the Participant will be demonstrating conformance or will be providing a plan to achieve conformance during the first crediting period.
8. **PARTICIPATION IN OTHER CREDITING PROGRAMS WITHIN THE PROPOSED AREA.** Disclose any existing electricity sector projects that may generate credits and the status of crediting.
9. **DOUBLE COUNTING.** Provide a preliminary description of the plan and procedures to ensure double counting is avoided per Section 9. Also please indicate the intended use for STEPS credits, if known. For example, indicate if they will be used for compliance against NDC targets, for transfer to another entity for use, or a combination of both.

A.2 STEPS REGISTRATION DOCUMENT

The STEPS Registration Document and attachments provide a full description of how the Participant meets and plans to meet the requirements of STEPS. This includes:

1. Program name and non-technical executive summary with key information on planned actions to contribute to STEPS emissions performance results
2. Contact information including Participant and primary contact
3. Partners in preparing the documentation, if any, including additional government agencies, NGOs, and/or additional technical consultants and a description of their roles
4. Crediting period start and end dates
5. Country-specific performance standard annually (after the application of the index) and for the crediting period and required BAU test disclosures
6. Description of how the Participant meets the eligibility criteria outlined in Section 3 of this Standard
7. Details of the Energy Transition Plan and associated Just Transition elements (full copies provided to VVB)
8. Description of ownership rights to ERs to be issued by STEPS
9. Disclosures about participation in other electricity sector crediting programs and/or electricity sector Project(s) within the proposed area regardless of credit ownership

10. Plan and procedures to ensure double counting is avoided
11. Emissions performance methods, data sources, and procedures used for data collection and quantification for both activity data and emission factors
12. Standard Operating Procedures (SOPs) or methodological procedures for data collection and QA/QC
13. Data sources, if from literature or defaults
14. Description of emission factors derived
15. Data storage and sharing plan
16. Uncertainty calculations
17. Description of monitoring plan
18. Description of how the Participant meets the requirements of the individual Safeguards including description of the STEPS Action's contributions to sustainable development

A.3 STEPS MONITORING REPORT

The STEPS Monitoring Report is submitted to the STEPS Registry prior to each verification. Each report must cover a minimum of 12 months representing one calendar year and is required to be submitted within twelve months following the end of calendar years 1, 3, and 5 of each crediting period. A STEPS Monitoring Report may be optionally submitted following the end of calendar years 2 and 4. The STEPS Monitoring Report outlines the ongoing performance of the Participant including a summary of activities conducted and the data collected and quantified for the ERs over the reporting period. These include:

1. Crediting period start and end date
2. Reporting period start and end date
3. Summary of program activities undertaken that contribute to emissions performance results
4. Description of on-going conformance with the Safeguards
5. Emissions for the reporting period including a description of the quantification and data collection since the most recently submitted report
6. Data storage and sharing plans
7. Uncertainty calculations
8. ER calculation description and supporting workbook

APPENDIX B: SUPPLEMENTAL INFORMATION

Appendix B provides the technical details referenced throughout this standard document.

B.1 DISCLOSURE REQUIREMENTS FOR CAPACITY PIPELINE TEST

The scope of Participant disclosure is limited to information necessary to ensure the accuracy and completeness of the Capacity Pipeline Test calculation. Disclosure during the development stage supplements the global plant-level dataset used by ERT and corrects for known gaps or errors in that dataset.

Participants are not required to provide original generation or emissions monitoring data at this stage. Disclosure requirements are satisfied by the categories of information specified below.

Grid-Connected Generation Fleet — Operational Plants

The Participant shall review ERT's pre-populated list of operational grid-connected plants for the Sector, drawn from [GEM], and confirm or correct the following for each plant:

- **Operational status:** Confirm whether the plant is currently operational. Flag any plants listed as operational that have in fact been retired, mothballed, or are no longer grid-connected.
- **Nameplate capacity (MW), Technology & Primary Fuel:** Confirm accuracy. Report any material discrepancies (±[5]% or ±[10 MW], whichever is greater).
- **Retirement date:** Where the Participant has a confirmed regulatory, contractual, or policy-mandated retirement date for any plant, that date must be disclosed. If no confirmed date exists, no disclosure is required and the Test applies its default economic-life assumptions.
- **Plants not in ERT's dataset:** The Participant must identify any grid-connected operational plants within the Sectoral Boundary that are absent from the pre-populated list and provide the following minimum data: fuel type, technology, nameplate capacity, and commercial operation date.

