



Verification Report

Version 1.4

01 July 2025

Aster Global Environmental Solutions, Inc.



Forest Carbon Partnership Facility (FCPF)

Carbon Fund

Verification Report (VER)

ER Program Name and Country	People and Forests – A Sustainable Forest Management-based Emission Reduction Program in the Terai Arc Landscape, Nepal
Reporting Period Covered In this Report	22-06-2018 to 31-12-2021
Number of FCPF ERs	1,882,435
Number of ERs allocated to the Uncertainty Buffer	395,467
Number of ERs allocated to the Pooled Reversal Buffer	358,557
Number of FCPF ERs from enhanced removals through afforestation/ reforestation	1,146,591
Name of the VVB	Aster Global Environmental Solutions, Inc.
Contact information of the VVB	Name: Aster Global Environmental Solutions Contact: Janice McMahon Phone: +1 330.294.1242 ext. 102 Email: jmcMahon@asterglobal.com Address: 3800 Clermont St. NW North Lawrence, OH 44666
Report Version	V1.4
Date of the Verification Report	01-07-2025
Report Approved by	Caitlin Sellers

1. VERIFICATION STATEMENT

The review and cross-check of explanations and justifications included in the Monitoring Report, v2.0 dated 16-06-2025 and supporting documents have provided Aster Global Environmental Solution, Inc.'s (herein referred to as Aster Global) with sufficient evidence to determine with a *reasonable* level of assurance the compliance of the *People and Forests – A Sustainable Forest Management-based Emission Reduction Program in the Terai Arc Landscape, Nepal* with the FCPF Methodological Framework, the Validation and Verification Guidelines, and other applicable normative documents.

The scope covered by the verification includes the ER Program's crediting period [22-06-2018 to 31-12-2024], the reporting period [22-06-2018 to 31-12-2021], the accounting area [2,287,325 hectares], the REDD Country Participant's Forest Monitoring System, the national REDD+ Programs and Projects Data Management System, and the following GHG sources, sinks, REDD+ activities and carbon pools:

Sources/Sinks/Reservoirs	REDD+ Activities (sources and sinks)
	Emissions from deforestation – included
	Emissions from forest degradation – included
	Removals from forest carbon stocks enhancement – included
	Sustainable management of forests – excluded
	Conservation of carbon Stocks – excluded
	Carbon Pools
	Aboveground biomass in tress – included
	Belowground biomass in trees – included
	Biomass in non-woody vegetation – excluded
	Dead organic matter – excluded
	Leaf Litter – excluded
	Soil organic carbon – excluded
	GHG
	CO ₂ – included
	CH ₄ – excluded
	N ₂ O – excluded

During the verification process, the VVB team issued findings as specified in the FCPF Validation and Verification Guidelines v2.7 Section 11. The VVB issued Major Corrective Actions (MCARs), Minor Corrective Actions (mCARs), and Observations (OBS).

A total of 71 MCARs were raised, but 7 rounds of review resulted in 4 mCARs, and 1 Observation as part of the verification process. All of the MCARs were successfully addressed by the ER Program and closed by the VVB, while 4 mCARs and 1 Observation remain open. These findings are described in Appendix 1 of this report.

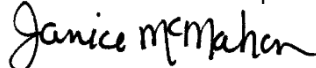
Aster Global is able to verify with a *reasonable* level of assurance that the Emissions Reductions generated by *People and Forests – A Sustainable Forest Management-based Emission Reduction Program in the Terai Arc Landscape, Nepal*, quantified in accordance with the verification criteria, amount to 2,636,459 tonnes CO₂ equivalent. Aster Global verified that the uncertainty buffer ERs amount to 395,467 tonnes of CO₂ equivalent and that the non-permanence ERs amount to 358,557. The amount of FCPF Units to be issued would be 1,882,435 tCO₂e. There are no uncertainties associated with the verification conclusion.

Statement Issuing Date: 01 July 2025

Intended User: [World Bank Group, FCPF Carbon Fund Participants]



TEAM LEADER: Caitlin Sellers



LEGAL REPRESENTATIVE: Janice McMahon

Version of the template: 1.4, August 2024

2. AGREEMENT

2.1 Level of Assurance

The level of assurance determined the depth of detail that the verification team used to determine if there were any errors, omissions, or misrepresentations. Aster Global assessed the *People and Forests – A Sustainable Forest Management-based Emission Reduction Program in the Terai Arc Landscape, Nepal* implementation of general principles, data collection and processing, sampling/monitoring descriptions, documentation, calculations, etc., to provide *reasonable* assurance to meet the requirements of the FCPF Carbon Fund and to satisfy the professional judgement of the VVB team.

Based on the previous provisions and considering the findings raised during the audit, a positive evaluation statement reasonably ensures that the FCPF Program GHG assertion is materially correct and is a fair representation of the GHG data and information provided in the ER Monitoring Report and supporting documents.

2.2 Objectives

As outlined in the Validation and Verification Guidelines (VVG) - (Section 8.2)¹, the general objectives of the validation/verification of *People and Forests – A Sustainable Forest Management-based Emission Reduction Program in the Terai Arc Landscape, Nepal* include the following:

- Review of the ER Monitoring Report and supporting information to confirm the correctness of presented information;
- Identify if the methodological steps and data are publicly available in accordance with applicable criteria;
- Assess whether the start date of the crediting period proposed by the ER Program is in compliance with the definition provided in the FCPF Glossary of terms;
- Assess the extent to which reported ERs have been reported with a transparent and coherent step-by-step process that enables reconstruction and have meet the requirements of applicable criteria;
- Assess the extent to which the reported GHG emissions / Emission Reductions is materially accurate, i.e., free of material misstatements, errors or omissions;
- Identify source(s) of Uncertainty due to both random and systematic errors related with the Reference Level setting and any sources of bias that can impact the estimate of the Total ERs, and determine whether the ER Program has conducted the Uncertainty analysis in compliance applicable criteria;
- Assess the Forest Monitoring System of the ER Program and validate that there are controls for sources of potential errors, omissions, and misstatements in place;
- Identify components of the Forest Monitoring System that require attention and/or adjustment in future monitoring and reporting or identify areas of risk of future noncompliance.

Similarly, as outlined in the VVG - (Section 8.2), the specific objectives of verification of the *People and Forests – A Sustainable Forest Management-based Emission Reduction Program in the Terai Arc Landscape, Nepal* include the following:

- Assess the extent to which the methodologies and methods used to estimate GHG emissions and removals during the Reporting Period are consistent with the Reference Level and with the Monitoring Plan as described in the ER Monitoring Report;

¹ Forest Carbon Partnership Facility, Validation and Verification Guidelines, Version 2.7, January 2025 (Section 8.2)

- Assess the extent to which the ER Monitoring Report includes a complete and accurate report, to the extent possible, on the implementation of its strategy to mitigate and/or minimize potential Displacement and on any on changes in major drivers in the ER Accounting Area;
- Assess the extent to which the ER Monitoring Report contains a complete and accurate report on the mitigation, to the extent possible, of significant risks of Reversals identified in the assessment, and addresses the sustainability of ERs;
- Determine whether the ER Program has quantified ERs allocated to the Uncertainty, Reversal, and Pooled Reversal Buffer during the Reporting Period in compliance with the Methodological Framework and other applicable criteria;
- Assess the extent to which systems to avoid that ERs generated under the ER Program have not been counted or compensated for more than once have been adequately implemented and confirm that issuance has not occurred in other known registries;
- Determine whether the national or centralized REDD+ Programs and Projects Data Management System are implemented and operated in compliance with the Methodological Framework and other applicable criteria.

The verification process ensured that all required objectives have been met during the course of audit.

2.3 Criteria

The criteria applicable to the verification with extended scope included the following:

- FCPF Methodology Framework, Version 3, April 2020
- Buffer Guidelines, Version 4.2.1, March 2025
- Guideline on the application of the Methodological Framework Number 1, Version 1, June 2016
- Guidelines on the application of the methodological Framework Number 2, Version 2, November 2020
- Guideline on the application of the Methodological Framework Number 3, Version 1, November 2018
- Guidelines on the application of the Methodological Framework Number 4, Version 1, November 2020
- Process Guidelines, Version 6.3, March 2025
- FCPF Validation and Verification Guidelines, Version 2.7, January 2025
- FCPF – Glossary of Terms Version 2.3, January 2025
- ISO 14064-3:2006
- ISO 14065:2013
- ISO 14066:2011
- IAF MD 6:2014
- Forms and templates as published and available by FCPF
- Training Presentations presented by FCPF
- Formal clarification provided by the FMT

Following are the Criteria and Indicators applicable verification:

Criteria / Indicators	Topic	Validation	Validation - Extended/GAP	Verification
3	Scope and methods		X	
4	Carbon pools and GHG		X	
5	IPCC guidelines		X	
6	Data availability	X	X	X
7, 8, 9.1	Identification and address source(s) of uncertainty	X	X	X
9.2, 9.3	Estimation of residual uncertainty			X
10-13	Reference level		X	

14.1	Consistency of monitored estimates with RL.			X
14.2, 14.3	Robust Forest Monitoring System		X	
15	National Forest Monitoring System		X	
16	Community participation in Monitoring and Reporting		X	
17.3, 17.4	Monitoring and reporting of displacement mitigation			X
18.2	Addressing reversals			X
19	Account for reversals			X
22	Calculation of Emission Reductions.			X
23	Double counting			X
37	REDD projects and programs DMS			X

2.4 Scope

The general scope of the verification includes:

- Crediting period of the ER Program
- The applicable ER Program Reporting Period (Verification)
- The ER Program Accounting Area
- The GHG sources and sinks associated with the REDD+ activities accounted for as required by the Methodological Framework
- The carbon pools and greenhouse gases to be accounted for as required by the Methodological Framework
- The REDD Country Participant's Forest Monitoring System as described in the ER Monitoring Report
- The national or centralized REDD+ Programs and Projects Data Management System.

2.5 Materiality

The verification process based on the desk review and country visit found that there are not quantitative and/or qualitative material discrepancies affecting the GHG assertion or leading to overestimations of the reported GHG emissions and removals. The process for estimating the threshold of materiality is described below:

Qualitative and quantitative materiality refers to "errors", "omission" and "misrepresentation" that either individually or in the aggregate form affect the GHG assertion. As detailed in the AGG, the following criteria are used to evaluate whether a given discrepancy is deemed material:

- Qualitative issues related to management system and controls, poorly managed documentation, and non-compliance with the applicable requirements of the Methodological Framework and other applicable criteria;
- Any errors in reporting factual information in the ER Monitoring Report as required by the FCPF Methodological Framework;
- 1% materiality threshold applies to any over-estimation of Reference Level and ERs. Under-estimation of the Reference Level or Emission Reductions will not be considered a material discrepancy.

Any material discrepancy identified by the VVB through the application of the above criteria were considered as non-conformities in the assessment. Any discrepancies not qualifying under the above criteria are treated as immaterial.

3. METHODOLOGY AND PLANNING

3.1 Verification team

The Verification Team is described as follows:

Name	Role	Activities				
		Desk review	Site visit	Reporting	Supervision	Technical review
Janice McMahon	Project Manager / Planning / Team Coordination / Quality Assurance Quality Control (QAQC)			X	X	X
Caitlin Sellers	Team Leader/ Lead Validator / Verifier, Desktop Review / Site Visit/ Client communications	X		X	X	
Justin Ziegler	Forest Biometrician / Team Member / Desktop Review	X				
Sandesh Shrestha	Remote Sensing and GIS Specialist / Team Member / Site Visit / Desktop Review / Client communications	X	X	X		
Matthew Campbell	Field Forester / Team Member	X				
Ashley Laux	Project Forester / Team Member	X				
Caris Lyons	Environmental Scientist / GIS Specialist / Team Member	X				
Kevin Markham	Principal Scientist / Team Member	X				
Shawn McMahon	Independent Peer Reviewer (Technical Reviewer)					X

Natalie Hammer	Executive Services Administrator / Resource Manager				X	
Mansfield ² Fisher	Team Member	X			X	

3.2 Verification schedule

The schedule of the Verification is described below:

Verification Activity/Milestone	Content (Explanation)	Proposed Delivery Date
Kick Off Call	Kick-off the validation and verification of Nepal ER Program	04 December 2023
VVB Initial Desk Review	Initial desk review to include preliminary review of documentation provided to inform our risk assessment and inputs into the Sampling Plan. If preliminary findings are discovered or documents are missing, Aster Global will notify FMT and ER Program Entity	Week of 15 January 2024
Draft Sampling Plan and submit to FMT	Sampling Plan submitted for review and approval – note that based on ISO 14064 and 14065 the final sampling plan must be signed by the ER Program Entity	Week of 04 December 2023
FMT return Draft Sampling Plan with comments	Draft Sampling Plan with comments submitted to Aster Global	Week of 04 December 2023
Final Sampling Plan submitted to FMT	Final Sampling Plan submitted	Week of 01 January 2024
Aster Global drafts Audit Plan and submits to FMT and ER Program	Draft Audit Plan submitted for review and approval – note that based on ISO 14064 and 14065 the final audit plan must be signed by the ER Program Entity	Week of 04 December 2023
Draft Audit Plan returned to Aster Global with Comments from ER Program and FMT	Draft Audit Plan submitted for review and approval – note that based on ISO 14064 and 14065 the final audit plan must be signed by the ER Program Entity	Week of 04 December 2023
Final Audit Plan submitted to ER Program for Signature	Final Audit Plan submitted for review and approval – note that based on ISO 14064 and 14065 the final audit plan must be signed by the ER Program Entity	Week of 22 January 2024
Aster Global starts desktop review	VVB conducts desktop review and generates Findings as they proceed	Begins upon receipt of signed Audit Plan – Week of 22 January 2024

² Please note that Mansfield Fisher is no longer an employee of Aster Global; however, he will remain on the Verification Report as he previously worked on the Validation/Verification.

