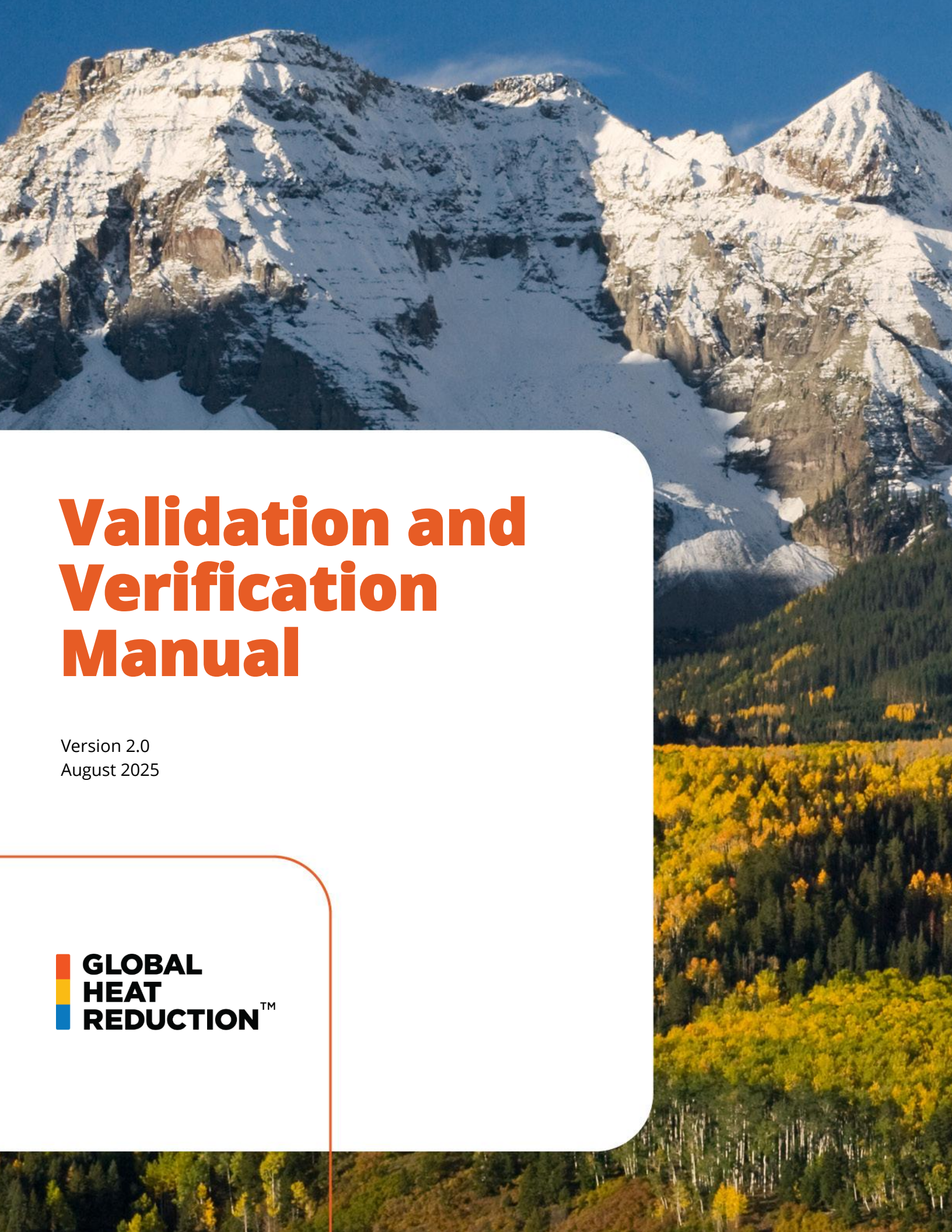

Validation and Verification Manual

Version 2.0
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GLOBAL HEAT REDUCTION™

Global Heat Reduction Validation and Verification Manual

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1 INTRODUCTION

1.1 Purpose and scope of manual

The Global Heat Reduction Initiative ("GHR") has established a Global Heat Reduction Registry (the "Registry") to register climate mitigation projects that can contribute to the goal of global heat reduction and issue corresponding credits. The purpose of this Manual is to provide guidance for Validation and Verification Bodies ("VVBs") who are conducting validation and verification assessments of climate mitigation projects in accordance with the requirements of the GHR Registry Standard ("Registry Standard"). The Registry Standard and all associated forms, templates, and guidance documents comprise the written elements of the GHR Registry Program (the "Registry Program").

1.2 Overview of validation and verification

The Registry requires VVBs to validate each project design and to verify claimed emission reductions from each "monitoring period"). Validation and verification shall be performed in accordance with the requirements of ISO 14064-3:2019 and the Registry Program.

Validations are conducted either before a project is undertaken or shortly after the commencement of project operations to confirm that the Project Design Document ("PDD") provides a reasonable basis for meeting the requirements of the program.

Verifications are conducted at least annually once a project is underway to confirm that project objectives have been achieved and radiative forcing reductions have been quantified according to the requirements of the Registry Standard.

The Registry Standard describes the general rules and requirements that all projects must follow to be registered.

- GHR Glossary of Terms – provides a summary of terms and definitions associated with the GHR Registry.
- Radiative Forcing Protocol – CCAC-peer reviewed protocol that describes the process for quantifying the radiative forcing reductions associated with projects. Training materials for VVBs are available from the Registry upon request.

Validation and initial verification of the project may be undertaken by the same VVB. Validation may occur before the first verification or at the same time as the first verification.

1.3 Registry documents for use by VVBs

VVBs shall refer to the following GHR documents, and use program templates when available:

- Application for Validation/Verification Body Approval
- Fee Schedule
- Methodology Development and Approval

- Project Design Document Template
- Project Monitoring Report Template
- Registry SDG Contributions Reporting Tool
- Registry Standard
- Validation and Verification Body Agreement
- Validation and Verification Body Auditor Checklist
- Validation and Verification Body Project-Specific Conflict of Interest Form
- Validation and Verification Manual (this document)
- Validation and Verification Opinion Template
- Validation and Verification Body Reliance Letter
- Validation and Verification Report Template

In the absence of a GHR form or template VVBs shall create such forms and templates in accordance with the requirements of the Registry Standard and the following normative documents:

- ISO-14064-3:2019, Specification with guidance for the validation and verification of greenhouse gas statements,
- ISO/IEC 17029:2019, Conformity Assessment—General principles and requirements for validation and verification bodies.

1.4 Definitions

All terms, definitions, abbreviations and acronyms relevant to the Registry are provided in the GHR Glossary of Terms.