Grid-Connected Generation Fleet — Pipeline Plants

The Participant shall review ERT's pre-populated list of pipeline plants (under construction or permitted) for the Sector and confirm or correct the following:

- **Operational status:** Confirm whether each listed plant remains in the pipeline and at what stage (under construction, pre-construction, announced). Flag any plants that have been cancelled, indefinitely deferred, or that have already achieved commercial operation (and should therefore appear in the operational fleet).
- **Expected commercial operation date:** Where the Participant has a more current or reliable estimate of the expected commissioning date than ERT's dataset reflects, the Participant should report it. If no material change exists, no update is required.
- **Anticipated capacity factor:** The Participant must report the anticipated capacity factor together with supporting justification (e.g., power purchase agreement, grid operator dispatch schedule, resource assessment).
- **Pipeline plants not in ERT's dataset:** The Participant must identify any under-construction or advanced-development plants (emitting and non-emitting) within the Sectoral Boundary that are absent from the pre-populated list and provide: fuel type, technology, nameplate capacity, expected commercial operation date, and data source.

Captive Generation — Operational and Pipeline

The Participant must provide the following specific disclosures for [in-scope] captive generation:

- Operational captive plants: Where ERT's dataset does not include captive plants, or where coverage is known to be incomplete, the Participant must provide a list of all operational [in-scope] captive fossil fuel plants, including: facility name or identifier, generation technology, fuel type, nameplate capacity (MW), commercial operation date, and estimated annual generation (GWh) or operating capacity factor.
- Pipeline captive plants: The Participant must identify any [in-scope] captive plants (emitting or non-emitting) currently under construction or in advanced development, providing: fuel type, nameplate capacity, expected commissioning date, and expected capacity factor.
- Retirement dates for captive plants: Where confirmed retirement dates exist for in-scope captive plants, these must be disclosed.

Imports and Exports

The Participant must confirm whether any planned changes to the Sector’s electricity import or export balance — including new power purchase agreements with neighboring jurisdictions — are expected to have a [material effect] on the electric sector emissions rate during the projection period. Where material changes are anticipated, the Participant should provide the estimated import/export volumes (GWh/year) and the applicable emissions rate for the imported electricity (or confirm that ERT’s assumption is appropriate). No disclosure is required where no material change is anticipated.

B.2 GENERATION CAPACITY REGISTER

Table 8: Generation Capacity Register

REQUIRED DATA	CAPACITY ADDITIONS	CAPACITY RETIREMENTS
• Unique identifier • Identifier of the institution mandated to collect energy statistics for the preparation of the energy balance • Energy Balance Sub-Category under which it is accounted in the national Energy balance • Indicator if electricity generator is considered as Major Electricity Producer (MEP) in accordance with STEPS • Elercticity/CHP/Autoproducer/Autoproducer CHP • Location (coordinates and grid connection point) • Owner/operator • Generation technology type • Primary and secondary fuel types (for thermal generation) • Nameplate thermal capacity - if applicable (MWth) • Main fuel delivery (pipeline, barges, rail, direct delivery from coalmine…) • Nameplate gross electric capacity (MWe) • Commercial operation date • Expected retirement date (if applicable) • Grid connection status (connected, captive, island)	• New generators shall be registered within 90 days of commercial operation. Registration shall include: • Commissioning documentation • Grid connection agreement (for grid-connected facilities) • Environmental permits • For renewable facilities: resource assessment documentation	• Retired generators shall be flagged in the Registry within 90 days of permanent closure. Documentation shall include: • Decommissioning records • Final meter readings • Confirmation of grid disconnection

B.3 CLASSIFICATION OF ELECTRICITY GENERATORS

Each electricity generator within the Sectoral Boundary is classified as a Major Electricity Producer (MEP), Electricity Producer (EP), or Other Electricity Producer (OEP) on the basis of four threshold criteria. An installation that meets any one of the MEP criteria is classified as MEP; an installation that does not meet any MEP criterion but has nameplate capacity ≥ 1 MWe is classified as EP; an installation with nameplate capacity < 1 MWe is classified as OEP.

B.3.1 MEP Threshold Criteria

An installation is classified as MEP if it meets at least one of the following in the reference period:

- Average annual CO_2 emissions of [1,000,000 tCO_2] or more; OR
- Contribution of [5%] or more to total CO_2 emissions from electricity generation; OR
- Nameplate gross electric capacity of [300 MWe] or greater; OR
- Contribution of [5%] or more to total installed electricity generation capacity.

B.3.2 EP and OEP Thresholds

EP installations are non-MEP installations with nameplate gross electric capacity ≥ 1 MWe, further stratified by significance share for monitoring purposes (Section B.4): EP-3 (≥ 3% to < 5%); EP-1 (≥ 1% to < 3%); EP-sub (< 1%). OEP installations are installations with nameplate gross electric capacity < 1 MWe, monitored at the aggregate level by fuel type and technology category.