General Walkthrough Call	Meeting with REDD+ Implementation Center (RIC) – Ministry of Forests and Environment (MoFE)	04 March 2024
Calculation Walkthrough Call	Meeting with Forest Survey and Carbon Measurement Section - Forest Research and Training Center (FRTC)(MoFE)	05 March 2024
Remote Sensing Walkthrough Call	Meeting with Remote Sensing and Mapping Section - Forest Research and Training Center (FRTC)(MoFE)	06 March 2024
Logistics Meeting/s to discuss site visit if able to travel or virtual logistics	Meeting to discuss travel logistics or alternative plans for conducting a virtual site visit	12 March 2024
Logistics Meeting/s to discuss site visit if able to travel or virtual logistics	Meeting to discuss travel logistics or alternative plans for conducting a virtual site visit	18 March 2024
Aster Global conducts in-country validation and verification review site visit	Implementation of in-country site visit	25-29 March 2024
Aster Global Issues Round 1 Findings	After completion of the site visit, the desktop findings and site visit findings will be combined and submitted to ER Program Entity	12 May 2024
Round 1 Findings Meeting	After ER Program Entity representatives and FMT have a chance to review the findings, Aster Global will hold a meeting to clarify any questions	24 May 2024
Aster Global Issues Revised Round 1 Findings	Aster Global issues revised Round 1 Findings based on clarifications provided by FMT	06 June 2024
ER Program Entity provide responses to Round 1 Findings and updated documents	Updated documentation/ evidence and Findings responses provided to Aster Global	18 September 2024, 24 September 2024
Aster Global Completes Review of Round 1 Finding Responses and Issues Round 2 Findings	Aster Global reviews updated documentation, evidence and Findings responses provided to Aster Global	17 November 2024
ER Program Entity provide responses to Round 2 Findings and updated documents	Updated documentation/ evidence and Findings responses provided to Aster Global	25 February 2025
Aster Global Completes Review of Round 2 Finding Responses and Issues Round 3 Findings	Aster Global reviews updated documentation, evidence and Findings responses provided to Aster Global	26 March 2025
ER Program Entity provide responses to	Updated documentation/ evidence and Findings responses provided to Aster Global	16 April 2025

Round 3 Findings and updated documents		
Aster Global Completes Review of Round 3 Finding Responses and Issues Round 4 Findings	Aster Global reviews updated documentation, evidence and Findings responses provided to Aster Global	01 May 2025
ER Program Entity provide responses to Round 4 Findings and updated documents	Updated documentation/ evidence and Findings responses provided to Aster Global	12 May 2025
Aster Global Completes Review of Round 4 Finding Responses and Issues Round 5 Findings or Indicates that all Findings are closed	Aster Global reviews updated documentation, evidence and Findings responses provided to Aster Global	16 May 2025
ER Program Entity provide responses to Round 5 Findings and updated documents	Updated documentation/ evidence and Findings responses provided to Aster Global	21-22 May 2025
Aster Global Completes Review of Round 5 Finding Responses and Issues Round 6 Findings or Indicates that all Findings are closed	Aster Global reviews updated documentation, evidence and Findings responses provided to Aster Global	22 May 2025
ER Program Entity provide responses to Round 6 Findings and updated documents	Updated documentation/ evidence and Findings responses provided to Aster Global	27 May 2025
Aster Global Completes Review of Round 6 Finding Responses and Issues Round 7 Findings or Indicates that all Findings are closed	Aster Global reviews updated documentation, evidence and Findings responses provided to Aster Global	29 May 2025
Aster Global drafts validation and verification report	Aster Global prepares draft validation and verification plans using FCPF templates (if available and ready to be used)	Week of 02 June 2025
Aster Global conducts Independent Peer Review (technical review)	Aster Global's Independent Peer Reviewer (technical reviewer) will assess the validation and verification work performed by Aster Global.	Week of 09 June 2025
Draft validation and verification reports are updated as needed and provided to the FMT and ER Program Entity	Aster Global makes updates to reports as needed after the Technical Reviewer is finished and then drafts are submitted to FMT and ER Program representatives	Week of 23 June 2025

Aster Global holds validation and verification closing meeting	After all representatives have had a chance to review, Aster Global will hold the closing meeting to review comments/suggestions about the draft reports and discuss feedback about the overall process.	Week of 30 June 2025
Aster Global issues final validation and verification report and statement (opinion)	Review of ER Program is complete.	Week of 30 June 2025

3.3 Methodology description

The audit consisted of both desktop review and on-site components. The desktop verification component included a full, risk-based review of all ER Program documentation/calculations received from the ER Program against the requirements and criteria of FCPF Carbon Program. The on-site component was conducted from 24 March through 29 March 2024. The on-site kickoff meeting was conducted on 24 March 2024, which included a review of the proposed schedule and an overview of the anticipated audit activities.

The desktop review included a full walkthrough meeting with the ER Program team to provide clarification to the VVB team as needed to understand the process followed and where to find key information in the documents provided. A complete list of documents and files provided to the VVB for review as part of the validation desktop assessment is presented in Appendix 2. The review focused on the ER Program Documents relative to the highest risk elements and complemented by interviews with ER program staff. ER Program details, implementation status, data and parameters, and quantification of GHG emission reductions and removals were thoroughly examined. Key supporting documents were also reviewed. These included, but were not limited to, monitoring data [i.e., remote sensing/Geographic Information System (GIS) data], Standard Operating Procedures (SOPs), geospatial boundaries, maps and aerial images, biomass and carbon calculations for emission sources/sinks, and the overall results of the MRV (Monitoring, Reporting, and Verification) system. Review of the ER Program documentation and elements as part of the desktop review included, but was not limited to, assessment of the following aspects of the ER Program: Review of the ER Program documentation and elements as part of the desktop review included, but was not limited to, assessment of the following aspects of the ER Program:

- Current conditions, for example the presence of deforestation and degradation, emissions factor adjustments, forest characteristics and reported biomass volume (above- and/or below-ground)
- implemented in accordance with the SOPs as they are written
- Confirmed that operational, data collection procedures and monitoring methods were applied
- Reviewed all program and strata boundaries (where applied)
- Interviewed management team, including a series of interviews with in-country staff that support the mission of the ER Program
- Confirmed organizational structure and operation
- Confirmed data management, compilation, and storage
- Confirmed the quality control and quality assurance procedures are in place

ER Program utilized remote sensing tools, including a satellite and land monitoring system, to produce estimates of the reference level and to generate the activity data. Geospatial data forms the basis for biomass and deforestation accounting estimates across landscapes, and therefore program integrity depends on a robust remote sensing assessment. The scope of the remote sensing review included inter alia the following:

- Expert judgement evaluation of remote sensing methods and implementation results
- Data selection suitability review: assessed the quality of acquired satellite data including review of minimum standards for remotely sensed analysis

- Reviewed classification results from Collect Earth including independent ground reference points as an indicator for accuracy
- Assessed the monitoring approach including data and methods
- Reviewed monitoring assumptions for inferences made using remotely sensed data and completeness checks on the analysis of drivers of emissions and removals
- Review of uncertainty propagation
- Selected independent data checks on analysis including, for example, accuracy assessment generation, classification results, etc.

Aster Global follows ISO 14064-3 and our management systems manual to apply a risk-based approach to the remote sensing review, concentrating on the likely sources of material misstatements. Aster Global performed the assessment of ER Program compliance against the FCPF Methodological Framework requirements and associated guidelines (as applicable) with respect to remote sensing.

Based upon the information and documentation received from ER Program to-date, the verification team completed our Strategic Analysis and Risk Assessment (SARA). SARA is a risk assessment that includes strategic analysis to make sure the V/V Team have considered:

- Regulatory requirements
- GHG program requirements
- Industry factors
- And other non-technical risks (i.e., health and security issues)

An ER Program-specific Validation/Verification Sampling Plan and Audit Plan were developed to guide the auditing process to ensure efficiency and effectiveness. The purpose of these documents was to present a risk assessment for determining the nature and extent of validation procedures necessary to ensure the risk of auditing error was reduced to a reasonable level. The plan methodologies were derived from all items in our validation process stated above. Specifically, these documents utilized the FCPF normative documents and ISO 14064-3. Any modifications applied to the plans were made based upon the conditions observed for monitoring to detect the processes with highest risk of material discrepancy.

Throughout the review process, the VVB team issued both MCARs and mCARs to the ER Program to ensure compliance with the FCPF Carbon Fund requirements and normative documents. The ER Program subsequently responded with written responses, generally after an online meeting to discuss the CARs that were submitted, updated/corrected documentation, and/or provided additional supporting evidence. During the review process there were seven (7) formal sets of CARs submitted to the ER Program.

3.4 Review of documentation

A detailed review of all documentation was conducted to ensure consistency with and identify any deviation from FCPF program requirements.

Initial review focused on the ER Monitoring Report (ER-MR), and included an examination of the details, implementation status, data and parameters, and quantification of GHG emission reductions and removals. Along with a review of the ER-MR, selected documentation was requested, provided, and subsequently reviewed for consistency, accuracy, and appropriateness with regard to FCPF Methodological Framework and associated requirements. Documents reviewed included, but were not limited to, property boundaries, financial analyses, Non-Permanence Risk Analysis, maps and aerial images, data from monitoring, biomass and carbon calculation spreadsheets, and responses to Major and/or Minor CARs. The process of verification involved seven (7) formal rounds of assessment by the verification team and resulted in ER-MR that was in conformance with FCPF rules.

Please see Appendix 2 for a complete list of documents received and reviewed by Aster Global.

3.5 REDD Country Visit

Aster Global conducted an on-site assessment from 24-29 March 2024. The on-site assessment closely followed Aster Global's Validation/Verification Sampling Plan and Audit Plan methodology. The on-site kick-off meeting was conducted on 24 March 2024, which included a review of the proposed schedule and an overview of the anticipated audit activities.

Biomass plots selected for detailed review were chosen based under the discretion of the Forest Biometrician and the Lead Verifier. Sample size and techniques were based on the ER Program parameters, scope, and best professional judgment of the Lead Verifier. A risk-based approach was used to select the plots to allow a review of multiple plots targeted to represent a wide geographic range that was sufficient to provide the necessary sample size to meet a reasonable level of assurance, as directed by the professional judgment of the Lead Verifier. A total of 4 of the ER Program's biomass plots were revisited which are located in 4 different community forests. At a minimum for each plot assessed in the field by the VVB team member, the ER Program team was requested to reproduce data collection using inventory SOPs so that the VVB team could ensure SOPs were appropriately implemented and in agreement with commonly accepted professional methods. The VVB team member compared the data collected from the site visit to the data from the original Project data sheets to ensure accuracy. The sample observations showed consistency and conservativeness with the original data collected by the ER Program team.

Additionally, accuracy of forest area change mapping and land cover classification was assessed. Spot-checking of change mapping and landcover classification was conducted throughout the site visit, with land cover information and photos documented.

Furthermore, interviews were conducted with representatives from the Ministry of Forests and Environment at Province, District and Local level in each site where the biomass plots were located. A meeting was held with the Remote Sensing and Mapping team where a walkthrough of re-interpretation of a sample of CEO plots was conducted. Interviews were conducted with each Community Forest User Group. The goal of these meetings was to solicit input on their experiences regarding interactions on REDD+ program activities and their participation in Monitoring and Reporting.

An on-site audit closing meeting was conducted on 28 March 2024 at the conclusion of on-site audit activities. A summary of site visit activities is provided in the table below. Please note that validation and verification activities were undertaken concurrently.

Date	Site Visit Activity
24 March 2024	Opening meeting and visit to Province Forest Ministry and meeting with Secretary, Forest Directorate and DFO Kailali
25 March 2024	Travel to Community Forest, Ghodaghodi, Kailali Forest Inventory- Plot 1 (22-69-6) (Badimalika Community Forest, Ghodaghodi, Kailali) Meeting with Community Forest Users Meeting at Division Forest Office, Pahalmanpur Meeting with Remote Sensing and Mapping team (Discussion on forest change mapping methods, Reinterpretation of a sample of CEO plots)
26 March 2024	Travel from Chisapani to Banke National Park Headquarter Meeting with Banke National Park Warden and staffs, field visit planning

	Forest Inventory - Plot 2 (43-54-03) (Rimna Buffer Zone Community Forest)
27 March 2024	Forest Inventory – Plot 3 (43-54-06) (Rimna Buffer Zone Community Forest) Meeting with Rimna Buffer Zone Community Forest Users Meeting with Secretary of Lumbini Province Forest Ministry and DFO Deukhuri
28-29 March 2024	Travel from Deukhuri to Dang, Ghorahi Meeting with DFO, Dang Meeting with Leruwa Pahad Community Forest Users Forest Inventory – Plot 4 (54-51-01) (Leruwa Pahad Community Forest) VVB holds Site Visit Closing Meeting VVB concludes the Site Visit

4. SUMMARY OF FINDINGS

4.1 Implementation status of the ER Program and update on drivers

After review of all ER Program information, procedures, calculations, and supporting documentation, Aster Global confirms that the Monitoring Report and supporting documents are complete and accurate. Aster Global confirms that sufficient information has been included to explain any changes in major drivers in the ER Accounting Area and the status of the implementation of the strategy to mitigate and/or minimize potential displacement.

4.2 System for measurement, monitoring and reporting emissions and removals occurring within the monitoring period

4.2.1 Forest Monitoring System

After review of all information, procedures, calculations, and supporting documentation, Aster Global confirms that the monitoring conducted by the ER Program is accurate and consistent with all FCPF Program requirements. Aster Global confirms that the Forest Monitoring System of the ER Program is functioning and is able to produce high quality data because it has in place the necessary controls to address relevant sources of potential errors, omissions, and misstatements in place.

4.2.2 Forest Monitoring Approach

This section is not applicable, as this section is only applicable to ER Programs that have already concluded the Validation Assessment.

4.2.3 Measurement, monitoring and reporting approach

After review of all information, procedures, calculations, and supporting documentation, Aster Global confirms that the equations and methods used for measuring, monitoring, and reporting are correct and consistent with the Reference Level. Additionally, Aster Global confirms that all equation parameters, monitored parameters, and fixed data are appropriately linked to the equations used for quantification and monitoring.

4.3 Fixed Data and Parameters

After review of all information, procedures, calculations, and supporting documentation, Aster Global confirms that all fixed data and parameters are reported and are in line with the guideline provided in the ER-MR template. Aster Global confirms that fixed data and parameters are made publicly available according to the Criterion 6 of the FCPF Methodological Framework.

4.4 Monitored Data and Parameters

Aster Global confirms that all data and parameters subject to monitoring and described below have been reported in line with guidelines provided in the Monitoring Report template. Aster Global confirms the information for each parameter is complete, and that the stated parameters are free of error and material misstatements. Activity data are the data and parameters subject to monitoring. The source of activity data is from Collect Earth platform and activity data was exported as numerical data for analysis. Assessment details are as follows.

Monitored Data and Parameters	Activity Data - Deforestation: $A(j,i)$ - Degradation: $A(a,b)$
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	- Forest gain: $A(j,i)$
Free of Material Misstatement (Yes/No)	Yes
Reported Appropriately (Yes/No)	Yes
Assessment Details	These parameters represent the following: - Deforestation: Area converted/transited from forest type j to non-forest type i during the Monitoring Period - Degradation: Area of forest type a converted to forest type b (transition denoted by a,b) during the Monitoring Period, ha yr⁻¹ - Forest gain: Area of non-forestland i converted to forestland j (transition denoted by i,j) in the Monitoring Period, ha yr⁻¹. Activity data that forms the basis of these parameters were estimated using a sample-based approach. For the sample design, a forest change map spanning from 1983 to 2021 was prepared. Four mapping algorithms were used to map forest change map: CCDC-SMA, CODED, LandTrendr, and MTDD. The algorithms utilize remote sensing imagery, training data points, land cover maps, and time series data analysis. An agreement map generated from the results of all four algorithms was used for sample design. Reference data were collected through visual imagery interpretation and time series analysis of 1,522 sampling plots in Collect Earth Online (CEO). The estimation of Activity Data was done using the stratified random estimator based on the formulas described by Cochran (1977). All 1,522 samples were used as the basis for calculating area estimates and their uncertainty. The VVB team reviewed SOPs and was able to ensure that forest change map was appropriate and followed the pre-defined classification system. Additionally, the VVB team performed an accuracy assessment of the forest change map and carried out an independent analysis of comparable remotely sensed data to validate the reliability and suitability of the source data used in the sample design. The VVB team conducted independent data checks for each step necessary for the quantification of these parameters. A sample of reference data was examined using remotely sensed imagery within the Collect Earth Online program to ensure accurate interpretation of LULC classification. Spatial analyses conducted in ESRI GIS Platform confirmed the geographical boundary, ensuring that all activity data fell within the Accounting Area and that the Accounting Area was computed correctly. Independent data checks were used to ensure that the quantification of the parameter was performed correctly, this included an independent review of the literature cited in reference to the applied equations. The uncertainty associated with



	these parameters was independently calculated after a thorough review of the quantification codes and calculation worksheets.
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5. VERIFICATION OF GHG ASSERTION

5.1 ER Program Reference level for the Reporting Period

The Reference level for the Reporting Period, as reported in the ER Monitoring Report and as confirmed in the Validation report, is as follows:

Year of monitoring/ reporting period <i>t</i>	Average annual historical emissions from deforestation over the Reference Period (tCO _{2-e} /yr)	If applicable, average annual historical emissions from forest degradation over the Reference Period (tCO _{2-e} /yr)	If applicable, average annual historical removals by sinks over the Reference Period (tCO _{2-e} /yr)	Adjustment, if applicable (tCO _{2-e} /yr)	Reference level (tCO _{2-e} /yr)
2018	273,539	182,182	-571,348	0	-115,627
2019	273,539	182,182	-598,102	0	-142,381
2020	273,539	182,182	-624,855	0	-169,134
2021	273,539	182,182	-651,608	0	-195,887
Total	1,094,156	728,728	-2,445,913	0	-623,029

5.2 ER program emissions by sources and removals by sinks

After review of all ER Program information, procedures, calculations, and supporting documentation, Aster Global confirms that the equations and methods used for measuring, monitoring, and reporting are correct and consistent with the Reference Level. Aster Global reviewed the entire estimation process to confirm that is complied with the FCPF Methodological Framework and associated documents. Aster Global was able to reconstruct ER estimates with given Excel spreadsheets and R coding. The formulae applied were correct to re-produce the final estimate of ER. The reported ERs are materially accurate. Aster Global confirms that the ERs have been reported following a transparent and coherent step-by-step process that enabled the reconstruction of estimates.