1.5 Project Methodologies

The VVB shall conduct validation and verification assessments in accordance with the requirements of the Registry Standard and the applicable GHR-approved, project type-specific Methodology.

2 GENERAL VVB REQUIREMENTS AND QUALIFICATIONS

2.1 VVB eligibility requirements

The VVB shall be eligible for approval as an independent service provider for the Registry, based on:

a. accreditation to "General principles and requirements for bodies validating and verifying environmental information" ISO 14065:2020 and 14066, to "Conformity Assessment – General principles for validation and verification bodies" ISO/IEC 17029: 2019 by a member of the International Accreditation Forum (IAF), and "IAF Mandatory Document for the Application of ISO 14065" (IAF MD 6:2023); and

b. demonstrated understanding of the key concepts and requirements of the Registry Standard and Program, and competence to perform the assessments required, including but not limited to, the ability to:

   i. evaluate the Project Design Document;

   ii. assess whether the baseline scenario and project baseline meet Registry and applicable protocol requirements;

   iii. evaluate data and information used to calculate results;

   iv. conduct GHG and RF calculations;

   v. apply key principles;

   vi. assess secondary effects and the risk of non-permanence, materiality, and additionality; and

   vii. evaluate the Project Proponent's analysis of risks and uncertainty.

2.2 VVB personnel qualifications and competence

The VVB shall establish, implement, and document a method for ensuring that individuals on any given validation and verification team are competent to fulfill the requirements of the GHG Registry, such that the VVB can:

a. assign qualified personnel for each audit team, consisting of at least two people;

b. assign a qualified team leader responsible for management of the audit team, with experience leading at least two prior audits, and demonstrated understanding of the GHR Registry, climate forcers, and GHG and climate forcer information and data management systems and controls, including quality assurance and quality control techniques;

c. ensure that each member of the audit team has sufficient training; and

d. document its expertise in auditing of data and information.

VVB personnel shall have the necessary knowledge, skills, experience, training, supporting infrastructure and capacity to effectively perform validation/verification activities.

The Registry will review the qualifications of previously approved VVBs every three years from the date of approval by the Registry.

2.3 Notification of validation/verification activities

The VVB engaged by a Project Proponent shall notify the Registry of its intention to provide validation or verification services and disclose any actual or perceived conflicts of interest (see 2.4) that it may have with the Project Proponent or related parties.

NOTE: The Registry will respond to the VVB within ten business days to authorize proceeding with validation or verification services.

2.4 Conflict of interest assessment

The VVB shall not perform services for which it, or any of its staff, employees, contractors, or other interested person or party has a conflict of interest.

2.5 Confidentiality

The VVB shall conform to the Intellectual Property requirements of the GHR Validation and Verification Body Agreement, and the confidentiality provisions of ISO/IEC 17029:2019, 10.4. Confidential information obtained or created during validation/verification activities is safeguarded and not inappropriately disclosed, consistent with the Intellectual Property requirements of the GHR Validation and Verification Body Agreement, and the confidentiality provisions of ISO/IEC 17029:2019, 10.4.

2.6 Risk-based approach

The VVB shall take into account the risks associated with providing competent, consistent, and impartial validation/verification. Risks can include, but are not limited to, those associated with:

a. the objectives of the validation/verification and the program requirements;

b. competence, consistency and real as well as perceived impartiality;

c. legal, regulatory and liability issues;

d. the client organization, where validation/verification is being carried out, and its management system, operating environment, geographic location, etc.;

e. the susceptibility of any parameter included in the responsible party statements to generate a material misstatement, even if there is a control system implemented;

f. the level of assurance to be achieved and the corresponding evidence-gathering used in the validation/verification process;

g. perception of interested parties;

h. misleading claims or misuse of marks by the client; and

i. risk control and opportunities for improvement.

2.7 Adherence to international principles

During its activities, the VVB and its team shall adhere to the verification principles specified in the Registry Standard and the ISO/IEC 17029:2019 standard, namely:

a. For the validation/verification process:

i. ***Evidence-based approach to decision making:*** The process deploys a method for reaching reliable and reproducible validation/verification conclusions and is based on sufficient and appropriate objective evidence. The validation/verification opinion is based on evidence collected through an objective validation/verification of the Project Proponent's statements. Evidence may include:

a) Documentary evidence, such as reports, contracts, invoices, permits, and certificates;

b) Physical evidence, such as equipment, meters, sensors, and samples;

c) Observational evidence, such as site visits, inspections, and measurements;

d) Testimonial evidence, such as interviews, surveys, and feedback; and

e) Analytical evidence, such as calculations, models, and simulations.

ii. ***Documentation:*** The validation/verification process is documented and establishes the basis for the conclusion and decision regarding conformity of the claim with the specified requirements.

iii. ***Fair presentation:*** Validation/verification activities, findings, conclusions and opinions, including significant obstacles encountered during the process, as well as unresolved, diverging views between the VVB and the client are truthfully and accurately reflected.

b. For validation/verification bodies:

i. ***Impartiality:*** Decisions are based on objective evidence obtained through the validation/verification process and not influenced by other interests or parties.

ii. Threats to impartiality can include but are not limited to the following:

a. ***Self-interest:*** Consideration of threats that arise from a person or body acting in their own interest. A concern related to validation/verification, as a threat to impartiality, is financial self-interest.

b. ***Self-review:*** Consideration of threats that arise from a person or body reviewing the work done by themselves.

c. ***Familiarity/trust:*** Consideration of threats that arise from a person or body being too familiar with or trusting of another person instead of seeking evidence for validation/verification.

d. ***Intimidation:*** Consideration of threats that arise from a person or body having a perception of being coerced openly or secretively, such as a threat to be replaced or reported to a supervisor.

3 GENERAL ASSESSMENT PARAMETERS

3.1 Key principles

The integrity of any registry and the credits it issues is dependent upon conformance with key principles applied to the development and assessment of projects during all stages of measurement, reporting, and verification (MRV). The VVB shall conduct validation and verifications in accordance with Registry principles, including:

a. ***Relevance:*** GHG and RF-related information, data, and Methodologies are applicable to the intended user and the scope of assessment. All relevant information and data that may affect the accounting and quantification of climate forcers and RF reductions are included.

b. ***Completeness:*** Known information and data pertaining to GHG and RF sources and reduction and relevant information to demonstrate conformance to criteria and procedures are included and shall be available for validation and verification.

c. ***Consistency:*** Information supports meaningful comparisons, and consistent methods are used, and project information is consistent throughout project documents.

d. ***Accuracy:*** Bias and uncertainties are considered and minimized to the degree practical. Methodologies include methods for estimating uncertainty relevant to the baseline and project scenario. Project documents accurately reflect information about the project.

e. ***Transparency:*** Sufficient information is disclosed to support decisions by intended users with reasonable confidence. Information is provided for any relevant assumptions, and appropriate references are provided for accounting, calculation methods, and data sources used. Any changes to the data, boundary, methods, or any other relevant factors are documented.

f. ***Conservativeness:*** Conservative assumptions, values, and procedures are applied to avoid overstating a reduction, removal, or co-benefit from the project. Methodology quantification methods are designed to ensure that RF reductions are not overestimated, particularly when estimation methods are relied upon in lieu of direct measurement. In terms of credit issuance, RF reduction claims shall be rounded down to the nearest whole number, and calculated buffer pool contributions shall be rounded up to the nearest whole number.

g. ***Significance.*** The inclusion of climate forcers in the quantification is justified based on their relative contribution to the total footprint.