B.3.3 Significance Methodology

The significance of an individual electricity generator (in %) is determined as the average annual CO_2 emissions in of the installation divided by the sum of CO_2 emissions of all electricity generators within the scope of the national MRV system, multiplied by 100. To determine the initial significance of each installation, the Participant shall apply the IPCC default NCV values (IPCC 2006 Vol. 2, Table 1.2) and the IPCC default CO_2 emission factors (Vol. 2, Table 2.2). Classification is determined at the start of each Crediting Period and remains fixed unless a material change occurs.

B.4 CLASSIFICATION OF FUELS

Each fuel used by an electricity generator shall be classified as major, minor, or de minimis on the basis of its contribution to absolute fossil CO_2 emissions:

Table 9: Classification of Fuels

CATEGORY	THRESHOLD (WHICHEVER IS GREATER IN ABSOLUTE VALUE)	IMPLICATION
Major fuel	Fuel does not fall into the minor or de minimis categories below.	Subject to all standard Monitoring Level requirements per Section B.4.
Minor fuel	Fuel jointly accounts for less than [5,000] tonnes of fossil CO_2 per year, OR less than [10%], up to a total maximum of [100,000] tonnes of fossil CO_2 per year.	Eased uncertainty thresholds per Section B.5.
De minimis fuel	Fuel jointly accounts for less than [1,000] tonnes of fossil CO_2 per year, OR less than [2%], up to a total maximum of [20,000] tonnes of fossil CO_2 per year.	No prescribed maximum permissible uncertainty; best industrial practice to be applied.

B.5 MONITORING LEVEL DEFINITIONS

Four Monitoring Levels are defined under STEPS, in increasing order of rigour. The Level assigned to each installation × fuel pair is determined by the matrix in Section B.4.

Table 10: Monitoring Level Definitions

LEVEL	ACTIVITY DATA	NCV	EF	OF	CC (MASS BALANCE)
Level 1	Aggregate national fuel deliveries to the electricity sector, from official energy statistics or equivalent.	IPCC default (Vol. 2, Table 1.2).	IPCC default (Vol. 2, Table 2.2).	1.0.	Not applicable — Mass Balance not available at Level 1.
Level 2	Country-specific aggregated fuel consumption from established national reporting systems.	Country-specific value, NIR / BTR.	Country-specific value, NIR / BTR.	1.0 unless documented evidence of incomplete combustion.	Not applicable.
Level 2+	Fuel consumption measured at the installation level, with documented evidence supporting the measurement.	Supplier-stated or representative measured value.	Supplier-stated or representative measured value.	Demonstrated value, conservatively bounded.	Not applicable.
Level 3	Fuel consumption measured at the installation level on a per-batch or continuous basis, with metering equipment subject to the calibration intervals and uncertainty bounds in B.5.	Per-batch or continuous laboratory measurement, ISO 17025 or equivalent (B.6).	Per-batch or continuous laboratory measurement, ISO 17025 or equivalent.	Demonstrated value.	Per-batch or continuous laboratory measurement, ISO 17025 or equivalent. Mass Balance available.

B.6 SIGNIFICANCE THRESHOLDS – CLASS X FUELS X LEVEL MATRIX

The Monitoring Level applicable to each installation × fuel combination is determined by the table below.

Table 11: Significance Thresholds for Determination of Requested Minimum Monitoring Approach

MAJOR FUEL	MAJOR EL. PRODUCERS (MEP)	ELECTRICITY PRODUCERS (EP)		EP AND OTHER ELECTRICITY PRODUCERS (OEP)
		>=3%-5%	>=1-3%	<1%
Solid fuels - indigenous	Level 3	Level 2+	Level 2	Level 1
Solid fuels- imported	Level 2+	Level 2+	Level 2+	Level 1
Liquid Fuels	Level 2	Level 1	Level 1	Level 1
Gaseous fuels	Level 2	Level 1	Level 1	Level 1

The matrix sets the minimum required Level. A Participant or operator may voluntarily apply a higher Level than required.