Year of reporting period <i>t</i>	Emissions from deforestation (tCO _{2-e} /yr)	If applicable, emissions from forest degradation (tCO _{2-e} /yr)*	If applicable, removals by sinks (tCO _{2-e} /yr)	Net emissions and removals (tCO _{2-e} /yr)
2018	148,615	64,764	-972,888	-759,509
2019	148,615	64,764	-1,083,295	-869,916
2020	148,615	64,764	-1,193,701	-980,322
2021	148,615	64,764	-1,304,108	-1,090,729

Total	594,460	259,056	-4,553,992	-3,700,476
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5.3 Uncertainty of Emission Reductions

5.3.1 Uncertainty analysis

Uncertainty was assessed as required. The VVB team recalculated the uncertainty statistics independently to confirm the accuracy of the reported precision, reviewed assumptions and sources associated with parameters used in the quantification, and reviewed uncertainty of the emission reductions. Fundamentally, uncertainty analysis is variance estimation for The ER Program. Aster Global assumes that given activity and emission factors data were collected with a reasonable level of accuracy and related sources of random and systematic errors are *de minimis* considering the professionals involved in the ER Program. Details regarding uncertainty calculation process is provided below in Section 5.3.2 Uncertainty of the estimate of Emission Reductions.

5.3.2 Uncertainty of the estimate of Emission Reductions

After completion of independent data checks, review of the workbook for the Monte Carlo simulation, and a systematic review of inputs and assumptions, Aster Global confirms that the aggregate uncertainty of emissions reductions is 102%. Additionally, Aster Global confirms that the correct uncertainty discount, 15%, is applied correctly, accurately and free of error and misstatements. The following steps were reviewed and confirmed, and the verification also confirmed that the quantification code ran without any error and that the results matched the Emission Reductions included in the monitoring report.

The uncertainty estimate for the Emission Reductions strictly follows the guidelines of Approach 2: Monte Carlo simulation from 2006 IPCC Volume 1 General Guidance and Reporting Chapter 3, except for the emission factors of which the distribution is based on re-sampling, i.e., non-parametric bootstrapping. Non-parametric bootstrapping for the activity data is applied to relax the limitations stemming from Monte Carlo simulation. While non-parametric bootstrapping is applied to generate random samples from the emission factors, random samples were generated from Monte Carlo simulation for the activity data, root-to-shoot ratios and carbon fraction. The distributions of emission factors were assumed to be truncated Gaussian (normal) distributions with a minimum value of 0. Additionally, the variance of emission factors was adjusted using the quadrature approach to account for uncertainty associated with biomass allometric models, as the variance from this source of uncertainty was not directly calculated. To ensure the accuracy uncertainty estimates for the Emission Reductions, non-parametric bootstrapping and Monte Carlo simulation were based on 10,000 random permutations. Finally, the distribution of Emission Reductions is determined by multiplying activity data, adjusted emission factors, root-to-shoot ratio, and carbon fraction.

5.3.1 Sensitivity analysis and identification of areas of improvement of the MRV system

The framework of the sensitivity analysis included: emission factors associated with each land use/land cover change, activity data associated with each land use/land cover change, carbon fraction, and root-to-shoot ratios. For each parameter, the sensitivity analysis was conducted by fixing all values except the focal parameter and repeating the Monte Carlo analysis, using a third-party software add-in. Section 5.3 of the ER-MR displays sensitivity in absolute and relative measures. Absolutely, the 'Swing' is presented as the range of total emission reductions resulting from the lowest and highest estimate of emission reductions due to uncertainty of each of the parameters. Relatively, the 'Percent Swing²' is a standardized measure to understand the rank order of parameters in terms of their 'Swing'.

The sensitivity analysis revealed that the emission factor associated with natural secondary forest regrowth contributed the greater uncertainty, followed by various parameters of activity data (most notably Degraded Forest-to-Intact Forest and Intact Forest-to-Unshaded Cropland). The sensitivity analysis showed that the impact of emission factors associated with land use/land cover staying static, root-to-shoot ratios, and carbon fraction on overall uncertainty of total emission reductions was negligible. After presenting this analysis, the ER-MR proposes methods and actions to address sources of

high uncertainty. Specifically, Section 5.3 of the ER-MR states activity data uncertainty notes that activity data may be reduced through consideration of improved accuracy of classification with use of higher resolution imagery and improvement of quality assurance/quality control through refining the interpretation key and training of interpreters.

The verification team reviewed and confirmed that above-mentioned elements related to the sensitivity analysis were all addressed in the provided quantification code. Therefore, Aster Global concludes that the application of the sensitivity analysis was performed correctly.

5.4 Transfer of Title to ERs

5.4.1 Ability to transfer title

As stated in Section 6 of the Monitoring Report, the ER Program has not identified the existence of unclear or contested title to the ERs during this reporting period. The percentage of ERs for which the ability to transfer Title to ERs is clear or uncontested is 100% during the first reporting period.

5.4.2 Program and Projects Data Management System

As stated in the ER monitoring report the Data Management System (DMS) is in the process of being established and has not yet been operationalized, as it is undergoing testing and verification steps prior to deployment. The ER Program expects the DMS to be fully functional by June 2025. Upon consultation with the FMT, the VVB has issued an mCAR related to Criterion 37. The ER Program should ensure that the DMS is fully operational at the time of the next verification and compliant with the requirements of the FCPF CF Program.

5.4.3 Double counted ERs

The VVB confirms that ERs generated under the ER Program have not been counted or compensated for more than once, have been adequately implemented, and that issuance has not occurred in other known registries. Based on the double-counting analysis a total of 108,516 CER units issued in the CDM projects has been calculated for deduction from the total ERs reported for the FCPF Carbon Fund ER Program for the reporting period from June 22, 2018 to December 31, 2021.

5.5 Reversals

5.5.1 The occurrence of major events or changes in ER Program circumstances that might have led to Reversals during the Reporting Period compared to the previous Reporting Period(s)

This section is not applicable, as this is the first verification.

5.5.2 Quantification of Reversals during the Reporting Period

This section is not applicable, as this is the first verification.

5.5.3 Reversal Risk Assessment and Buffer ERs

The VVB Team determines that the Buffer Guidelines have been correctly used to determine the Total reversal risk set-aside percentage of 16%.

Risk Factor	Risk indicators – Assessment by VVB	Resulting reversal risk set-aside percentage
Default risk	N/A	10%

Lack of broad and sustained stakeholder support	<i>Reversal Risk is low, with 10% discount.</i> The ER Program's extensive stakeholder engagement throughout the REDD+ process, measures like handing over national forest to community user groups, robust institutional mechanisms addressing localized encroachment risks, and legal safeguards provided by the National Land Use Act 2019 and Land Use Regulation 2022 suggests a positive level of stakeholder engagement and support. The VVB confirms there is no indication of lack of broad and sustained stakeholder support for the ER Program. Low risk rating is appropriate.	0%
Lack of institutional capacities and/or ineffective vertical/cross sectorial coordination	<i>Reversal Risk is low, with 10% discount.</i> The ER Program's robust institutional frameworks, mandated inter-governmental collaboration and proactive risk mitigation of devolution related challenges suggest strong institutional capacities and effective vertical and cross-sectorial coordination. The VVB assessed the institutional capacities and cross sectorial coordination of the ER Program through a review of the ER Program documentation, supporting documentation and interviews and determined that a low risk rating is appropriate.	0%
Lack of long term effectiveness in addressing underlying drivers	<i>Reversal Risk is medium, with 2% discount.</i> The ER Program's long-term effectiveness in addressing underlying drivers is supported by effective land use planning intervention to mitigate infrastructure driven deforestation, energy diversification efforts to reduce dependency on fuelwood and handover of forests to communities for management. The VVB confirms that a medium risk rating is appropriate.	3%
Exposure and vulnerability to natural disturbances	<i>Reversal Risk is medium, with 2% discount.</i> The VVB confirms there are no major events reported in the monitoring period. However, given the exposure and vulnerability of Nepal's forestry sector to natural disturbances (landslides, forest fires, earthquakes, floods, droughts) the VVB confirms that a medium risk rating is appropriate.	3%
Total reversal risk set-aside percentage		16%
Total reversal risk set-aside percentage from ER-PD or previous monitoring report (whichever is more recent)		11%

5.6 Calculation of emission reductions

Aster Global determines *People and Forests – A Sustainable Forest Management-based Emission Reduction Program in the Terai Arc Landscape, Nepal* ER Program has quantified ERs in compliance with the Methodological Framework, the ER Monitoring Report template and other applicable criteria. Aster Global confirms that the evidence collected in the assessment is sufficient to support the GHG assertion made by the ER Program as affirms that the GHG assertion is without material discrepancy with a reasonable level of assurance. The table below shows the Reporting Period (22-06-2018 to 31-12-2021) which includes 192 days of year 2018 (53%) and complete duration of the years 2019, 2020, and 2021.

		2018	2019	2020	2021	Total
A	Reference Level (tCO₂-e) (Section 5.1)	-115,627	-142,381	-169,134	-195,887	-623,029
B	Net emissions and removals under the ER Program (tCO₂-e) (Section 5.2)	-759,509	-869,916	-980,322	-1,090,729	-3,700,476
C	Emission Reductions during Reporting Period (tCO₂-e) (A-B)	311,407	700,783	811,189	921,596	2,744,975
D	If applicable, number of Emission Reductions from reducing forest degradation that have been estimated using proxy-based estimation approaches (use zero if not applicable)	0	0	0	0	0
E	Number of Emission Reductions estimated using measurement approaches (C-D)	311,407	700,783	811,189	921,596	2,744,975
F	Percentage of ERs (A) for which the ability to transfer Title to ERs is clear or uncontested (Section 5.4.1)	100%	100%	100%	100%	100%
G	ERs for which the ability to transfer Title to ERs is unclear or contested because they are sold, assigned or otherwise used by any other entity for sale, public relations, compliance or any other purpose (Section 5.4.3)	16,227	30,763	30,763	30,763	108,516

		2018	2019	2020	2021	Total
	If applicable, any buffer replenishments	0	0	0	0	0
H	Total ERs (D+E)*F-G minus, if applicable, any replenishments	295,180	670,020	780,426	890,833	2,636,459
I	Conservativeness Factor to reflect the level of uncertainty from non-proxy based approaches associated with the estimation of ERs during the Crediting Period (Section 5.3.2)	15%	15%	15%	15%	15%
J	Emission Reductions allocated to the Uncertainty Buffer $(0.15 * D / C * H) + (I * E / C * H)$	44,277	100,503	117,063	133,624	395,467
K	Total reversal risk set-aside percentage applied to the ER program (Section 5.5)	16%	16%	16%	16%	16%
L	Emission Reductions allocated to the Pooled Reversal Buffer $(H - J) * K$	40,144	91,122	106,138	121,153	358,557
M	Number of FCPF ERs (H-J-L)	210,759	478,395	557,225	636,056	1,882,435
N	Percentage of Emission reductions from enhanced removals from afforestation/reforestation as a percentage of the total removals [Optional if the country wishes to generate enhanced removals]	48.42659 59%	56.551885 5%	62.465344 1%	66.9619877 %	
O	Number of FCPF ERs from enhanced removals from afforestation/reforestation $(M * N)$ [Optional if the country wishes to generate enhanced removals]	102,063	270,541	348,072	425,915	1,146,591

6. NON-COMPLIANCES AND OBSERVATIONS

During the verification process, there was a risk that potential errors, omissions, and misrepresentations would be found. The actions taken when errors, omissions, and misrepresentations were found included notifying the client of the issues identified and expanding our review/sample to the extent that satisfied the Team Leader's professional judgment.

This verification involved seven (7) formal rounds of assessment by the verification team and resulted in a Monitoring Report that is in conformance with FCPF rules. Where findings were noted by the verification team, the ER Program Entity implemented corrective actions by amending the MR and supporting documentation/calculations and providing written clarification responses. Types of findings were characterized in the following manner:

Major Correction Action Requests (MCARs) were, in general, issued as a response to material discrepancies when:

- the evidence provided to demonstrate conformity is insufficient, unclear or not transparent and may lead to a material error, omission or misstatement, and/or a breakdown in the systems delivery;
- underlying assumptions used to develop the reported estimates are not supported by data;
- material errors, omissions or misstatements have been made in applying assumptions, in data or calculations;
- non-compliance with Verification criteria;
- the REDD+ Country Participant has failed to implement or made inadequate progress with the mCARs from the previous verifications; (*not applicable, as this is the first verification*)

Minor Correction Action Requests (mCARs) were, in general, issued when:

- the evidence provided to demonstrate conformity is insufficient, unclear or not transparent, but does not lead to a material error, omission or misstatement, and/or a breakdown in the systems delivery;
- non-material errors, omissions or misstatements have been made in applying assumptions, in data or calculations;

Observations (OBS) were issued when:

- there is no objective evidence to prove that there is a non-conformity, but the VVB observes practices and/or methods that could result in future MCAR and mCAR;
- the VVB wishes to identify an area of the Forest Monitoring System that requires attention and/or adjustment in future monitoring and reporting.

During the course of the verification, a total of 71 MCARs were raised, but 7 rounds of review resulted in 4 mCARs, and 1 Observation as part of the verification process. All of the MCARs were successfully addressed by the ER Program and closed by the VVB, while 4 mCARs and 1 Observation remain open. These findings are described in Appendix 1 of this report.