NOTE: *For Methodologies involving statistical sampling, the sampling error associated with the mean of the estimated RF reduction should not exceed ±10% of the mean at the 90% confidence interval. Project Proponents who cannot meet this target should report an amount equal to the mean minus the lower bound of the 90% confidence interval, applied to the final calculation of total RF reduction, unless the Methodology specifies an alternative approach. When modeling is used to estimate emissions and/or removals, estimates of input uncertainty and structural uncertainty related to the inadequacy of the model, model bias, and model discrepancy should be included.*

3.2 Level of assurance

For validation of the PDD, the VVB shall select samples of data and information sufficient to achieve a reasonable level of assurance on historical information used to plan the project. The VVB shall provide limited assurance on the assumptions, limitations, and methods used to forecast emission reduction from the project. The VVB shall perform all verifications to a reasonable level of assurance and meet the materiality requirements of the project consistent with this section and the applicable Methodology.

3.3 Materiality thresholds

The VVB's threshold of materiality shall be 5% for quantitative materiality. Uncertainty in climate forcer calculations shall take into account all potential sources of uncertainty as defined in the applicable Methodology.

3.4 Secondary effects (leakage)

Consistent with the applicable Methodology, the VVB shall evaluate the risk of secondary effects (i.e., leakage) during the validation assessment, and evaluate whether the Project Proponent has adequately disclosed any secondary effects that occurred during the project monitoring period, including consideration of the following:

a. Increases in emissions outside of a project boundary caused by the project's existence (e.g., supply and demand effects, shifting of activities, activities on adjacent properties, etc.)

b. Sale of the project output as an intermediate feedstock or component of another manufacturing process.

c. When fuel sources include biomass:

   - The source of the feedstock is renewable.

   - The feedstock had no other uses that would have resulted in higher RF reduction than the project itself or resulted in fewer trade-offs.

3.5 Non-permanence

Consistent with the applicable Methodology, the VVB during the validation assessment shall assess the Project Proponent's disclosures of risk of non-permanence of radiative forcing changes. During verifications the VVB shall assess whether project activities, as reported by the Project Proponent, have diminished radiative forcing permanence.

3.6 Buffer pools

The VVB shall assess whether the Project Proponent's determination of the size of contributions to the buffer pool to be created for projects in a given project category conforms to the requirements of the applicable protocol, taking into consideration:

a. The risk of non-permanence of GHGs and other climate forcer reductions and removals, due to unforeseen project output shortfalls or failures;

b. The risk of secondary effects – i.e., increases in GHGs and other positive climate forcer levels that occur outside the project life-cycle boundary, but that are nonetheless affected by the project;

c. The risk of deviation from the validated project scenario – e.g., a change in production levels, a change in fuel sources, etc.;

d. The risks related to data accuracy – i.e., contingent upon the sources of data available; and

e. The risks associated with sampling Methodologies applied to grouped projects.

For lower risk projects, the default buffer pool is 2% of the total credits approved for issuance for the vintage, or as dictated by the project type Methodology. For projects deemed to have a higher risk of reversal, the default buffer pool is 10% of the total credits approved for issuance for the vintage, or as dictated by the project type Methodology. See additional details, Appendix A.

3.7 Reversal of emissions

If reversals are determined to have occurred at any time during the monitoring period for any reason, the VVB shall assess whether the Project Proponent's proposed number of buffer credits to be used to serve as replacement are adequate to replenish the buffer pool.

3.8 Project and baseline scenarios

Project and baseline scenarios are essential elements of the validation and verification process, as they provide the basis for assessing RF reduction, co-benefits and trade-offs achieved by a project. The project scenario describes the conditions and activities that occur as a result of the project implementation, while the baseline scenario describes the conditions and activities that would have occurred in the absence of the project. The difference between the project and baseline scenarios represents the net impact of the project on the RF level, as well as on other environmental and human health indicators.

The project and baseline scenarios are established and documented by the Project Proponent in the Project Design Document, following the requirements and guidance of the applicable Methodology. The Methodology provides specific rules and data for defining and quantifying the project and baseline scenarios, including the identification and selection of alternative scenarios, the demonstration of additionality, the calculation of baseline emissions and removals, the assessment of secondary effects, and the estimation of co-benefits and trade-offs.

The VVB shall assess, validate, and verify the project and baseline scenarios (see Clauses 4 and 5 below).

4 VALIDATION

Validation is the process of assessment and determination by an approved third-party VVB that a climate mitigation project, as described in the Project Design Document, should achieve its projected RF reduction upon becoming operational. Validation confirms the Project Proponent as the legitimate representative of the project, the relevant Methodology, the interested parties, the validity of the project and baseline scenarios, and the monitoring procedures to be implemented.

4.1 Confirming project ownership

During validation, the VVB shall assess whether the Project Proponent has demonstrated direct financial or operational control of the project – that is, its legal right to control and operate the project activities. The VVB shall base its conclusions on presentation of sufficient and appropriate evidence.

If the Project Proponent is not the legal owner of the site or facility at which project activities occur, but is acting on the owner's behalf to control the project activities at this site or facility, the VVB shall assess whether the documentation provides evidence of the transfer of attributes of the project, including any resulting carbon credits, to the Project Proponent.

4.2 Confirming jurisdiction

During validation, the VVB shall confirm the jurisdiction within which the project is being implemented to determine the applicable regulatory framework against which to confirm project conformity.

4.3 Applicable Methodology

During validation, the VVB shall confirm that the project falls within a project type covered by a Registry-approved Methodology.

4.4 Interested parties

During validation, the VVB shall assess the Project Proponent's identification of interested parties who might be impacted by project activities, such as regulators, suppliers, communities, and non-governmental organizations (NGOs), among others.