B.7 MAXIMUM PERMISSIBLE UNCERTAINTIES FOR ACTIVITY DATA

Table 12: Maximum Permissible Uncertainties for Determination of Fuel Consumption

ACTIVITY/ FUEL TYPE	PARAMETER TO WHICH THE UNCERTAINTY IS APPLIED	MAJOR FUELS (FOR MEP)	MAJOR FUELS (FOR EP)	MINOR FUELS (MEP & EP)
Commercial standard fuels	Amount of fuel [t] or [Nm3]	± 1,5 %	± 2,5 %	± 7,5 %

Other gaseous and liquid fuels	Amount of fuel [t] or [Nm3]	± 1,5 %	± 2,5 %	± 7,5 %
Solid fuels	Amount of fuel [t]	± 1,5 %	± 2,5 %	± 5,5 %
SO_2 Scrubbing: carbonate	Amount carbonate consumed [t]	± 1,5 %	± 7,5 %	± 10 %
SO_2 Scrubbing: gypsum	Amount gypsum produced [t]	± 1,5 %	± 7,5 %	± 10 %

B.8 EQUIVALENT TECHNICAL COMPETENCE FOR LABORATORIES

Where ISO 17025 accreditation is required (Level 3 NCV, EF, or CC measurement, and Mass Balance Method) but the laboratory is not formally accredited, the Participant may demonstrate equivalent technical competence through evidence of all of the following:

- Documented quality management system covering test methods, calibration, personnel competence, and corrective action procedures, equivalent to the ISO 17025 management requirements.
- Use of internationally recognised test methods (ASTM, ISO, EN, or equivalent national standard) for the relevant fuel parameters.
- Calibration of analytical instruments traceable to national or international measurement standards.
- Participation in inter-laboratory comparison programmes or proficiency testing schemes, with results within the scheme's z-score acceptance criteria for the most recent two cycles.
- Independent technical audit, conducted within the past three years by a competent third party.

Equivalent technical competence is subject to validation by the VVB at registration and to verification at each subsequent reporting period.

B.9 IPCC DEFAULT VALUE SOURCES

Table 13: IPCC Sources List

PARAMETER	IPCC SOURCE
Net Calorific Value (NCV)	IPCC 2006 Vol. 2 Energy, Chapter 1, Table 1.2 (pp. 1.18–1.19).
CO_2 Emission Factor (EF)	IPCC 2006 Vol. 2 Energy, Chapter 2, Table 2.2 (pp. 2.16–2.17).
Default Carbon Content	IPCC 2006 Vol. 2 Energy, Chapter 1, Table 1.3.
Biomass Emission Factor (where biomass is not zero-rated)	IPCC 2006 Vol. 3, Chapter 2, Table 2.1.
Oxidation Factor	IPCC 2006 Vol. 2, default of 1.0 for stationary combustion.
MSW Biogenic Share (default)	IPCC 2006 Vol. 5 Waste, Chapter 2; default 50% by mass.

B.10 DATA FLOW FROM GENERATORS INTO THE EESB AND FROM THE EESB INTO THE EMISSIONS CALCULATION

B.10.1 Data Flows by Class

This Section illustrates how the methodology rules in Section 5 operate in practice. It is informative; the operative rules remain those in Section 5.

Table 14 Data Flows by Producer Class

CLASS	REPORTS TO PARTICIPANT	CALCULATION METHOD	WHO APPLIES IT
MEP	Calculated CO_2 emissions per Equation 3 (Standard) or Equation 4 (Mass Balance)	Standard Method (Equation 9) or Mass Balance	MEP installation itself

	of 5.5.8; AD; NCV; EF; OF (or CC); gross + net generation. Submitted as STEPS Annual Emission Report by 31 March each year.	Method (Equation 10)	
EP	AD by SIEC fuel type; gross + net generation. NCV/EF/OF not reported by EP (assigned by Participant).	Standard Method (Equation 9)	Participant, applying NCV/EF/OF at the EP's assigned Monitoring Level (Sections B.3, B.4)
OEP	Aggregate AD by SIEC fuel type; aggregate gross + net generation.	Standard Method (Equation 9)	Participant, applying Level 1 (IPCC default) NCV/EF/OF

B.10.2 Three-Layer Reconciliation Tolerances

Table 15: Three-Layer Reconciliation Tolerances

LAYER	TEST	TOLERANCE
Layer 1 — Supply-use identity	Statistical difference row of the EESB, per fuel.	± 2% of Total Energy Supply for the fuel.
Layer 1 — STEPS-internal cross-check	Sum of MEP + EP + OEP fuel input AD vs Transformation-row entry, per fuel.	± 1% of Transformation-row entry.
Layer 2 — Fuel input vs electricity output	Aggregate fuel input × representative system efficiency vs aggregate electricity output.	Material discrepancy beyond ± 5% requires investigation;
Layer 3 — Generation vs independent sources	Aggregate gross generation vs grid operator dispatch, national statistics, and independent third-party estimates.	± 2% vs the most authoritative independent source.