**APPENDIX 1: OVERVIEW OF NON-COMPLIANCES & OBSERVATIONS ISSUED DURING THE VERIFICATION
BY THE VERIFICATION TEAM**

Item	1
Carbon Methodological Framework Version 3, April 2020	Criterion 3: The ER Program can choose which sources and sinks associated with any of the REDD+ Activities will be accounted for, measured, and reported, and included in the ER Program Reference Level. At a minimum, ER Programs must account for emissions from deforestation. Emissions from forest degradation also shall be accounted for where such emissions are significant.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ER-MR Section 7, Annex 4
Aster Global Findings (12 May 2024)	The VVB reviewed the ERM and noted the following: 1. The ER Program appropriately included Emissions from deforestation, Emissions from forest degradation, Enhancement of forest carbon stocks. The VVB notes that there are no requirements to included sources/sinks in the ER Program Boundary rather there are only requirements that must be met when the ER Program chooses to exclude sources/sinks. The VVB notes that Table 38 of the ERPD states "Please note that Nepal defines Enhancement here as non-forest areas becoming forest (afforestation) and not as specific increases to forest biomass observed in forests remaining as forests." however this text does not appear within the ERM and it is unclear to the VVB why this occurs. 1a. Similarly, it is unclear to the VVB if this has change has been appropriately described as a Technical correction in line with the FCPF requirements. 2. The ERM references a report by "Gurung and Koch, 2011"; however, the VVB cannot located a copy of this report via web search. 3. The ERM states "Since primary activities are related to avoiding deforestation and degradation and do not include significant ground disturbance, exclusion of soil carbon is likely conservative even though available estimates indicate high values representing about 29% of total biomass (Gurung and Koch, 2011)." However, the MR also notes that two of the Primary ER Program activities are "the adoption of Sustainable Forest Management (SFM), aiming to increase the production of timber and fuelwood as well as biomass" and "Expand private sector forestry operations through improved access to extension services and finance.", there can be significant SOC emissions from intensive forest management resulting from soil disturbance. It is unclear to the VVB how the ER Program determined that it was appropriate to exclude SOC from the ER Program Boundary. 4. The ERM states "Emissions from fire can contribute to CH₄ and N₂O concentrations in the atmosphere, but this source of emissions is not considered significant, as described in Section 4.1.3" however there does not appear to be a section 4.1.3 within the ERM. 4a. The MR states " Nepal performed an estimation of annual non-CO₂ emissions from fire using equation 2.27 (IPCC 2006, Volume 4, Chapter 2)." However, the analysis conducted in the CarbonDensitiesToolV3.xlsx workbook does not apply the referenced equation and appears to be an analysis to estimate CO₂ emissions rather than CH₄ or N₂O emissions. 4b. The MR states "This calculation suggests a total of nonCO₂ emissions of 281,470 tCO₂e, which consists of 12% of the total annual emissions included in Nepal's FRL."

	and The estimations made based on the MODIS data for the TAL (2004–2014) assuming all 25 ha MODIS pixel-1 litter, and deadwood pool were fully burnt (1.19 t biomass/ha; as per NFI data) and fully recovered year after year (some pixels are flagged as burnt in all years), which is unlikely, yields an estimated average of 196,646 tCO₂e/yr-1. This corresponds to about 27% of total average gross emissions from the TAL 2004–2014." and finally "Based on this, Nepal considers the percentage of emissions resulting from these fires to be very well below the 10% threshold for their inclusion as significant sources in a conservative manner and therefore left them out of this version of the Reference Level in addition to derived N₂O, CH₄ and CO (non-CO₂) gasses." Based on the MR it appears the first two referenced statements contradict the third statement that emissions resulting from these fires are well the 10% threshold for inclusion. 4c. While the VVB notes that the MR states "Results indicate fires occur mostly within forest areas that are also within protected areas (see figures below). Discussing the results with the relevant agencies such as the DFRS and NRC as well as with FAO, it was indicated these are prescribed burnings for the most part that do not affect the main biomass content of the forests and are targeted at the litter and deadwood pools (less than 2% of the available ER-MR Version 2.4 67 biomass)." all fires within the ER Program Area are not prescribed burns and the exclusion of the loss of additional pools in the analysis is not conservative.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings, provide supporting documentation and update the ERM as necessary.
Round 1 Response from Program (18 September 2024)	1 and 1a. Emission from forest degradation recalculation. The initial approach overestimated degradation emissions because it didn't account for the increase in biomass due to canopy cover recovery in the estimate of emissions from degradation in the permanent forest. Carbon accounting approaches were revised and improved, which made it possible to estimate the removals in permanent forests. As a result, in item IV of the Technical Corrections Section of ER-MR Annex 4, Nepal indicated that it initially didn't include the increased forest biomass observed in forests remaining as forests. However, in the Reference Level and for the monitoring report, the net emission from forest degradation was calculated, including biomass recovery. 2. "Gurung and Koch, 2011" reference. This reference can be accessed at the following link: https://drive.google.com/file/d/16mQXAbJkri5_L9a3I0pxLbTgwFWNeiC/view 3. SOC emissions from Sustainable Forest Management: In Nepal Community Forest, the level of SOC emissions is considered low, and an increase in SOC stock is expected rather than emissions. Note that human interventions in Community Forests in Nepal may improve the carbon sink functionality, balancing carbon accumulation between biomass carbon and soil organic carbon. Community forestry practices in Nepal are recognized globally for their participatory environmental governance, which includes well-defined policies, institutions, and practices. Community forest management practices in Nepal include seedling plantations, controlling wildlife hunting, forest fires and grazing, and protecting soil erosion-prone areas. Many community forests across Nepal have adopted sustainable or scientific forest management practices, disseminating theories and practices for implementation at the grassroots level [1]. [1] https://www.wwfnepal.org/?364515/SFM-Manual 4. Section 4.1.3 Reference. ER-MR reference to section 4.1.3 pertains to the Forest Fires section in the ER-PD [2]. However, forest fire emissions have been recalculated, and therefore, this reference will be removed from the ERM as necessary. [2] https://www.forestcarbonpartnership.org/system/files/documents/Nepal%20ERPD%2024May2018final_CLEAN_0.pdf

	4a and b. Non-CO₂ emissions. CO, N₂O, and CH₄ emissions from forest fires have been recalculated according to Equation 2.27 (IPCC 2006, Volume 4, Chapter 2). A new version of the Carbon Pools Significance worksheet has been included in Carbon Densities tool version 4 (CarbonDensitiesToolV4.xlsx), accessible at the following link: https://docs.google.com/spreadsheets/d/13PAsVhclDibruN5djgC21p_-1AfxTN31/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true According to the revised calculation, N₂O, CO, and CH₄ account for 1.89% (13,742 tCO₂e/yr), 0.35% (2,568 tCO₂e/yr), and 1.27% (9,225 tCO₂e/yr) respectively of the Forest Reference Emission Level. Since Nepal does not have mangroves or flooded forest areas, there are no CH₄ or N₂O emissions associated with organic and mineral soils due to management activities like extraction, drainage, rewetting, and revegetation. Because of this, Nepal has determined that non-CO₂ emissions are below the 10% threshold to be considered significant sources. Therefore, N₂O, CO, and CH₄ have been excluded from the carbon accounting. 4c. Forest fire emissions. Please take note that Nepal currently lacks reliable data on forest fires. Therefore, there is insufficient information to accurately assess the impact of fires in the Terai region on forests or emissions. An initial estimate is derived from low-resolution satellite imagery, MODIS, and IPCC 2006 default emission factors. The MODIS Forest fire data detects thermal anomalies (above 300 degrees Fahrenheit) within 500x500m (25ha) pixels, but it does not specifically indicate the area burned or the impact. Forest fire emissions have been calculated using Equation 2.27 from IPCC 2006, Volume 4, Chapter 2. Based on this preliminary calculation, forest fire emissions represent 12.95% (94,052 tCO₂e/yr) of the Forest Reference Emission Level. However, this preliminary calculation can be considered to be a very large overestimation of actual emissions from the fire. A flagged pixel does not imply the entire area has been burnt; it simply indicates that a fire has been detected within that 25-ha area. In addition, the estimations made based on the MODIS data for the TAL (2004–2014) assuming all 25 ha MODIS pixel-1 litter and deadwood pool were fully burnt (1.18 t biomass/ha; as per NFI data) and fully recovered year after year (some pixels are flagged as burnt in all years), which is unlikely. Based on this, Nepal considers the percentage of emissions resulting from forest fires to be very well below the 10% threshold for their inclusion as significant sources in a conservative manner and therefore left them out of the forest reference emission level in addition to derived N₂O, CH₄, and CO (non-CO₂) gases.
Aster Findings - Round 2 (17 November 2024)	The VVB confirms that emission from forest degradation have been accounted for this item is addressed and these findings will be reviewed under Criterion 4.
Item	2
Carbon Methodological Framework Version 3, April 2020	Indicator 3.1: The ER Program identifies which anthropogenic sources and sinks associated with any of the REDD+ Activities will be accounted for in the ER Program.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ER-MR Section 7, 1

**Aster Global Findings
(12 May 2024)**

1. Section 1.1.1 of the ERM identifies 7 different ER Program interventions: Improve management practices on existing community and collaborative forests building on traditional and customary practices, Localize forest governance through transfer of National Forests to Community and Collaborative Forest User Groups, Expand private sector forestry operations through improved access to extension services and finance, Expand access to alternative energy with biogas and 4b. Expand access to alternative energy with improved cookstoves, Scale up pro-poor leasehold forestry, Improve integrated land use planning to reduce forest conversion associated with infrastructure development, and Improve management of existing Protected Areas (PAs). The ERM states that Conservation of forest and Sustainable management of forests (described as Sinks/Sources) are not included within the ER Program Boundary which is justified in the ERM and states "Any emissions or removals that occur in protected areas or managed forests are included in three, aforementioned, REDD+ activities. The impact of sustainable forest management, especially in community forests, can be seen in the enhancement of carbon stocks and afforestation that are included in the emission estimates." The VVB notes that no areas within the ER Program Boundary (Terai Arc Landscape) are a priori excluded from the accounting area. The VVB finds this to be a reasonable justification and is reasonably assured that the exclusion of these source/sinks is appropriate as the emissions/enhancements from these will be captured in the 3 sources/sinks included in the ER Program Boundary. However, it appears that these sources/sinks are included within the ER Program Boundary but are not accounted for separately from the sources/sinks that are included within the ER Program Boundary. It is unclear to the VVB if these excluded Sources/Sinks should be indicated as included in the ER Program Boundary even though they are not accounted for separately.
2. Section 6.3 of the MR states "“People and Forests- A Sustainable Forest Management -Based Emission Reduction Program in the Terai Arc Landscape” is the first ER program being implemented in the government-owned forest in Nepal." However, the MR also states ". At the beginning of the ER program, there were a total of 639 registered private forests in the TAL area covering 550 ha of forests. Since 2018, a total of 190 new private forests which include an area of 114 ha, have been registered in eight districts. At the same time, many private forest owners operate without registering their forest – and a substantial number of private forests is expected to have developed during this period." It is unclear to the VVB if the ER Program is only being implemented on government-owned land in Nepal.
3. The MR states "This intervention targeted the installation of 60,000 biogas plants and 60,000 improved cookstove (ICS) units over the duration of the ER program. The installation of biogas plants and ICS units is carried out by Alternative Energy Promotion Center (AEPIC), which sells ER credits of alternative energy installations in the international market. Accordingly, ER credits from biogas plants and ICS are not included in this ER program." The VVB understands that ICS projects derive ERs from the implementation of the Project Activity which results in less aboveground biomass used for cookstoves. It is unclear to the VVB how the ER Program ensures that these reductions in deforestation and/or degradation are not being double counted as part of the implementation of the ER Program.
4. Additionally, the VVB found that there appears to be at least 1 AFOLU project (IMPROVING LIVELIHOOD OF FARMERS VIA CARBON FINANCE PROJECT IN NEPAL) participating in the Voluntary Carbon Market (VCM) within the ER Program boundaries. It is unclear to the VVB how the ER Program is ensuring that there is not double counting of the emissions reductions generated in areas that overlap with the ER Program Boundary.



	5. Please provide a comprehensive list of all projects participating in the VCM that are contained either partially or wholly within the ER Program boundary.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please request clarification from FMT regarding if it is appropriate to indicate that "Conservation of carbon stocks" and "Sustainable management of forest" are excluded from the ER Program Boundary when they are actually included in the ER Program Boundary but not accounted for separately. MCAR: Please clarify in line with Findings 2-5 and provide supporting documentation/evidence and update the ERM as necessary.

Round 1 Response from Program (18 September 2024)	1. Including conservation of forest and SFM: The country confirms that the conservation of forests and sustainable management of forest resources are part of the ER (Emission Reduction) Program Boundary. However, they are not accounted for separately. Instead, the emissions and removals related to the conservation and sustainable management of forest resources and carbon storage are included in the overall carbon balance calculation of forest lands that remain as forests. 2. Including private forest areas in ER-P: The country confirms that the ER program is being implemented in both government-owned land and private forests. However, the area of private forests in the TAL is only 2-3 %. 3. Biogas plants and cookstoves impact on degradation ERs. The MoFE is the designated national authority for the carbon services including the accounting of the ER from reduction in deforestation and forest degradation. As the ERPA between the World Bank and the FCPF has already defined the ER boundary area and the activities, the national designated authority will ensure that the double counting of the ER will not be done. Further, the methodologies for accounting the Emission Reductions from the Biogas Plants and Improved Cook Stoves (ICS) are as per the Gold Standard methodologies. These methodologies do not include the Emission Reduction from reduction in deforestation and forest degradation. The references to the Gold Standard methodologies are below: Improved Cook Stove: https://globalgoals.goldstandard.org/standards/412_V1.1_ICSLCP_Black-Carbon-and-Co-emitted-Species-due-to-the-replacement-of-less-efficient-cookstoves-with-improved-efficiency-cookstoves.pdf Biogas plants https://globalgoals.goldstandard.org/433-ee-ics-methodology-for-animal-manure-management-and-biogas-use-for-thermal-energy-generation/ 4 and 5. VCM projects in ER-P carbon accounting area. MoFE is the designated national authority for the carbon service and does not have any record of such VCM projects. Any carbon-related projects have to get concurrence/letter of intent from the MoFE before participating in the VCM. There are no VCM projects in the FCPF ERP carbon accounting area.
Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification, this finding is closed. 2. Thank you for the clarification. Please clarify if the ER Program has rights to carbon emissions reductions/removals generated on private land. 3. Thank you for the clarification. However, the VVB notes that there are multiple projects that use the AMS-I.C CDM methodology which include "Non-Renewable Biomass" in the Project boundary and thus the Round 1 Finding remains open. 4. The VVB notes that the following Projects (identified through their VCS ID) are listed on the Verra registry: 4046, 3963, 3604, 3228, 2999, 2357, 2303, 2304, 2300, 1863, 1624. Please provide a detailed accounting and demonstration of how these VCM projects do not result in double counting. 5. Thank you for the clarification. The VVB is concerned that although the VVB has found numerous examples of VCM Projects the ER Program has no record of these. This item is marked pending.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with the findings 3 and 4 and update the ERM and quantification as necessary.