4.5 Validation scope

During validation, the VVB shall evaluate the written Project Design Document (PDD) and any project activities undertaken to date to confirm the Project Proponent's capacity to achieve the projected level of radiative forcing reduction and GHG reduction/removal. The Project Design Document shall include, and the VVB shall validate, the following:

a. Project title, purpose(s) and objective(s);

b. Proof of eligibility;

c. Mitigation project technologies, products, services, and the expected level of activity;

d. Roles and responsibilities, including contact information of the Project Proponent, other implementation partners, regulator(s), and/or other interested stakeholders as relevant;

e. Additionality, Risk of Secondary Effects, and Risk of Non-Permanence Evaluation;

f. Project type and Methodology;

g. A description of project activities;

h. A description of the project boundaries, noting which activities are included in the analysis;

i. A description of the project scenario and baseline scenario;

j. Project location, including geographic and physical information allowing the unique identification and delineation of the specific extent of the project;

k. A description of how the project scenario will achieve RF reductions (e.g., through GHG or SLCP emission reduction, GHG removals, enhanced albedo);

l. The amount of reductions/removals anticipated to be achieved – i.e., calculated by the Project Proponent in terms of CO_2e GWP-100 and CO_2fe over multiple timeframes – at a minimum, over project duration, 2030, 2050, and 2100;

m. Anticipated date for initiation of project activities, intended date of project termination, frequency of monitoring and reporting, and description and timeframe of the relevant project activities;

n. Identification of risks that could substantially affect the quantity of reductions/removals, or contribute to secondary effects;

o. Identification of other potential beneficial or adverse consequences and risks on the environment and society/human health (i.e., life cycle co-benefits and tradeoffs) across Scopes 1, 2, and 3, including, as applicable, safeguards for labor, gender, and indigenous people;

p. Identification of relevant UN Sustainable Development Goals affected by the project;

q. Project monitoring plan;

r. Mechanisms for stakeholder identification and consultation; and

s. Identification of interested parties, documentation of dates, methods, and outcomes of interested party consultations, transparency of issue resolution and mechanisms for on-going communication.

4.6 Validation of project and baseline scenarios

As indicated in Clause 2, the VVB shall validate the project and baseline scenarios in a manner consistent with the requirements and guidance of this Manual, the Registry Standard, and the applicable Methodology, including the following steps:

a. Review the Project Design Document and supporting documents to check the completeness, consistency, accuracy, transparency, and conservativeness of the information and data related to the project and baseline scenarios.

b. Conduct a risk analysis to identify and prioritize any areas of significant uncertainty, error, or misrepresentation in the project and baseline scenarios, and developing a verification plan accordingly.

c. Perform a desk review, site visit, interviews, document inspection, and data sampling and testing to collect and analyze sufficient and appropriate evidence to confirm or challenge the project and baseline scenarios reported by the Project Proponent.

d. Prepare a Validation Report (Clause 4.8) that provides the findings and conclusions of the assessment along with a disclosure of any limitations, assumptions, deviations, or corrections made during the process.

e. Report any issues, discrepancies, non-conformities, or recommendations related to the project and baseline scenarios to the Project Proponent and the Registry.

f. Follow up on any corrective actions taken by the Project Proponent to resolve them.

g. Sign and deliver a Validation Opinion (Clause 4.9) that declares whether the project is suitable for validation.

4.7 Review of the monitoring system

The validation team shall validate that the Project Proponent has a monitoring system and procedures that are adequate and consistent with the Registry Standard and the applicable Methodology. The monitoring system and procedures shall include the following elements:

a. A description of the monitoring objectives, scope, criteria, methods, and schedule;

b. A list of the parameters to be monitored, including their definitions, units, sources, methods of measurement or estimation, frequency of monitoring, and quality control and quality assurance procedures;

c. A description of the data management system, including the roles and responsibilities of the personnel involved, the data collection and recording procedures, the data processing and aggregation procedures, the data storage and retrieval procedures, and the data security and confidentiality measures;

d. A description of the methods and procedures for estimating the uncertainty associated with the monitored data and parameters; and

e. A description of the methods and procedures for reporting the monitored data and parameters, including the format, content, frequency and recipients of the monitoring reports.

4.8 Preparation of the Validation Report

The VVB shall prepare the validation report – the main deliverable of validation – in a clear, concise manner, using GHR terminology, and in accordance with the GHR Validation and Verification Report Template. The report shall include the following sections:

a. ***Introduction:*** General information about the project, the validation scope and objectives, the standards and criteria used, the validation team, and the summary of validation activities.

b. ***Project description:*** Summary of the main characteristics and features of the project (e.g., the project location, type, technologies, stakeholders, baseline scenario, additionality, monitoring plan, and estimated emission reductions or removals).

c. ***Findings:*** Results of the validation assessment for each relevant aspect of the project (consistent with the principles in Clause 2), including but not limited to the identification of any issues, discrepancies, non-conformities, or recommendations related to the project, and the corrective actions taken by the Project Proponent to resolve them.

d. ***Conclusions:*** Overall determination as to whether the project meets the requirements of the Registry Standard, the applicable Methodology, and the relevant protocols and guidelines, and disclosing any limitations, assumptions, deviations, or corrections made during the validation process.

e. ***Appendices:*** Supporting information and evidence for the validation report (e.g., list of documents reviewed, interviews conducted, a site visit report).

The VVB shall provide sufficient details and references to support the validation findings and conclusions.

4.9 Preparation of the Validation Opinion

The Validation Opinion is prepared based on the GHR Validation and Verification Opinion Template, and shall include:

a. the client name;

b. the project name and description;

c. the relevant period of time covered by the validation assessment;

d. the anticipated number of credits;

e. the objectives and scope of the validation;

f. validation recommendation; and

g. the opinion date.

4.10 Validation Report quality control review

Prior to submission to the Registry, the VVB shall conduct an internal quality control review to ensure that the validation report is complete, accurate, and reliable, and that it reflects the professional judgment of the validation team. This review shall be performed by a qualified person who was not involved in the validation activities. (See further details in Clause 8.)

4.11 Submission of Validation Report and Opinion

The VVB shall submit the Validation Report to the Registry, accompanied by a Validation Opinion and signed VVB Reliance Letter, within the agreed timeframe and in accordance with the Registry's submission procedures.

The Registry shall retain sole discretion to accept or reject the Validation Report and Validation Opinion.

5 VERIFICATION

Verification is the process of independent assessment and confirmation by an approved verification body (VVB) of the radiative forcing (RF) reduction, co-benefits and trade-offs achieved by a project, as well as its compliance with the Registry Standard and the applicable Methodology. Verification ensures the credibility, quality and accuracy of the project data and information reported to the Registry.