Round 2 Response from Program (25 February 2025)	2. Rights to carbon emissions reductions/removals generated on private land. The ER Program does not have rights to carbon emissions reductions/removals generated on private land. The ER program includes the area of national forest (Community managed and government managed forest only. However, carbon service is the sole authority of the federal government. The government has not managed the ER rights for the private sector until now. But, private sector can develop the ER projects with the consent from National Designated Authority (NDA). There are no projects designed, registered, and running in the ERP area. In our record there are no projects that have taken the consent from the NDA for ER program on private land. We have published public notification related to ER program on private land (https://mofe.gov.np/notices/details/%E0%A4%B5%E0%A4%BF%E0%A4%9C%E0%A5%8D%E0%A4%9E%E0%A4%AA%E0%A5%8D%E0%A4%A4%E0%A4%BF%E0%A5%A4-0417). Though the ERMR assumes that the total private forest area in ER program area is 2-3%, the total area of private forest in ER program area from 2018-2021 is 664 hectares (less than 0.04 % of the total forest area in ER Program area). The Benefit Sharing Plan (BSP) has ensured 5 % of the benefits to the private forest. 3. Projects using the AMS-I.C CDM and Gold Standard methodologies for Biogas and Improved Cook Stoves. Use of the methodology AMS-I.C in Nepal. A total of seven projects have been registered within the CDM Registry of Programs of Activities for Nepal (please refer to the table below). Among these, only project 0139, the Biogas Support Program - Nepal (BSP-Nepal) Activity-2, is included in the official project list (https://cdm.unfccc.int/Projects/projsearch.html), indicating its association with Methodology AMS-I.C. version 6. However, it is important to clarify that, despite the designation of project 0139 with methodology AMS-I.C in this list, the detailed project description (https://cdm.unfccc.int/Projects/DB/DNV-CUK1132671435.09/view) actually specifies the methodology as AMS-I.E. version 9. Consequently, no projects utilizing the AMS-I.C. methodology have been implemented in Nepal. Double-counting risk analysis: An analysis of the double-counting risk between biogas/improved cook stove initiatives and the FCPF Carbon Fund ER Program was conducted. The table below summarizes the key elements considered in this analysis. Consequently, Nepal concludes that there is no risk of double-counting with projects utilizing the Gold Standard methods for quantifying climate-related emission reductions of Black Carbon and Co-emitted Species [1], as well as for animal manure management and biogas for thermal energy [2]. Regarding the Gold Standard for improved efficiency in cook stoves, it is determined that there is no double-counting risk between the FCPF ERP and these projects, since this Gold Standard methodology specifically addresses non-CO2 gases emitted from biomass burning. Conversely, the ERP program's carbon accounting does not factor in non-CO2 gases from forest degradation due to fuelwood consumption. For the Gold Standard methods focused on animal manure management and biogas for thermal energy, it is similarly concluded that there is no risk of double-counting between the FCPF ERP and biogas projects employing this methodology, as the ERP's carbon accounting excludes emissions from animal manure management. Concerning the AMS-I.E and AMS-II.G methodologies used in biogas and improved cook stove projects in Nepal, the country identified a potential risk of double-counting between the FCPF ERP and CDM projects. The ERP is working to reduce
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	forest degradation driven by fuelwood demand. Simultaneously, the CDM projects aim to lower the demand for firewood by: • Completely replacing existing biomass-fired cookstoves, ovens, or dryers with more efficient appliances to reduce non-renewable biomass use. • The project aims to promote biogas digesters (biogas units) to households in rural Nepal. This will reduce GHG emissions by displacing conventionally used fuel sources for cooking, such as non-renewable woody biomass (firewood) and/or fossil fuels (kerosene and/or LPG). However, the CDM methodologies differ in how they calculate ERs. The CDM methodologies assume that, without the project, the baseline scenario would rely on fossil fuels to meet thermal energy needs. Consequently, the ERs are calculated based on reducing fossil fuel use rather than concentrating on the decreased demand for fuelwood sourced from permanent natural forests. The complete deduction of all CERs may not be justified because there is no one-to-one equivalence among the emission reductions. Additionally, it remains uncertain whether all non-renewable biomass used in the Clean Development Mechanism (CDM) project is sourced from within the boundary of the Emission Reduction Project (ERP) accounting area. Double-counting risk analysis. [Aster Global NOTE: see “Nepal Round 2 Findings - working file.docx” for Table provided as part of Round 2 Response, formatting issues prevent inclusion of table here] [1] Gold Standard cookstoves improved efficiency: https://globalgoals.goldstandard.org/standards/412_V1.1_ICS_SLCP_Black-Carbon-and-Co-emitted-Species-due-to-the-replacement-of-less-efficient-cookstoves-with-improved-efficiency-cookstoves.pdf [2] Gold Standard animal manure management and biogas for thermal energy: https://globalgoals.goldstandard.org/433-ee-ics-methodology-for-animal-manure-management-and-biogas-use-for-thermal-energy-generation/ [3] AMS-I.E ver 9. Thermal energy production with or without electricity: https://cdm.unfccc.int/methodologies/DB/IB9J7XDIJ3298CLGZ1279ZMB2Y4NPQ [4] Energy efficiency measures in thermal applications of non-renewable biomass https://cdm.unfccc.int/UserManagement/FileStorage/SG39AKEL4B2H5UJVPD86XNOI7OR1ZQ CER deduction calculation Based on the double-counting analysis a total of 123,055 CER units issued in the CDM projects has been calculated for deduction from the total ERs reported for the FCPF Carbon Fund ER Program for the reporting period from June 22, 2018, to December 31, 2021 (See Below Table). It is essential to note that the CER calculation includes non-CO₂ gases; therefore, the CER deduction specific to the Nepal FCPF ERP is adjusted by the ratio of CO₂ emissions to the total gases released during litter burning. This ratio is used to calculate only the CO₂ emission reductions, excluding other gases like CH₄, N₂O, and CO because non-CO₂ gases are not included in the carbon accounting for the Nepal FCPF ERP. This ratio derives from the calculations of the carbon pool significance analysis. Additionally, it is important to clarify that the deduction of Certified Emission Reductions (CERs) is determined by the CERs requested during the Nepal FCPF Emission Reduction Program (ERP) reporting period. Specifically for the Nepal FCPF ERP, this deduction depends on the share of biogas units within the ERP carbon accounting area for projects 3, 4, 5, and 6, while for project 7, the area proportion is utilized. Lastly, for projects 1 and 2, no deduction is made because, in the first case, there is no overlap between project boundaries, and for the second, there is no crediting period overlap. The calculation process of the CER deduction can be consulted in the Nepal_TAL_Integration_tool_V6, worksheet “DubleCounting”, at the following link:
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	https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true [Aster Global NOTE: see “Nepal Round 2 Findings - working file.docx” for Table provided as part of Round 2 Response, formatting issues prevent inclusion of table here] 4. VCM Projects listed in the Verra registry and issue of double counting. The MRV team checked the Verra database and when filtered for Nepal, the Verra database shows no entries registered under the category 'Agriculture, Forestry and Land Use. (https://registry.verra.org/app/search/VCS/Registered) When the team filtered the database to include all projects within Nepal on AFOLU, there is only one (ID: 4046) but has the status "Registration and verification approval requested". The Government of Nepal, through the NDA for carbon trade, the Ministry of Forests and Environment, has issued a public notice informing all concerned parties that any initiative to implement carbon trading is against the prevailing law and subject to penalties (https://mofe.gov.np/notices/details/%E0%A4%B5%E0%A4%BF%E0%A4%9C%E0%A5%8D%E0%A4%9E%E0%A4%AA%E0%A5%8D%E0%A4%A4%E0%A4%BF%E0%A5%A4-0417). Given this context, there is no potential for double counting from the mentioned VCS projects. 5. VCM projects in ER-P carbon accounting area. The record of the VCM projects in ER carbon accounting area is not available in the NDA's recording system. The NDA has clearly stated that VCM projects have to take consent from the NDA and they should inform the NDA when implementing the VCM projects. The Government of Nepal, through the NDA for carbon trade, the Ministry of Forests and Environment, has issued a public notice informing all concerned parties that any initiative to implement carbon trading without consent from the NDA is against the prevailing law and subject to penalties.
Aster Findings - Round 3 (26 March 2025)	2. Based on the VVB's understanding, any of the private forests in the TAL would generate emissions reductions/removals as part of the Program, but the Program does not have rights to those ERs. The VVB believes these areas should be removed, but the totals generated can be considered immaterial, so this sub-item is addressed. 3. The VVB reviewed the approach used for the double-counting analysis and has confirmed the calculations. 4/5. The VVB reviewed the notice provided in the response and is reasonably assured that the NDA's recording system will accurately capture all voluntary projects because it carries the force of law. The VVB did not identify any validated AFOLU projects to account for and clarified the preexisting projects. These are accounted for in the doubleCounting tab of Nepal_TAL_Integration_tool_v6. Closed.
Item	3
Carbon Methodological Framework Version 3, April 2020	Indicator 4.1: The ER Program accounts for all Carbon Pools and greenhouse gases that are significant within the Accounting Area, both for Reference Level setting and Measurement, Monitoring and reporting (MMR).

Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERP, ERMR or Supporting Documents)	CarbonDensitiesToolV3.xlsx, ERMR
Aster Global Findings (12 May 2024)	The VVB reviewed the ERMR and noted the following: 1. The ERMR references a report by "Gurung and Koch, 2011"; however, the VVB cannot locate a copy of this report via web search. Additionally, the VVB notes that the ER Program has provided a paper by Gurung (Gurung et al. 2015). 2. The VVB notes that the Gurung et al. 2015 paper shows that SOC represents approximately 42% of total reported biomass. 3. The ERMR states "Since primary activities are related to avoiding deforestation and degradation and do not include significant ground disturbance, exclusion of soil carbon is likely conservative even though available estimates indicate high values representing about 29% of total biomass (Gurung and Koch, 2011)." However, the MR also notes that two of the Primary ER Program activities are "the adoption of Sustainable Forest Management (SFM), aiming to increase the production of timber and fuelwood as well as biomass" and "Expand private sector forestry operations through improved access to extension services and finance.", there can be significant SOC emissions from intensive forest management resulting from soil disturbance. It is unclear to the VVB how the ER Program determined that it was appropriate to exclude SOC from the ER Program Boundary. 4. The ERMR states "Emissions from fire can contribute to CH₄ and N₂O concentrations in the atmosphere, but this source of emissions is not considered significant, as described in Section 4.1.3" however there does not appear to be a section 4.1.3 within the ERMR. 4a. The MR states " Nepal performed an estimation of annual non-CO₂ emissions from fire using equation 2.27 (IPCC 2006, Volume 4, Chapter 2)." However, the analysis conducted in the CarbonDensitiesToolV3.xlsx workbook does not apply the referenced equation and appears to be an analysis to estimate CO₂ emissions rather than CH₄ or N₂O emissions. 4b. The MR states "This calculation suggests a total of nonCO₂ emissions of 281,470 tCO₂e, which consists of 12% of the total annual emissions included in Nepal's FRL." and The estimations made based on the MODIS data for the TAL (2004–2014) assuming all 25 ha MODIS pixel-1 litter, and deadwood pool were fully burnt (1.19 t biomass/ha; as per NFI data) and fully recovered year after year (some pixels are flagged as burnt in all years), which is unlikely, yields an estimated average of 196,646 tCO₂e/yr-1. This corresponds to about 27% of total average gross emissions from the TAL 2004–2014." and finally "Based on this, Nepal considers the percentage of emissions resulting from these fires to be very well below the 10% threshold for their inclusion as significant sources in a conservative manner and therefore left them out of this version of the Reference Level in addition to derived N₂O, CH₄ and CO (non-CO₂) gasses." Based on the MR it appears the first two referenced statements contradict the third statement that emissions resulting from these fires are well above the 10% threshold for inclusion. This section of the MR is generally unclear. 4c. While the VVB notes that the MR states "Results indicate fires occur mostly within forest areas that are also within protected areas (see figures below). Discussing the results with the relevant agencies such as the DFRS and NRC as well as with FAO, it was indicated these are prescribed burnings for the most part that do not affect the main biomass content of the forests and are targeted at the litter and deadwood pools (less than 2% of the available ER-MR Version 2.4 67 biomass)." all

	fires within the ER Program Area are not prescribed burns and the exclusion of the loss of additional pools in the analysis is not conservative.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings, provide supporting documentation and/or updated calculation workbooks and update the ERM as necessary.
Round 1 Response from Program (18 September 2024)	1. "Gurung and Koch, 2011" reference. This reference can be accessed at the following link: https://drive.google.com/file/d/16mQXAbJkri5_L9a3l0pxLibTgwFWNeiC/view 2. Gurung et al. 2015 reference. This information was included in the Carbon Densities Tool version 3 (CarbonDensitiesToolV3.xlsx). However, to ensure consistency with the ER-PD, the Soil Organic Carbon (SOC) density value in the Carbon Pools Significance worksheet was replaced with the 2011 study conducted by Gurung and Koch in Carbon Densities Tool Version 4. It is worth mentioning that both estimates are very similar. The estimate from Gurung et al. in 2015 (96.53 ± 8.76 tC/ha) is only 4% (3.76 tC/ha) greater than the study by Gurung and Koch in 2011 (92.77 tC/ha). Furthermore, the difference between the estimates falls within the confidence interval ($3.76 < 8.76$ tC/ha), indicating that there is no statistical difference between the estimates. 3. SOC exclusion. According to the calculations in the Carbon Densities tool Version 4's Carbon Pools Significance worksheet, the annual emissions of soil organic carbon (SOC) from deforestation ($20,233$ tCO₂/yr) represent only 2.79% of the forest reference emission level ($726,365$ tCO₂/yr). It's important to note that this calculation is overestimated because it assumes that all SOC content is released in a