5.1 Applicable standards and guidance documents

The VVB team shall conduct the verification in accordance with the following standards and requirements:

- The Registry Standard and any relevant policy memos;
- The applicable Methodology and any relevant errata and clarifications;
- ISO 14064-3:2019 and ISO 14065:2020 standards and the IAF MD 6:2023 document;
- The Validation and Verification Manual and any relevant guidance documents.
- In case of any inconsistency or conflict between these standards and requirements, the following order of precedence shall apply: 1) the Registry Standard; 2) the applicable Methodology; 3) the Validation and Verification Manual; 4) the ISO 14064-3:2019 and ISO 14065 standards and the IAF MD 6:2023 document.

5.2 Verification scope of work

The VVB shall independently assess and make a determination about the level of the radiative forcing reduction, co-benefits and trade-offs achieved by a project, consistent with the Registry Standard and the applicable Methodology, and to ensure the credibility, quality, and accuracy of the project data and information reported to the Registry. Activities performed during a verification include:

a. Determination of the objectives of the verification;

b. Determination of the criteria used by the Project Proponent to report on its project-related activities;

c. Determination of the criteria to be used to perform the verification;

d. Verification planning and risk assessment, taking into account eligibility criteria, project sources, sinks, and reservoirs, and project monitoring Methodologies;

e. Site visits;

f. Evidence-gathering and sampling;

g. Determination of achieved RF reductions and associated co-benefits and trade-offs; and

h. Verification Report and Opinion.

5.3 Verification planning and risk assessment

5.3.1 The verification team shall develop verification and evidence-gathering plans that describe the objectives, scope, criteria, level of assurance, materiality threshold, methods, procedures, and schedule of activities during the verification. The verification plan shall be based on a risk assessment that identifies and evaluates the potential sources of uncertainty, error, bias, misrepresentation, or non-conformity that may affect the project's statements.

5.3.2 The verification plan shall include the following elements:

i. A description of the verification team, including the roles and responsibilities, of each team member;

ii. A definition of the verification objectives, scope, criteria, level of assurance and materiality threshold, consistent with the Registry Standard and the applicable Methodology;

iii. A schedule of activities to be performed and schedule for site visits;

5.3.3 The schedule of activities should prioritize the verification activities according to the risk assessment and allocate the appropriate resources and time for each activity;

5.3.4 The verification schedule should specify the timing and sequence of the verification activities and the expected deliverables and deadlines.

5.3.5 The verification plan shall be updated as necessary during the verification process to reflect any changes or new information.

5.4 Verification of project eligibility

The VVB and its verification team shall verify that the project continues to meet the eligibility criteria specified in the Registry Standard and the applicable Methodology, as earlier validated. Eligibility considerations at this stage shall encompass the following aspects:

a. The project type and technology;

b. The project location and boundary;

c. The project start date and crediting period;

d. Legal ownership and the right to claim RF reductions or removals;

e. Compliance with applicable laws and regulations;

f. Avoidance of double counting and double claiming;

g. The demonstration of additionality;

h. The selection of the baseline scenario;

i. The quantification of the baseline and project emissions or removals;

j. The identification and mitigation of secondary effects (leakage) and reversal risks;

k. The establishment and maintenance of a buffer pool, as applicable;

l. The design and implementation of a monitoring system;

m. The estimation and reporting of co-benefits and trade-offs.

The verification team shall:

a. review the Project Design Document, the Monitoring Report, and any other relevant documents or records provided by the Project Proponent or obtained from other sources to confirm eligibility; and

b. collect and evaluate sufficient and appropriate evidence to support the verification of the eligibility criteria; and

c. assess the relevance, completeness, consistency, accuracy, transparency and conservativeness of the data and information related to the eligibility criteria; and

d. identify and report discrepancies, errors, omissions, misrepresentations or non-conformities that may affect the eligibility of the project or the accuracy of the project's statements.

5.5 Verification of project and baseline scenarios

The VVB shall verify that project scenario and confirm that the validated baseline scenario is still accurate, taking into consideration the results of the desk review, site visit, interviews, document inspection, and data sampling and testing, as well as any issues, discrepancies, or non-conformities observed. If either the project scenario or baseline scenario are deemed to be no longer be representative of the project or baseline conditions, then the verification team shall determine what adjustments to these scenarios are required, and whether and how these modifications may affect the evaluation of RF reductions and ensuing issuance of credits.

5.6 Verification assessment

The VVB shall conduct the verification *ex-post* to confirm the monitored RF reductions or removals that have occurred as a result of the implementation of a project, including the following steps:

a. Confirm that the project has been implemented and operated in accordance with the validated Project Design Document and the Registry requirements;

b. Determine whether the project's monitoring system and procedures are adequate and have been properly applied to measure and record relevant data, including any Incident Reports that may have been documented;

c. Ensure that the project data and information reported in the monitoring report are complete, consistent, accurate, transparent and conservative;

d. Recalculate the project's RF reductions or removals based on the verified data and information, and compare them with statements prepared by the Project Proponent;

e. Identify and report any material discrepancies, misstatements, errors or omissions in the project's statements and request corrective actions as appropriate;

f. Evaluate the Project Proponent's statements of potential co-benefits and trade-offs in terms of human health and environmental impacts, and verify the indicators and methods used to quantify them;

g. Provide a verification opinion that states the level of assurance, the materiality threshold, the verification criteria, the verification scope, and the verification findings, and attest to the accuracy and reliability of the project's statements.

5.7 Identification of sources, sinks and reservoirs

The verification team shall verify that the project has identified and accounted for all relevant sources, sinks and reservoirs (SSRs) of RF within the project boundary, as defined by the Registry Standard and the applicable Methodology. The SSRs may include the following:

a. Well-mixed greenhouse gases (WMGHGs), such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs);

b. Non-well-mixed climate forcers, such as tropospheric ozone (O_3), black carbon (BC), organic carbon (OC), brown carbon (BrC), nitrate aerosols (NO_3), sulfate aerosols (SO_{42-}) and sea salt aerosols (NaCl);

c. Non-emission climate forcers, such as albedo and waste heat.

The verification team shall:

a. review the Project Design Document, the Monitoring Report and any other relevant documents or records provided by the Project Proponent or obtained from other sources;

b. collect and evaluate sufficient and appropriate evidence to support the verification of the identification and accounting of the SSRs;

c. assess the relevance, completeness, consistency, accuracy, transparency and conservativeness of the data and information related to the SSRs; and

d. identify and report any discrepancies, errors, omissions, misrepresentations or non-conformities that may affect the identification and accounting of the SSRs.