	20-year period while ignoring the SOC content of the final land use. With respect to SOC emissions resulting from the implementation of sustainable forest management practices in Nepal's Community Forests, it is anticipated that there will be an increase in the permanent carbon stock in the forest soil rather than emissions. Notably, human activities within Community Forests in Nepal have the potential to enhance the carbon sequestration capability of the forests, thereby striking a balance between carbon accumulation in biomass and soil organic carbon. Nepal's community forestry practices are internationally renowned for their participatory environmental governance, encompassing clearly defined policies, institutions, and practices. These include activities such as tree planting, wildlife conservation, fire prevention, grazing control, and the protection of soil erosion-prone areas. Numerous community forests across Nepal have embraced sustainable and scientific forest management practices, disseminating relevant theories and principles for implementation at the grassroots level [1]. Given that the emissions of soil organic carbon (SOC) from deforestation are below the 10% threshold, and an increase in SOC stock rather than emissions is anticipated from the implementation of sustainable forest management (SFM) practices in permanent forests, it has been determined that SOC will not be included in the carbon accounting of the ER-P. [1] https://www.wwfnepal.org/?364515/SFM-Manual 4. Section 4.1.3 Reference. ER-MR reference to section 4.1.3 pertains to the Forest Fires section in the ER-PD [2]. However, forest fire emissions have been recalculated, and therefore, this reference will be removed from the ERM document. [2] https://www.forestcarbonpartnership.org/system/files/documents/Nepal%20ERPD%2024May2018final_CLEAN_0.pdf 4a and b. Non-CO₂ emissions. CO, N₂O, and CH₄ emissions from forest fires have been recalculated according to Equation 2.27 (IPCC 2006, Volume 4, Chapter 2). A new version of the Carbon Pools Significance worksheet has been included in Carbon Densities tool version 5 (CarbonDensitiesToolV5.xlsx), accessible at the following link: https://docs.google.com/spreadsheets/d/1G3ToJYNA-n8kl12GfFBurQ-m9C1bcVyr/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true According to the revised calculation, N₂O, CO, and CH₄ account for 1.89% (13,742 tCO₂e/yr), 0.35% (2,568 tCO₂e/yr), and 1.27% (9,225 tCO₂e/yr) respectively of the Forest Reference Emission Level. Since Nepal does not have mangroves or flooded forest areas, there are no CH₄ or N₂O emissions associated with organic and mineral soils due to management activities like extraction, drainage, rewetting, and revegetation. Because of this, Nepal has determined that non-CO₂ emissions are below the 10% threshold to be considered significant sources. Therefore, N₂O, CO, and CH₄ have been excluded from the carbon accounting. 4c. Forest fire emissions. Please take note that Nepal currently lacks reliable data on forest fires. Therefore, there is insufficient information to accurately assess the impact of fires in the Terai region on forests or emissions. An initial estimate is derived from low-resolution satellite imagery, MODIS, and IPCC 2006 default emission factors. The MODIS Forest fire data detects thermal anomalies (above 300 degrees Fahrenheit) within 500x500m (25ha) pixels, but it does not specifically indicate the area burned or the impact. Forest fire emissions have been calculated using Equation 2.27 from IPCC 2006, Volume 4, Chapter 2. Based on this preliminary calculation, forest fire emissions represent 12.95% (94,052 tCO₂e/yr) of the Forest Reference Emission Level. However, this preliminary calculation can be considered to be a very large overestimation of actual emissions from the fire. A flagged pixel does not imply the entire area has been burnt; it simply indicates that a fire has been detected within that 25-ha area. In addition, the estimations made based on the MODIS data for the TAL (2004–2014) assuming all 25 ha MODIS pixel-1 litter and deadwood pool were
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	fully burnt (1.18 t biomass/ha; as per NFI data) and fully recovered year after year (some pixels are flagged as burnt in all years), which is unlikely. Based on this, Nepal considers the percentage of emissions resulting from forest fires to be very well below the 10% threshold for their inclusion as significant sources in a conservative manner and therefore left them out of the forest reference emission level in addition to derived N₂O, CH₄, and CO (non-CO₂) gases.
Aster Findings - Round 2 (17 November 2024)	1/1a. Thank you for the clarification. The VVB reviewed the updated ERM and noted that these items have been addressed in the ERM. This finding is closed. 2. The ERM states "Based on NFI analysis, it is estimated that dead organic matter, litter, and debris contribute 1.19 t C/ha (2.25 t C/ha per WWF report [Gurung and Koch, 2011]" however, the Gurung and Koch 2011 report, reports litter only as 2.25 and thus the statement within the ERM is incorrect. 3. Thank you for the clarification, this finding is closed. 4. The VVB reviewed the updated analysis provided by the ER Program and found that the analysis is inadequate to demonstrate that the excluded carbon pools are not significant as the analysis only considers forest fire. It is unclear to the VVB why the analysis has not considered the impact of degradation, deforestation, and enhancement in the assessment of the whether or not these pools are significant. 4a. Thank you for the clarification; however, it remains unclear why the ER Program has ignored inclusion of aboveground live biomass in the accounting. 4b. This item is marked pending other findings issued. 4c. Thank you for the clarification. If the ER Program wishes to exclude the fire emissions from the ER Program Boundary then an updated analysis should be provided or alternatively the ER Program could seek clarification from FMT and request a deviation from this rule. 4d. The VVB notes that just through the consideration of burning the ER Program's calculations show that DW+Litter are significant and thus are required to be considered in the ER Program Boundary.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with the findings, provide supporting documentation and/or updated calculation workbooks and update the ERM as necessary.
Round 2 Response from Program (25 February 2025)	2. Text in ERM has been corrected. 4. Degradation, deforestation, and enhancement in the assessment of the whether or not these pools are significant. The IPCC Good Practice Guidance for Land Use, Land Use Change, and Forestry (LULUCF), particularly in section 3.2, outlines methods for estimating changes in carbon stocks, as well as greenhouse gas emissions and removals associated with changes in biomass and soil organic carbon on forest lands and lands converted to forests. According to this guidance, emissions of non-CO₂ gases from forests that remain forested mainly result from biomass burning. Additionally, the nitrogen oxide (N₂O) sink can be enhanced through nitrogen fertilization in forests and the drainage of wet soils. However, these practices are not applicable to community forestry practices in Nepal or to forest types that are vulnerable to degradation. It is important to note that there are no forested wetlands within the accounting area of the Emission Reduction Program [1]. Furthermore, the guidance clarifies that certain forest management practices, such as clear-cutting and thinning, may increase N₂O emissions. However, the available

	data on this topic is insufficient and somewhat contradictory, meaning the impact of these practices is not fully accounted for in the IPCC Good Practice Guidance. Regarding non-CO₂ emissions from non-forest land that is converted to forest land, the guidance indicates that generally, converting land from cropland, grassland, settlements, or other types to forest does not significantly change the sources and removals of non-CO₂ gases from the soil compared to the sources and removals under the initial land use (cropland, grassland, or settlements) or the new land use (forest land) [2]. For these reasons, carbon accounting for Nepal's Emission Reduction Program considers biomass burning as the sole source of non-CO₂ emissions. [1] Forest lands remaining Forest Lands: According to IPCC good practice guidance non-CO₂ gases emissions in Forest Lands remaining Forest Lands are considered from biomass burning. N₂O and NO_x are mainly produced in soils as a byproduct of nitrification and denitrification. Emissions are stimulated directly by N fertilisation of forests and drainage of wet forest soils, and indirectly through deposition of N from the atmosphere and leaching and runoff. Forest management (or forest degradation) such as clear cutting and thinning may increase N₂O emissions. However, available data are insufficient and somewhat contradictory, therefore in the IPCC good practice guidance the impact of these practices is not considered. Regarding the CH₄ emissions the IPCC good practice guidance indicate that "CH₄ sink in aerated and undisturbed forest soils is a natural process and is estimated to average at 2.4 kg CH₄/ha/yr (Smith et al., 2000). Forest management, particularly N fertilisation, may significantly alter this CH₄ sink. Methods and data to estimate changes in methane oxidation are not provided at this time. As additional information becomes available, a fuller consideration of various activities and their impacts on methane oxidation from fertilised lands may be possible." [2] Impact of carbon enhancement in sources and removals of non-CO₂ gases from soil. According to IPCC Good Practice Guidance for LULUCF (Section 3.2.2.4), "In general, land conversion from cropland, grassland, settlements and other land to forest land tends not to alter sources and removals of non-CO₂ gases from soil as compared to the sources and removals occurring under the preceding (cropland, grassland, settlements, other land) or new land use (forest land). This assumption may not always hold true, for instance, if a grassland is ploughed for afforestation. However, insufficient data exist to provide a default methodology. 4.a. Above ground biomass exclusion. According to experts from the Nepal MRV team, forest fires within the ER-Program carbon accounting area generally do not impact the above-ground biomass (AGB). Consequently, the carbon pool significance analysis assumes that only litter and debris are available for burning during these fires. A study conducted by Bhujel et al. (2020) supports this assumption. The researchers examined forest fires that occurred from 2001 to 2007 in community-managed forests, which included Lower Tropical Sal Mixed Broad-leaved Forests, Hill Sal Forests, and Riverine Forests in Nepal. During this period, over 3,158 hectares of forest were burned, resulting in emissions of 4,066 tons of CO₂ equivalent (tCO₂e). This corresponds to an overall emission factor (EF) of 1.29 tCO₂e per hectare. Considering that the AGB of intact forests is approximately 203.84 tons per hectare (equivalent to 351.28 tCO₂e per hectare), it is important to note that less than one percent of the AGB was burned (0.4%). [3] Bhujel, K.B., Maskey Byanju, R., Gautam, A.P. et al. Fire-induced carbon emissions from tropical mixed broad-leaved forests of the Terai-Siwalik region, central Nepal. J. For. Res. 32, 2557–2565 (2021). https://doi.org/10.1007/s11676-020-01256-x
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	4c. Forest fire emission exclusion: FMT was consulted for guidance on evaluating the significance of the carbon pool and GHG in the context of FCPF. The FMT provided the following feedback: “To evaluate the significance of carbon pools and GHG in the context of the FCPF, ER Programs need to follow the requirement defined in Criterion 4 of the Methodological Framework, indicators 4.1 and 4.2. According to 4.2, “Carbon Pools and GHG gases may be excluded if Emissions associated with excluded Carbon Pools and greenhouse gases are collectively estimated to amount to less than 10% of total forest-related emissions in the Accounting Area during the Reference Period”. The FMT would like to clarify to the VVB and to the ER Program that: a) emissions are interpreted as net emissions (emissions plus removals) and; b) that since removals are expressed as a negative value, it is acceptable to conduct the significance assessment using the absolute values of the emissions and removals of Carbon Pools and greenhouse gases. Since Nepal is reporting removals for certain Carbon Pools this guidance applies and Nepal may determine the significance of non-CO₂ emissions from forest fires using this approach.” Considering feedback from FMT, the carbon pool's significance analysis has been updated. Calculations show that emissions from forest fires account for 7.47% (94,052 tCO₂e/yr) of the total annual emissions and removals during the reference period [1]. It is important to note that the county lacks reliable data on forest fires, which complicates the accurate evaluation of their effects on forests and emissions in the Terai region. Because of the absence of dependable data, the analysis is based on assumptions, including the burning of only litter and debris, the utilization of low-resolution satellite imagery from MODIS (AD), the 2006 IPCC emission factors (Tier 1 EF), and Equation 2.27 from IPCC 2006, Chapter 2. MODIS detects thermal anomalies (over 300°F) in 500x500m pixels but does not provide information on the burned area or its impact. A flagged pixel indicates fire detection within a 25-hectare area but does not confirm that the entire area has burned. The MODIS estimations for TAL (2004–2014) assume that all 25-hectare MODIS pixels were completely burned (1.18 t biomass/ha, according to NFI data) and that recovery occurs annually, even though some flagged pixels showing fire may not have burned entirely in every year. In addition, this preliminary analysis assumes that all flagged pixels indicating fire originate from areas deforested during the reference period. The MODIS activity data is inaccurate, leading to a significant overestimation of actual forest fire emissions by 7.47% in this calculation. However, since forest fire emissions account for less than 10% of the absolute annual emissions and removals during the reference period, and given the lack of reliable data on forest fires, Nepal has classified forest fire emissions as non-significant sources to ensure conservative estimates, thus excluding them from the forest reference emission level (CO₂, N₂O, CH₄, and non-CO₂ gases). [1] See Carbon Pools Significance worksheet of the CarbonDensitiesToolV5 Excel file accessible at the following link: https://docs.google.com/spreadsheets/d/1e3REqxI3Oa7KqpC2vfHEdgZMUeLQQ52w/edit?usp=drive_link&oid=100991295489415488908&rtpof=true&sd=true 4d. DW+Litter exclusion: DW+Litter is non-significant source of emissions. DW+Litter's deforestation and forest degradation emissions represent 0.4% of the absolute annual emissions and removals during the reference period (see table below). The calculation is available in the Carbon Pools Significance worksheet of the
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	CarbonDensitiesToolV5 Excel file accessible at the following link: https://docs.google.com/spreadsheets/d/1e3REqxl3Oa7KqpC2vfHEdgZMUELQQ52w/edit?usp=drive_link&ouid=100991295489415488908&rtopof=true&sd=true [Aster Global NOTE: see “Nepal Round 2 Findings - working file.docx” for Table provided as part of Round 2 Response, formatting issues prevent inclusion of table here] Additional clarification from the FMT: The FMT would like to clarify to the VVB and to the ER Program that: a) emissions are interpreted as net emissions (emissions plus removals) and; b) that since removals are expressed as a negative value, it is acceptable to conduct the significance assessment using the absolute values of the emissions and removals of Carbon Pools and greenhouse gases. Since Nepal is reporting removals for certain Carbon Pools this guidance applies and Nepal may determine the significance of non-CO2 emissions from forest fires using this approach.
Aster Findings - Round 3 (26 March 2025)	2. The VVB confirmed the correction made. This item is closed. 4. Thank you for the additional explanation provided by the ER team and the demonstration in the Carbon pools Significance tab of CarbonDensitiesToolV6 to quantify the significance of emissions associated with biomass burning. The referenced scientific article provides adequate clarification as to why aboveground biomass is excluded. The VVB confirms that the ratio of emissions associated with burning are under 10% of total absolute annual emissions/removals during the reference period. However, the VVB noted that this is not accurately reported. In response, the ER Team stated that forest fire emissions account for 7.47%. However, the percentage of forest fire emissions reported in ER-MR is 17.19% and 7.53% in “CarbonDensitiesToolV6.xlsx”. It is unclear why such discrepancies exist. Additionally, significance % of N2O, CO, and CH4 reported in the ER-MR do not match with values in “CarbonDensitiesToolV6.xlsx”. It is stated that MODIS burnt area analysis was carried out for TAL area for 2004-2014." However, based on analysis provided in “CarbonDensitiesToolV6.xlsx” and the table reported in ER-MR, the analysis only covers through 2013. It is unclear why this inconsistency exists.
Round 3 MCAR/mCAR/OBS (26 March 2025)	4. MCAR: Please address the discrepancies noted. Please ensure the updated values are reflected in the ER-MR.
Round 3 Response from Program (16 April 2025)	Emissions and removals have been recalculated to address findings 6, 70, 8, 26, and 69. Tree-level biomass data and carbon densities were updated. According to the Carbon pool significance worksheet in the Carbon Densities tool, the results of this analysis are the following: Annual soil organic carbon (SOC) emissions from deforestation (94,052 tCO2/yr) represent only 7.88% of the absolute annual emissions/removals during the reference period (1,194,279 tCO2/yr). Annual NH4 emissions from deforestation (9,225 tCO2/yr) represent 0.77% of the absolute annual emissions/removals during the reference period. Annual N2O emissions from deforestation (2,568 tCO2/yr) represent 0.22% of the absolute annual emissions/removals during the reference period. Annual CO emissions from deforestation (13,742 tCO2/yr) represent 1.15% of the absolute annual emissions/removals during the reference period.

	The ERMR has been updated accordingly.
Aster Findings - Round 4 (01 May 2025)	4. Thank you for the response. The VVB confirmed the values reported in this response are in line with the values found in the updated Carbon pool significance worksheet. However, the VVB noted the update does not appear to be reflected in ER-MR. Specifically, in page 106-107. Additionally, CH ₄ is incorrectly written as “NH ₄ ” in this response and also in cell B25 (Carbon pools Significance tab).
Round 4 MCAR/mCAR/OBS (01 May 2025)	4. MCAR: Please ensure the updated values are reflected in the ER-MR. Please also address finding related to MODIS burnt area analysis timeframe in the previous round and please correct the typo -NH ₄ .
Round 4 Response from Program (12 May 2025)	Section 7.2 of Annex 4 (pages 106, 107, 109) has been edited to ensure consistency with carbon density tool calculations, including the correction of the burnt area analysis timeframe. Additionally, the typo “NH ₄ ” has been corrected to “CH ₄ ” in the carbon density tool.
Aster Findings - Round 5 (16 May 2025)	Thank you for the response and updates made in ER-MR. The Table under 7.1 of the ERMR appears to not have been updated to reflect current values and does not reflect values in the Results tab of Nepal_TAL_Integration_tool_V6 MODIS burnt area analysis timeframe has been corrected. Item closed. “NH₄” typo has been corrected. Item closed. Values updated in section 7.2 Annex 4 (Pages 106, 107, 108) do not appear to be reflective of the most recent version of carbon density tool worksheet. See the following statements from ER-MR for reference: “Additionally, the calculations, using the Carbon Densities tool, of annual soil organic carbon (SOC) emissions from deforestation (94,052 tCO₂/yr) represent only 7.88% of the absolute annual emissions/removals during the reference period (1,194,279 tCO₂/yr).” – Page 107 “According to the calculation, N₂O, CO, and CH₄ account for 1.89% (13,742 tCO₂e/yr), 0.35% (2,568 tCO₂e/yr), and 1.27% (9,225 tCO₂e/yr) respectively of Nepal’s RFL.” – Page 107

	“Based on this preliminary calculation, forest fire emissions represent 17.19% (94,052 tCO₂e/yr) of the FREL.” – Page 108 Additionally, values reported under “Justification/Explanation” in section 7.1 of Annex 4 do not seem to align with the values in most recent Nepal Tal Integration tool worksheet “Results” tab Cells C47, D47, and E47 for total and C49, D49 and E49 for average over the reference period (2004-2014, 11 years).
Round 5 MCAR/mCAR/OBS (16 May 2025)	MCAR. Please make sure that the ER-MR is updated to include the most recent worksheet values.
Round 5 Response from Program (21 May 2025)	The Table under 7.1 of the ERM has been updated to reflect current values in the Results tab of Nepal_TAL_Integration_tool_V6. Values updated in section 7.2 Annex 4 (Pages 106, 107, 108) have been updated to reflect the most recent version of carbon density tool worksheet.
Aster Findings - Round 6 (I)	The VVB confirms Table under section 7.1 of Annex 4 has been updated appropriately in line with the most recent version of Nepal TAL Integration tool worksheet. Item closed. The VVB confirms that values in section 7.2 of Annex 4 have been updated in line with the most recent version of Carbon Density Tool worksheet. Item closed.
Item	4
Carbon Methodological Framework Version 3, April 2020	ii. The ER Program can demonstrate that excluding such Carbon Pools and greenhouse gases would underestimate total emission reductions.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	CarbonDensitiesToolV3.xlsx, ERM
Aster Global Findings (12 May 2024)	The ERM states "Since primary activities are related to avoiding deforestation and degradation and do not include significant ground disturbance, exclusion of soil carbon is likely conservative even though available estimates indicate high values representing about 29% of total biomass (Gurung and Koch, 2011)." However, it is unclear to the VVB if the ER Program is excluding this pool on the basis that "excluding such carbon pools and greenhouse gases would underestimate total emissions reductions." Additionally, the ER Program is required to demonstrate that exclusion of such carbon pools would not underestimate total emissions reductions. The VVB has not been provided demonstrations to satisfy this requirement for all excluded Carbon Pools and greenhouse gases.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings, provide supporting documentation and update the ERM as necessary.

Round 1 Response from Program (18 September 2024)	1. According to the calculations in the Carbon Densities tool Version 4's Carbon Pools Significance worksheet, the annual emissions of soil organic carbon (SOC) from deforestation (20,233 tCO₂/yr) represent only 2.79% of the forest reference emission level (726,365 tCO₂/yr). It's important to note that this calculation is overestimated because it assumes that all SOC content is released in a 20-year period while ignoring the SOC content of the final land use. With respect to SOC emissions resulting from the implementation of sustainable forest management practices in Nepal's Community Forests, it is anticipated that there will be an increase in the permanent carbon stock in the forest soil rather than emissions. Notably, human activities within Community Forests in Nepal have the potential to enhance the carbon sequestration capability of the forests, thereby striking a balance between carbon accumulation in biomass and soil organic carbon. Nepal's community forestry practices are internationally renowned for their participatory environmental governance, encompassing clearly defined policies, institutions, and practices. These include activities such as tree planting, wildlife conservation, fire prevention, grazing control, and the protection of soil erosion-prone areas. Numerous community forests across Nepal have embraced sustainable and scientific forest management practices, disseminating relevant theories and principles for implementation at the grassroots level [1]. Given that the emissions of soil organic carbon (SOC) from deforestation are below the 10% threshold, and an increase in SOC stock rather than emissions is anticipated from the implementation of sustainable forest management (SFM) practices in permanent forests, it has been determined that SOC will not be included in the carbon accounting of the ER-P. [1] https://www.wwfnepal.org/?364515/SFM-Manual
Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification. However the VVB is requesting a clear quantitative demonstration that the exclusion of the carbon pools would underestimate total emission reductions. 1a. The ER-MR states SOC emissions in the analysis are 20,233 tCO₂/yr, or 2.79% of annual emissions during the reference period, whereas the CarbonDensitiesToolV5 states this as 27,628 tCO₂e/yr, or 5.04% of annual emissions during the reference period. 2. The litter and debris are 1.18 tdm/ha per the NFI data (Table 32 in "STATE OF NEPAL'S FORESTS"). However this is presented as 1.19 tC/ha in 7.2 of the ER-MR
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with the findings, provide supporting documentation and/or updated calculation workbooks and update the ERM as necessary.
Round 2 Response from Program (25 February 2025)	1a. SOC emissions in section 7.2 of the ERM has been corrected according to the significance analysis in CarbonDensitiesToolV5.xlsx. 2. Litter and debris figure in 7.2 of the ER-MR has been corrected accordingly the Table 32 in "State of Nepal's Forest."
Aster Findings - Round 3 (26 March 2025)	1. The VVB notes that no response has been provided to the Round 2 Finding issued by the VVB, so this finding remains open. 1a. Section 7.2 states "Additionally, the calculations, using the Carbon Densities tool, of annual soil organic carbon (SOC) emissions from deforestation (27,628 tCO₂/yr) represent only 4.37% of the forest reference emission level (631,848 tCO₂/yr)." Based on the updated workbook "CarbonDensitiesToolV6.xlsx/ Carbon pools Significance", the values reported are incorrect. 2. The VVB confirmed the necessary correction has been made. This item is closed.

Round 3 MCAR/mCAR/OBS (26 March 2025)	1. MCAR: Please address in line with the findings. 1a. MCAR: Please address the discrepancy noted.
Round 3 Response from Program (16 April 2025)	1. The SOC emissions from deforestation estimates in the Carbon pool significance worksheet of the Carbon Densities tool are considered overestimated. This is due to the assumption of immediate SOC release instead of considering a 20-year period and neglecting the SOC content of the final land use. 1a. Emissions and removals have been recalculated to address findings 6, 70, 8, 26, and 69. Tree-level biomass data and carbon densities were updated. According to the Carbon pool significance worksheet in the Carbon Densities tool, the results of this analysis are the following: Annual soil organic carbon (SOC) emissions from deforestation (94,052 tCO₂/yr) represent only 7.88% of the absolute annual emissions/removals during the reference period (1,194,279 tCO₂/yr). Annual NH₄ emissions from deforestation (9,225 tCO₂/yr) represent 0.77% of the absolute annual emissions/removals during the reference period. Annual N₂O emissions from deforestation (2,568 tCO₂/yr) represent 0.22% of the absolute annual emissions/removals during the reference period. Annual CO emissions from deforestation (13,742 tCO₂/yr) represent 1.15% of the absolute annual emissions/removals during the reference period. The ERM has been updated accordingly.
Aster Findings - Round 4 (01 May 2025)	1. Thank you for the clarification. This item is closed. 1a. Thank you for the response. The VVB confirmed the values found in the updated Carbon pool significance worksheet are appropriately reflected in ER-MR section 7.2. However, this item is pending closure of all upstream findings (6, 69) and review of all downstream calculations and final ER numbers pertaining to the findings.
Round 4 MCAR/mCAR/OBS (01 May 2025)	
Round 4 Response from Program (12 May 2025)	
Aster Findings - Round 5 (16 May 2025)	Pending closure of finding 54 and review of finalized ER-MR.
Round 5 Response from Program (21 May 2025)	
Aster Findings - Round 6 ()	Findings related to exclusion of de minimis pools have been resolved. This requirement is met in the final determination of ERs.
Item	5

Carbon Methodological Framework Version 3, April 2020	Criterion 6: Key data and methods that are sufficiently detailed to enable the reconstruction of the Reference Level, and the reported emissions and removals (e.g., data, methods and assumptions), are documented and made publicly available online. In cases where the country's or ER Program's policies exempt sources of information from being publicly disclosed or shared, the information shall be made available to the third party validation and verification body and a rationale is provided for not making these data publicly available. In these cases, reasonable efforts shall be made to make summary data publicly available to enable reconstruction.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	CarbonDensitiesToolV3.xlsx, ERM, FRA_data_analysis_manual_2021.pdf, MRV_tree_data_with_V_ratio.xlsx
Aster Global Findings (12 May 2024)	The VVB reviewed the MRV and Reference Period tree data workbooks, the "CarbonDensitiesToolV3", and the ERM and noted the following: 1. It is unclear to the VVB which species specific parameters from Sharma and Pukkala (1990) were applied to species in the tree list that are not included in Tables 2-7 of the referenced paper. Further, the VVB does not note any crosswalk between Species Codes used in the Tree data workbooks and the ID associated with a species in the FRA Data Analysis Manual (2021).pdf. 2. The FRA Data Analysis Manual (2021) states that the Sharma and Pukkala model gives units in cubic dm, however it is unclear to the VVB how this was determined. It appears the model reports cubic cm. 3. It is generally unclear what the difference between the MRV_tree_data_with_V_ratio.xlsx and Reference_period_Tree_data.xlsx workbooks is how these workbooks tie into the emission factor estimation. 4. Section 5.2 of the FRA_data_analysis_manual_2021.pdf references a Correction Factor; however, this information does not appear to be included in the MRV_tree_data_with_V_ratio.xlsx, it is unclear to the VVB why this occurs. 5. The VVB attempted to recreate the volume calculations within the MRV_tree_data_with_V_ratio.xlsx and Reference_period_Tree_data.xlsx workbooks and was unable to reproduce the ER Program's results. The VVB is requesting that either the ER Program provide the R code used in the calculations or provide an excel workbook with live formulas with examples of the volume calculations. 6. The VVB was unable to reproduce the diameter height modeling using the Lmfor package in R. The VVB is requesting a copy of the R code used for this computation set. The VVB also notes that it recreated the example in the figure on page 32 of FRA_data_analysis_manual_2021.pdf using the exact code provided and was able to impute heights that had less predictive error than the heights listed under the field 'Pre_ht' in MRV_tree_data_with_V_ratio.xlsx 7. The VVB reviewed the NFI_dataset tab of the CarbonDensitiesToolV3.xlsx workbook and it is unclear to the VVB how these data are related to the data in the MRV_tree_data_with_V_ratio.xlsx and Reference_period_Tree_data.xlsx workbooks. The MRV_tree_data_with_V_ratio.xlsx and Reference_period_Tree_data.xlsx workbooks do not appear to contain volume

	estimations and the Plot IDs do not appear to match. As a result, the VVB was unable to confirm the origin of this data and was unable to assess if it has been quantified appropriately. The VVB is requesting a transparent set of documents that allows the VVB to trace the quantification procedure from plot measurements to strata level estimates of carbon. 8. The MR states "The carbon densities of natural forests categorized as intact, degraded, and very degraded were estimated using the second measurement from NFI's 591 plots (pl_total_bio_mrv)36" however the VVB found that the "Carbon Densities" tab of the CarbonDensitiesToolV3.xlsx appears to show only 576 forest inventory plots. The VVB also notes that the MRV_tree_data_with_V_ratio workbook contains 573 unique plots and that although in the Reference_period_Tree_data workbook there does not appear to be a unique plot number, but when creating the unique Plot ID based on the MRV_tree_data_with_V_ratio workbook there appear to be over 1,500 unique plots. The VVB also notes that the ERM states "NFI data from 622 permanent sample plots located within the ER accounting area were derived." It is unclear to the VVB how many NFI plots were used to derive the emission factors. .
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify the species codes used in the Tree Data workbooks and which allometric parameters are applied on the basis of these species codes. MCAR: Please clarify in line with findings 2-8, provide updated quantification documents and additional support documents and update the ERM as necessary.

Round 1 Response from Program (18 September 2024)	1. Species codes used in the Tree Data workbook. For the species not included in Table 2-7 of Sharma and Pukkala, the ERM has applied the species' parameters from the Miscellaneous Categories, either from Terai or Hills, depending on the sample plots' locations. 2. Sharma and Pukkala model units. In the example provided by Sharma and Pukkala (1990), the calculation program in Figure 7 shows that the Volume model input uses centimeters for diameter and meters for height. The example uses the equation $\ln(v) = -2.4554 + 1.9026 \ln(d) + 0.8352 \ln(h)$ for a Shorea robusta tree with a diameter of 50.0 cm and a height of 35.0 m. The total volume (with bark) was found to be 2,856 dm. After converting this value to cubic meters (1 dm = 0.001 m³), the reported result in the example was 2.86 m³. The example calculation worksheet can be accessed at the following link: https://docs.google.com/spreadsheets/d/1AMeh9dbP854GAkpk5PsMBS7E19ZtcvQj/edit?usp=drive_link&oid=100991295489415488908&rtpof=true&sd=true 3. Difference between the MRV_tree_data_with_V_ratio.xlsx and Reference_period_Tree_data.xlsx workbooks. Carbon accounting integration tools do not include a worksheet named Reference_period_Tree_data.xlsx. Furthermore, there is no reference to Reference_period_Tree_data.xlsx in the ER-PD or ER-MR documents. The team inadvertently shared the working file with the VVB. 4. Reference to the Correction Factor in the FRA manual. The correction factor is for Not Reachable areas within the sample plot or different land uses within a plot. In the case of ER Boundary, all the plots fall in the forest area and are reachable. Therefore, the Correction Factor has not been applied. 5. Recreation of volume calculation: The link to the R-code used for the volume calculation is: https://drive.google.com/drive/folders/15gn1CONKrFRDUxoZWkRFNKpPb3pzKNQf 6. Reproduction of diameter height modeling using Lmfor package in R. Thank you for indicating the interesting issue. The example provided in the FRA Manual is for reference only. However, given the low significance of the 'Height' in the total error, there will not be significant differences in the final tree volume. The link to the R-code used for diameter height modeling is: https://drive.google.com/drive/folders/15gn1CONKrFRDUxoZWkRFNKpPb3pzKNQf 7 and 8. Differences between Tree data and NFI dataset used to estimate carbon densities. The NFI dataset worksheet for the Carbon Densities tool contains 622 biomass measurement plots. Out of these, 426 were measured between 2010 and 2013, while 571 were measured in 2022. The tree data files for the 2010-2013 survey can be found at the following link: https://drive.google.com/file/d/1j8IXS-VM6KiL56RCfEXseUYGifK-GAOT/view?usp=sharing. The tree data file for the 2022 survey can be found at the following link: https://drive.google.com/file/d/16knU-uMaeLiivni0vig8X9jH6dJRI6Ws/view?usp=sharing. It's important to note that some plots have zero biomass and are therefore not included in the tree data files. Additionally, there were slight differences found in the 2010-2013 measurements when comparing plot-level biomass information against tree data. As a result, plot-level biomass information was corrected according to tree data information, and carbon densities were recalculated. [1]The updated version of Carbon densities tool (CarbonDensitiesToolV5.xlsx) can be accessed at the following link: https://docs.google.com/spreadsheets/d/1e3REqxI3Oa7KqpC2vfHEdgZMUELQQ52w/edit?usp=drive_link&oid=100991295489415488908&rtpof=true&sd=true
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Aster Findings - Round 2 (17 November 2024)	1. The VVB used the equations.csv to confirm how species were assigned equations from Sharma and Pukkala. The VVB has issued another finding on this matter but this one may closed. 2. The VVB found that Sharma and Pukkala does not list units in the article but concurs with the interpretation from the Project that results should be converted to cubic m. Closed. 3. Thank you for the clarification. The VVB understands MRV_tree_data_with_V_ratio.xlsx to be a working document in support of carbon accounting and will not use Reference_period_Tree_data.xlsx. Closed 4. Thank you for the clarification; closed. 5.The VVB has issued another finding on this matter but this one may closed. 6. The VVB is still unable to reproduce the predicted heights. The provided script "Diameter height modeling.r" states "# import NFI data "tree" and name H". It is unclear what dataset is imported. The VVB still attempted to correct the R script in order to reproduce the predicted heights but was unable to replicate results. 7. The VVB is able to verify the response from the Program. Closed. 8.The VVB is able to verify the response from the Program. Closed.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please deliver a reproducible demonstration of the imputed heights.
Round 2 Response from Program (25 February 2025)	6. Reproduction of diameter height modeling using Lmfor package in R. Thank you for indicating the issue with the dataset for "Diameter height modelling.r". The R code has been revised and the dataset used to reproduce the predicted heights has been clearly referenced in the revised R script. The link to the folder that includes the R-code and the dataset used for diameter height modeling is: https://drive.google.com/drive/folders/1TjOPf2ULnETXb5oK_leOarYHz7ph9kiQ Also please note that during each NFI/FRA, the calculations and modeling were performed for each physiographic region (e.g. individual calculation and modeling for Terai, Churia, Middle Mountain.). But during the MRV calculations, data from different physiographic regions (only from ER area) were merged and a single calculation was carried out. This might have affected (though insignificant) the values of predicted heights acquired from the model. Thus, while regenerating the predicted heights, we may not get the values exactly the same as before.
Aster Findings - Round 3 (26 March 2025)	1) Of the 2,982 trees with a measured height in tree_data_2010_2013_with_pred_heights.csv for example, the values for hpred differed from the values for height_p by a typical 0.15 m. Based on the clarification provided by the Program. This finding is closed. 2) The ERM states "The height of every fifth tree was measured and for the remaining trees, their height was predicted using the model developed based on the height-diameter relationship of neighboring trees." For trees whose heights were measured, it is unclear why sometimes the predicted height appears to be used, and sometimes the measured height is used. This appears to conflict with the MRV script which states "## In absence of the measured height use predicted height". Thus, the VVB expects that, if the height has been measured on a tree, then the measured height is used. For example, Tree 72-41-1-5 has a measured height of 10.1, a height_m of 10.38, a height_p of 11.37, and an hpred of 12.80 in tree_data_2010_2013_with_pred_heights. In calculated_tree_data_2013_updated_feb20, this tree has a height of 10.1, height_m