5.8 Review of Monitoring Report

The verification team shall:

a. review the Project Design Document, the Monitoring Report and other relevant documents or records provided by the Project Proponent or obtained from other sources;

b. collect and evaluate sufficient and appropriate evidence to support the verification of the monitoring system and procedures;

c. assess the reliability, provisions for data back-up and data security, access controls, input controls, and quality assurance/quality control of the monitoring system and procedures (see further QA/QC details in Clause 7); and

d. identify and report detected deficiencies, weaknesses, errors, omissions, misrepresentations or non-conformities that may affect the quality and reliability of the monitored data and parameters.

5.9 Verification of RF reductions

The verification team shall verify the RF reductions achieved by the project during the monitoring period, as well as the associated GHG emission reductions or removals, expressed in tCO_2e and tCO_2fe units. The RF reductions shall be calculated by subtracting the project RF from the baseline RF and adjusting for any secondary effects or reversal effects, as specified by the Registry Standard and the applicable Methodology. The GHG emission reduction or removal shall be calculated by applying the appropriate global warming potentials (GWPs) to the GHG reduction or removal, as specified by the Registry Standard and the applicable Methodology.

The verification team shall:

a. review the Project Design Document, the Monitoring Report, and any other relevant documents or records provided by the Project Proponent or obtained from other sources

b. collect and evaluate sufficient and appropriate evidence to support the verification of the RF reduction, including but not limited to any GHG emission reduction or removal that has occurred.

c. assess the relevance, completeness, consistency, accuracy, transparency and conservativeness of the data and information used to calculate the RF reduction;

d. identify and report any discrepancies, errors, omissions, misrepresentations, or non-conformities that may affect the calculation of the RF reduction;

e. recalculate the RF reduction based on the verified data and information, and compare to the project's statements; and

f. determine whether the project's statements meet the level of assurance and the materiality threshold specified by the Registry Standard and the applicable Methodology.

5.10 Site visits

The verification team shall conduct a site visit(s) to the project location(s) as part of the verification activities. The site visits shall be planned and scheduled in consultation with the Project Proponent, and the dates shall be communicated to the Registry. The site visit shall have the following objectives:

a. To verify the existence and operation of the project and its components;

b. To inspect the equipment, meters, sensors, and other devices used for monitoring the project parameters;

c. To review physical evidence, such as samples, photographs, and videos;

d. To interview the project personnel and other stakeholders involved in the project implementation and monitoring;

e. To cross-check data and information reported by the Project Proponent with other sources;

f. To identify and investigate any potential issues, risks, uncertainties, or inconsistencies related to the project performance and data quality.

The verification team shall document the results of the site visit in its Verification Report and include the following information:

a. The date, time and duration of the site visit(s);

b. The name and role of each verification team member and each project representative or stakeholder present at the site visit(s);

c. A summary of the activities and observations made during the site visit, including a description of the evidence collected;

d. A list of the findings, issues, discrepancies, or non-conformities identified during the site visit;

e. A list of the corrective actions requested or agreed upon during the site visit;

f. Any limitations, assumptions, or qualifications that may affect the site visit.

The Verification Report, including site visit information, shall be submitted to the Project Proponent and to the Registry as part of the verification documentation.

5.11 Evidence gathering and sampling

The verification team shall use evidence-gathering procedures to select and evaluate a subset of the data and information related to the project. The evidence-gathering methods shall be:

a. based on a risk assessment that identifies and evaluates the potential sources of uncertainty, error, bias, misrepresentation, or non-conformity that may affect the project's statements;

b. consistent with the level of assurance and the materiality threshold specified by the Registry Standard and the applicable Methodology;

c. appropriate for the type, nature, and scale of the project, and for the data and information to be verified;

d. transparent, objective, unbiased, and avoid any systematic or intentional exclusion or inclusion of data and information;

e. sufficient to provide reasonable assurance in the verification findings, conclusions, and opinion.

The verification team shall document its evidence-gathering procedures in its working papers.

When statistically relevant sampling is used, the verification team shall explain the rationale and purpose for using the selected sampling methods, including:

a. A description and definition of the sampling population, unit, frame and size;

b. A description and application of the sampling techniques, such as random, stratified, cluster, systematic, etc.;

c. A description and calculation of the sampling parameters, such as confidence level, confidence interval, error margin, etc.;

d. A description and analysis of the sampling results, including any adjustments, extrapolations or inferences made from the sample to the population.

5.12 Documentation

The verification team shall prepare verification documentation, including:

a. A description of the roles and qualifications of each team member;

b. An attestation of the absence of any conflict of interest or threat to the impartiality of the verification team, using the project-specific VVB Conflict of Interest form;

c. A summary of the project information, including the project title, location, type, Project Proponent, start date, crediting period, applied Methodology, baseline scenario, project scenario, monitoring system, and RF reduction statements;

d. An evidence-gathering plan that includes a description of the verification methods and procedures, including the data and information to be reviewed, the evidence to be collected and evaluated, sampling techniques to be applied, if applicable, site visits to be conducted, interviews to be performed, and calculations to be checked;

e. A description of the verification team's risk assessment that identifies potential sources of uncertainty, error, bias, misrepresentation, or non-conformity in the project's statements, and evaluates their likelihood and significance for the verification;

f. A list of findings that summarizes the material and immaterial discrepancies, errors,

omissions, misrepresentations, or non-conformities identified during the verification, and the corrective actions requested or taken by the Project Proponent;

g. A Verification Report, based on the GHR Validation and Verification Report Template that describes the verification objectives, scope, criteria, level of assurance, materiality threshold, methods, procedures, activities, schedule, team, findings, and conclusions, and discloses any limitations, assumptions, or qualifications that may affect the verification;

h. A verification opinion, based on the GHR Validation and Verification Opinion Template, that expresses the verification conclusions on the project's statements and atteststo the accuracy and reliability of the RF reductions (including GHG emission reductions or removal enhancements, and other climate forcer reductions or removals) achieved by the project during the monitoring period;

i. A verification worksheet that shows the calculations and adjustments made by the verification team to determine the verified RF reduction and the verified GHG emission reductions or removal enhancements;

j. Any other relevant documents or records that support or supplement the verification, such as site visit reports, interview records, evidence lists, independent reviews, etc.

5.13 Submission of documentation to Project Proponent

The VVB shall submit the following documentation to the Project Proponent or designated responsible party:

a. A description of the roles and qualifications of each team member;

b. The verification plan;

c. A list of findings;

d. A draft Verification Report; and

e. A draft Verification Opinion.

The VVB shall subsequently review Project Proponent responses to the findings to determine whether non-conformances identified have been adequately addressed, and to update the Verfiication Report and Verification Opinion accordingly.

5.14 Independent internal review

The VVB shall perform an independent internal review of the verification process and results in accordance with the requirements of ISO 14064-3:2019, clause 8, prior to submission of the Verification Report to the Registry. The independent review is conducted by a qualified person within the VVB who was not involved in the verification activities. (See further details in Clause 8.)

5.15 Submission of documentation to Registry

The VVB shall submit the following documentation to the Registry:

a. An attestationof the absence of any conflict of interest or threat to the impartiality of the verification team using the GHR Conflict of Interest form;

b. A Verification Report, including but not limited to project information, including the project title, location, type, Project Proponent, start date, crediting period, applied Methodology, baseline scenario, project scenario, the data sources (e.g., calculated, modeled, historic, surrogate), monitoring system, RF reduction statements, and supporting data and assumptions; and

c. A Verification Opinion, including: the client name, the relevant period of time covered by the verification assessment, the calculated number of credits, the objectives and scope of the verification, findings (including whether they have been addressed), the verification recommendation, and opinion date (see also Clause 6).

d. A signed VVB Reliance Letter.

The verification body shall make available to the Registry, upon request and on a confidential basis, any document prepared by the verification team or VVB to support its conclusions, findings, and the results of the independent review.

The verification documentation shall be prepared and submitted in accordance with the Registry Standard, the applicable Methodology, the ISO 14064-3:2019 and ISO 14065 standards, the IAF MD 6:2023 document, and the Registry Validation and Verification Manual. The verification documentation shall follow the templates and formats provided by the Registry, and shall use clear, concise, accurate and unbiased language.

5.16 Openness

The VVB shall provide public access to, or disclosure of, appropriate information about its validation/verification process.

5.17 Responsiveness to complaints

The VVB shall manage and resolve complaints made by parties that have an interest in validation/verification.

NOTE: Responsiveness to complaints is necessary to demonstrate integrity and credibility to all users of validation/verification outcomes.

6 VALIDATION AND VERIFICATION OPINIONS

A validation or verification opinion is a written declaration issued by a VVB to express its opinion on the fair statement of responsible party statements and responsible party conformity to project objectives and criteria.

6.1 Responsibility

The VVB shall base a Validation/Verification Opinion upon sufficient and appropriate objective evidence.

NOTE: The client of the VVB, and not the VVB, has the responsibility for their statements and their conformity with the applicable specified requirements.

6.2 Unmodified, adverse, and modified Opinions

The GHR program recognizes three types of validation or verification opinions: unmodified, modified, and adverse.

a. An unmodified opinion indicates that the responsible party's statements are fairly stated, that the project conformed to all applicable criteria, and that no material misstatements were found. An unmodified opinion is required for the registration of a validated project or the issuance of credits for a verified project.

b. An adverse opinion indicates that the project does not conform to one or more of the applicable criteria or that material misstatements were found.

   The VVB may disclaim the issuance of an opinion when the VVB is not able to complete the validation or verification due to lack of cooperation from the Project Proponent, available evidence is insufficient, or for other reasons. The Registry will not register a project or issue credits when a project's VVB has disclaimed the issuance of an opinion.

c. A modified opinion indicates that the project conforms to most of the criteria, but that some nonconformities were found and not corrected by the Project Proponent. A modified opinion may allow the registration of a validated project or the issuance of credits for a verified project, subject to the resolution of the outstanding issues or the application of conservative adjustments. In the case of a modified opinion, the GHR Registry shall make the final determination about the registration of a validated PDD or the issuance of credits.

6.3 Disclaimed issuance

The VVB may disclaim the issuance of an opinion when the VVB is not able to complete the validation or verification due to lack of cooperation from the Project Proponent, available evidence is insufficient, or for other reasons. The Registry will not register a project or issue credits when a project's VVB has disclaimed the issuance of an opinion.

6.4 Transparency regarding opinion

The VVB shall clearly indicate in the Validation/Verification Report the type of opinion it has issued and include a copy of the opinion as an annex to the report.

The VVB shall submit to the GHR registry any adverse or modified Validation/Verification Opinion that it issues for a project seeking registration under the GHR. It shall also provide to the GHR any communication it has with a Project Proponent about disclaiming the issuance of an opinion.

The VVB shall explain in a Validation/Verification Report that it submits to GHR the reasons for issuing an adverse or modified opinion, if applicable.

7 QUALITY ASSURANCE

Quality assurance refers to the planned and systematic activities implemented to ensure that the validation and verification services performed by a VVB meet the requirements of the Registry Standard, the applicable Methodology, the ISO 14064-3:2019 and ISO 14065:2020 standard, the IAF MD 6:2023 document, and the Registry Validation and Verification Manual. Quality assurance encompasses all aspects of the validation and verification process, from the engagement and initial planning to the final reporting and delivery of the Validation or Verification Report and Opinion.

7.1 Uncertainty and sources of error

The VVB shall identify and evaluate the uncertainty and sources of error associated with the RF-related data and information of the project, and disclose estimates of the level of uncertainty in the Validation or Verification Report. Uncertainty and error may arise from various factors, such as measurement and sampling methods, assumptions and estimates, data quality and availability, models and calculations, and human errors.

The verification team shall ensure that the responsible party has established methods and procedures to quantify uncertainty and to the extent possible, ensure that RF-related data and information are accurate, reliable, and conservative.

7.2 Quality control and quality assurance procedures

The VVB shall implement quality control and quality assurance procedures to prevent, detect, and correct any errors, omissions, or misrepresentations that may affect the validation or verification results.

Quality control procedures include:

a. checking the completeness, consistency, and accuracy of the RF-related data and information;

b. conducting independent reviews and audits; and

c. ensuring the competence and impartiality of the validation team or verification team.

Quality assurance procedures include:

a. maintaining a quality management system;

b. following documented policies and standards;

c. conducting training; and

d. undergoing external accreditation and oversight.

8 INDEPENDENT INTERNAL REVIEW PROCEDURES

The VVB shall perform an independent review of the validation or verification process and results in accordance with the requirements of ISO 14064-3:2019, clause 8.

8.1 Independent reviewer

The independent review shall be conducted by a qualified person within the VVB who was not involved in the validation or verification activities, and who possesses the relevant competencies, experience, and impartiality to conduct the review.

The independent reviewer shall ensure that the validation or verification was carried out in accordance with the applicable criteria, objectives, and procedures, and that the Validation/Verification Opinion is consistent with the Validation/Verification Report and the evidence collected.

The independent reviewer shall have the authority to approve, amend, or reject the Validation/ Verification Report and the Validation/ Verification Opinion.

8.2 Scope of review

The independent review shall cover the following aspects:

a. The completeness, consistency, and adequacy of the validation or verification plan and the conclusions documented in the Validation or Verification Report and Opinion;

b. The methods, assumptions, and calculations used by the validation team or the verification team to evaluate the responsible party's data and information;

c. The assessment of uncertainty, risk, and materiality in the responsible party's statements;

d. The adherence of the validation or verification activities to GHR program rules, the applied Methodology, applicable ISO standards, and any other relevant criteria;

e. The resolution of any nonconformities, corrective actions, or clarifications identified during the validation or verification;

f. The adherence of the validation team or verification team to VVB procedures;

g. The competence and impartiality of the validation or verification team.

The independent review shall be documented and retained by the VVB. The independent reviewer shall sign the Validation or Verification Report and Opinion to indicate completion and approval of the work submitted for review.

9 PROGRAM ADMINISTRATION AND OVERSIGHT

The Registry has established policies and procedures to ensure the quality, credibility, and integrity of validations and verifications performed by approved VVBs.

9.1 Record keeping and document control

a. The VVB shall keep records of all validation and verification activities, including planning documents, working papers, data sources, calculations, site visit reports, review notes, correspondence, and final reports. The records shall be retained for at least seven years after the completion of the validation or verification, or longer if required by the Registry or applicable regulations.

b. The VVB shall maintain a document control system that ensures the identification, approval, distribution, revision, and retrieval of all relevant documents related to the validation and verification program. The VVB shall also ensure that obsolete documents are removed from circulation and archived securely.

c. The VVB shall provide copies of any records or documents requested by the Registry or any authorized third party, subject to confidentiality agreements and applicable laws.

9.2 Verification oversight, audits, and site visits

The Registry may conduct oversight, audits, and site visits of the VVB and its validation and verification activities, either directly or through designated representatives, to verify compliance with Registry requirements and standards and to evaluate the performance and competence of the VVB and its personnel. The oversight, audits, and site visits may be announced, and may cover any aspect of the validation and verification program.

The VVB shall cooperate fully with the Registry and its representatives in the conduct of oversight, audits and site visits, and shall provide access to all relevant records, documents, facilities, personnel, and information as requested. The VVB shall also facilitate communication and coordination between the Registry and the Project Proponent, as needed.

The Registry will provide the VVB with a report of the findings and conclusions of the oversight, audit, or site visit, and may require the VVB to take corrective actions to address any non-conformities, deficiencies, or areas for improvement identified in the report. The VVB shall respond to the report and implement corrective actions within the time frame specified by the Registry.

9.3 Notice of corrections and suspensions

The Registry may issue a notice of correction to the VVB if it finds any errors, omissions, inconsistencies, or inaccuracies in the Validation or Verification Reports or Opinions submitted by the VVB, or if it receives any complaints or allegations regarding the VVB's conduct or performance. The notice of correction shall specify the nature and extent of the problem, and the actions and deadline for the VVB to correct it.

The Registry may suspend or revoke the VVB's program approval, partially or fully, temporarily or permanently, if it determines that the VVB has failed to comply with the Registry requirements and

standards, or has engaged in any misconduct, fraud, negligence, or malpractice that affects the quality, credibility, or integrity of the validation or verification program. The suspension or revocation shall be communicated to the VVB in writing, with the reasons and conditions for the decision, and the appeal process if applicable. The Registry may choose to inform accrediting bodies of poor performance, as appropriate.

The VVB shall comply with any notice of correction or suspension issued by the Registry and shall inform the Registry of the actions taken to resolve the problem. The VVB shall also inform the Registry of any changes in its organizational structure, management system, personnel, or scope of accreditation or recognition that may affect its ability to perform validation or verification activities.

9.4 Appeals and complaints

The VVB shall have policies to handle appeals and complaints that it may receive from a Project Proponent or other interested party regarding its validation or verification activities. The appeals and complaints process shall be fair,transparent, impartial, and timely, and shall seek to resolve appeals and complaints through dialogue, negotiation, mediation, or arbitration, as appropriate.

The VVB shall document the details and outcomes of any appeals and complaints and their resolution, and shall make them available upon request to the Registry.

VVBs are encouraged to provide feedback and suggestions to the Registry on how to prevent or minimize future appeals or complaints, and how to improve the validationand verification program.

10 REFERENCES

International Organization for Standardization. (2019). ISO 14064-3:2019 - Specification with guidance for the validation and verification of greenhouse gas statements. International Organization for Standardization.

International Organization for Standardization & International Electrotechnical Commission. (2019). ISO/IEC 17029:2019 - Conformity assessment — General principles and requirements for validation and verification bodies. International Organization for Standardization.

International Organization for Standardization. (2020). ISO 14065:2020 - General principles and requirements for bodies validating and verifying environmental information. International Organization for Standardization.

International Accreditation Forum. (2023). IAF MD 6:2023 - IAF Mandatory Document for the Application of ISO 14065:2020. International Accreditation Forum.

SCS Global Services and International Centre for Integrated Mountain Development. (2023) Radiative Forcing Protocol: Methods and Applications, Version 1.1. Prepared by SCS Global Services, and published together with the International Centre for Integrated Mountain Development (ICIMOD).

Appendix A

Project Risks for Consideration When Establishing Buffer Pool Size

The following is a list of potential events that could affect the validity of credits issued for projects in any given specific project category. Methodologies representing specific project types provide additional guidance where applicable.

Reversal Risks

Environmental Events that result in the release of sequestered carbon, including:

- Fire
- Drought
- Disease/Pests
- Flood
- Earthquake
- Storms
- Heatwaves
- Avalanche

Human activity that unintentionally or deliberately result in the release of sequestered carbon

- Land-use changes (e.g., deforestation, urban development)
- Project site abandonment (due to inadequate management, financial failure, socio-political instability, economic crises, community opposition, etc.)
- Failure of maintenance or oversight

Regulatory, Legal, and Compliance Risks

Regulatory Changes

- Alterations in national or regional regulations that invalidate or require re-evaluation of credit validity.
- Introduction of new performance or safety standards that retroactively affect previously verified

projects.

Legal Disputes

- Litigation challenging the validity of credits.
- Ownership disputes over land or resources related to the project.

Compliance Failures

- Failure to adhere to regulatory requirements after credit issuance.
- Non-compliance with ongoing monitoring and reporting obligations.

Project Implementation and Verification Risks

- Inadequate technical capacity of the VVB, VVB contractor, or project proponent
- Fraud, or deliberate misrepresentation of project outcomes by the VVB, VVB contractor, or project proponents
- Inaccurate or incomplete Measurement, Reporting, and Verification processes leading to issuance of credits that do not reflect actual carbon reductions or removals
- Inaccurate data collection methods or issues related to the security, accuracy, and storage of data over time