	of 10.38, height_p of 11.37, and used_ht of 10.38. It is unclear why the measured height of 10.1 m does not appear to be used.
Round 3 MCAR/mCAR/OBS (26 March 2025)	MCAR: Please clarify how height measurements in cases such as Tree 72-41-1-5 were selected.
Round 3 Response from Program (16 April 2025)	In a normal condition, when we have measured heights of trees, we use the measured heights. For rest of the trees for which heights were not measured, we use the (model) predicted heights (height_p). However, in some unusual cases like if the tree top is broken (crown class = 6) or if the tree is stump (crown class = 9, not applicable in MRV calculations though) then we use the same predicted heights (height_p). The MRV script "## In absence of the measured height use predicted height" (as a comment) also literally meant the same. height = 10.1 (this is field measured height) height_m = 10.38 (this one is updated field measured height calculated according to section 5.7 Height_M of FRA_final_data_analysis_manual, page 8) The heights measured and recorded from the field often consist heights of leaning trees for which the real length of trees are to be calculated as follows: height_m = $\text{Sqrt}(\text{base}^2 + \text{height}^2)$----- (i) height_p = 11.37 (predicted height by H-D model) hpred = 12.80 (probably the earlier version of model predicted height – differed during the latest updates of the H-D model) – Now this column has been dropped since it is of no use used_ht = 10.38, this is okay according to our manual, so far we have field measured height (10.1), we do not use model height, however, since this tree is leaning and has base of 2.4, we had to go through aforementioned section 5.6 Height_M calculation to derive the value height_m = 10.38 and use for further calculations.
Aster Findings - Round 4 (01 May 2025)	This explanation clarifies why the value for the height used may differ from the value measured for height. Thank you. This item is closed.
Item	6
Carbon Methodological Framework Version 3, April 2020	Criterion 6: Key data and methods that are sufficiently detailed to enable the reconstruction of the Reference Level, and the reported emissions and removals (e.g., data, methods and assumptions), are documented and made publicly available online. In cases where the country's or ER Program's policies exempt sources of information from being publicly disclosed or shared, the information shall be made available to the third party validation and verification body and a rationale is provided for not making these data publicly available. In these cases, reasonable

	efforts shall be made to make summary data publicly available to enable reconstruction. (Additional Findings)
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	CarbonDensitiesToolV3.xlsx, ERMR, FRA_data_analysis_manual_2021.pdf, MRV_tree_data_with_V_ratio.xlsx, Nepal_TAL_Integration_tool_V2.xlsx
Aster Global Findings (12 May 2024)	The VVB reviewed the MRV and Reference Period tree data workbooks, the "CarbonDensitiesToolV3", and the ERMR and noted the following: 1. It is unclear to the VVB what each of the column headers (e.g. Row 1) of the NFI_dataset mean as there does not appear to be any definitions for any of these column header codes. 2. The VVB reviewed the Nepal_TAL_Integration_tool_V2.xlsx and it appears that within the "Carbon Enhancement Model NF-F" there removal factors continue to be applied to forests that have been converted to forest more than 20 years before and this appears to contradict statements within the ERMR previously referenced by the VVB.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings noted. Please make all necessary corrections, update the downstream calculations, and update the ERMR as necessary.
Round 1 Response from Program (18 September 2024)	1. NFI_dataset column headers. it is critical to clarify that the Carbon densities estimate has been updated. The carbon density estimates for forest and non-forest areas are calculated using data from the NFI biomass plots. The NFI gives two measurements of biomass: the first was taken between 2011 and 2013, and the second in 2022. It's important to note that the first measurement was made during the ER-Program Reference Period 2004-2014. The determination of average carbon densities for non-forest lands is based on fourteen NFI plots, which provided biomass estimates for grassland, other land, and unshaded cropland. These estimates were obtained during the NFI's initial measurement phase, which was measured between 2011 and 2013. The initial carbon density estimates for natural forests were based on the second measurement. However, these estimates were made before the signing of the ERPA in September 2021. Therefore, the carbon densities of natural forests were recalculated using only the first measurement (2011-2013). The carbon densities of intact, degraded, and very degraded natural forests were recalculated using the first measurement from NFI's 388 plots. The updated version of the Carbon densities tool (CarbonDensitiesToolV5.xlsx) can be accessed at the following link: https://docs.google.com/spreadsheets/d/1e3REqxl3Oa7KqpC2vfHEdgZMUELQQ52w/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true Find below the details regarding the NFI_dataset variables used for calculating forest carbon densities, non-forest carbon densities, and the rate of removal of secondary natural forests. It is essential to note that data from four distinct time intervals (1983-2003, 2004-2014, 2015-2017, and 2018-2021) were utilized to determine land use and disturbance types in the NFI biomass plot.

	Variables Description Forest carbon density estimate t1_disturbance_type Disturbance types were assessed for each NFI biomass plot and period t1. The categories of disturbance type are forest gain, stable forest, and stable non-forest. t1_type_final Land use classes were assessed for each NFI biomass plot and the period t1. The land use types and categories included are grasslands, other lands, permanent forests, secondary natural forests, secondary plantation forests, and unshaded cropland. pl_total_bio_mspa Plot total biomass in tdm/ha measured in the 2010-2013 NFI survey. Number.of.tree.covered.samples..2021. This variable represents the number of points in the CEO plot that fall within canopy cover in the year 2021. The value ranges from 1 to 9. NA values are assigned to non-forest lands. Non-forest carbon density estimate t2_type_final Land use classes were assessed for each NFI biomass plot and the period t2. The land use types and categories included are grasslands, other lands, permanent forests, secondary natural forests, secondary plantation forests, and unshaded cropland. pl_total_bio_mspa Plot total biomass in tdm/ha measured in the 2010-2013 NFI survey. Natural Forest Regeneration Removal Rate Estimate pl_mspadate_plot_id NFI Biomass Plot ID in the NFI 2010-2013 Survey. pl_mspadate_dom Date of measurement of Biomass plot in the NFI 2010-2013 Survey. pl_total_bio_mspa Plot total biomass in tdm/ha measured in the 2010-2013 NFI survey. pl_fid_mrv NFI Biomass Plot ID in the NFI 2022 Survey. Note that the Plot ID in NFI 2010-2013 and 2022 are the same. pl_mrv2021date_dom Date of measurement of Biomass plot in the NFI 2022 Survey. pl_total_bio_mrv Plot total biomass in tdm/ha measured in the 2022 NFI survey. pl_matchingplots This variable indicates whether the NFI biomass plot has biomass measurements for both the 2010-2013 survey and 2022 or only for one of the surveys. t1_forestgain_year Year of regeneration of the forest in the NFI biomass plot during period t1. t2_forestgain_year Year of regeneration of the forest in the NFI biomass plot during period t2. pl_physiograph This variable specifies the physiographic region in which the NFI biomass plot is situated. 2. Forest growth period. Nepal confirms that the statement in ERM Section 2 (Annual change in carbon stocks in biomass on non-forestland converted in forestland) is correct. A conservative default period of 20 years is assumed for the forest to grow from the carbon stock levels of non-forest to the level of biomass in the average forest. The "Carbon Enhancement Model NF-F" has been updated accordingly. The updated version of the Emission Reduction calculation tool can be accessed at the following link: https://docs.google.com/spreadsheets/d/100Gu__isysou0ekiv8c4xlaVLupQtWvH/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true
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Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification; however, the VVB noted that there are numerous column headers that have not been described and defined. Additionally, the VVB noted for instance that the NFI dataset contains columns that have the same column names and it is unclear to the VVB what the differences in these columns are. Please ensure that all workbooks contain clear descriptions and definitions for all variables used in the ER Program quantification. The VVB reviewed the updated Nepal_TAL_Integration_tool_V5.xlsx and noted the following: 2. It is unclear to the VVB why Forest Gain for the period 1983-2003 starts in 1995 rather than 1983. Based on the VVB's understanding it seems that in 1995 there would actually be 4,950 hectares of forest gained rather than 381 hectares. 3. The "Carbon Density Final" in the Deforestation Model table of the Parameters and Models tab is incorrectly calculated.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with the findings and provide updated quantification, supporting evidence, and program documents as necessary.
Round 2 Response from Program (25 February 2025)	1. It's important to note that the 125 variables listed in the NFI_dataset tab come from the compilation R script applied to the data collected in the Collect Earth Online app. Out of these, only 16 variables were used to calculate forest carbon densities (4 variables), non-forest carbon densities (2 variables), and natural forest regeneration removal rates (10 variables). A table detailing each of these 16 variables was included in the round 1 response from the program (refer to above). The other columns and variables provide information gathered for the time series analysis and are irrelevant to these calculations. The CarbonDensitiesToolV5.xlsx worksheet has been updated to include a tab that describes these 16 variables ("NFI_dataset var description" tab), and the irrelevant columns and variables have been hidden. For the sake of transparency, those columns were not removed. 2. The Forest Gain Model has been revised to include the total area regenerated from 1983 to 2003 for natural forest and plantation forest, along with recalculated emission reductions. You can download the updated Nepal_TAL_Integration_tool_V6.xlsx at this link: https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true 3. The "Carbon Density Final" in the Deforestation Model table of the Parameters and Model tab has been corrected. The R:S factor was incorrectly applied, which led to an underestimation of the EF, and emission reductions have been recalculated accordingly. You can access the updated Nepal_TAL_Integration_tool_V6.xlsx at the following link: https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true

Aster Findings - Round 3 (26 March 2025)	1. Thank you for the clarification and including clear descriptions and definitions for all variables used in the ER Program quantification. This item is closed. 2. The VVB confirmed the corrections have been made in the revised workbook (Nepal_TAL_Integration_tool_V6.xlsx). This item is closed. 3. The VVB's prior finding was in reference to the following in the Parameters and Models tab of Nepal_TAL_Integration_tool_V6.xlsx: - Cell O94 (Final carbon density of intact forest to unshaded cropland) references cell F24 (unshaded cropland CI). It is unclear why the CI of unshaded cropland is referenced. In response to this finding, the Program changed formulae in cells O91:O105, such that the term (1+R:S) was changed to R:S. It is unclear why the aboveground biomass is now multiplied by the root:shoot ratio rather than 1 + the root:shoot ratio. The consequence is that the emission factors now represent belowground biomass only.
Round 3 MCAR/mCAR/OBS (26 March 2025)	3. MCAR: It appears only the belowground portion of CO₂e/ha of final deforested land uses are calculated. Please clarify how this is appropriate. MCAR: Please address the identified discrepancy, and revise all downstream calculations accordingly. Please ensure the updated values are reflected in the ER-MR.
Round 3 Response from Program (16 April 2025)	Nepal_TAL_Integration_tool_V6.xls, Cell O94 (Final carbon density of intact forest to unshaded cropland) has been updated and now references cell E24 (unshaded cropland average). In cells O91..O105, the final carbon density of the transition is calculated. It is essential to clarify that for non-forest lands, the R::S for Grasslands (1.887) reported by Monaky et al. (2006, Table 2) is utilized. We consider it incorrect to use 1+1.887 to estimate the BGB for non-forest lands because it adds 1 twice. Discrepancies have been addressed, and all downstream calculations and ERMR values have been updated accordingly [1]. [1] Updated Nepal_TAL_Integration_tool_V6.xls can be accessed at the following link: https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true
Aster Findings - Round 4 (01 May 2025)	The VVB finds that the determination of above+belowground biomass appears correct in column N of the Parameters and Models tab of Nepal_TAL_Integration_tool_V6 where the aboveground biomass is multiplied by (1+ root:shoot ratio). However, column O multiplies the aboveground biomass by the root to shoot ratio, and this is incorrect as the solution is only belowground biomass. The VVB notes that the application of the root:shoot ratio used by the Program here differs from other uses of the same root:shoot ratio (e.g., Pienimäki (2014; available at: https://core.ac.uk/download/pdf/33725366.pdf) and https://rspo.org/wp-content/uploads/NPP_SUM-Zifasing_and_Tararan-RAMU_NBPOL-Aug_18_3nd_Rev_18.10.18_(1).pdf). Secondly, it is unclear to the reader of the ERMR why a root:shoot ratio is applied at all. Section 3.1 states the values for total above and belowground biomass for each forest type. For example, it is stated that the total aboveground and belowground biomass is 202.08 tons dm/ha. However, the Parameters and Models tab of Nepal_TAL_Integration_tool_V6 calculates 202.08*(1+0.44), or 291, to represent the total above and belowground biomass; this conflicts with the ERMR.

	Thirdly, the ERMV states that the root:shoot ratio is 0.44, sourced from IPCC and does not mention Mokaney or the root:shoot values sourced from Mokaney.
Round 4 MCAR/mCAR/OBS (01 May 2025)	MCAR: Please ensure the root:shoot ratio is consistently applied in workbooks. MCAR: Please ensure that total (above+belowground) biomass of forest types is correctly reported in the ERMV. MCAR: Please ensure the ERMV accurately describes the root:shoot values used.
Round 4 Response from Program (12 May 2025)	1 - The application of the root-to-shoot ratio for non-forest lands has been revised in the Nepal TAL Integration tool. The BGB has been recalculated by multiplying the non-forest land AGB by 1 + 1.1887. Emission reductions were recalculated. ER-MR was edited to reflect the change in the recalculation of ERs. Updated calculation tools can be accessed at the following links: Carbon Densities tool: https://docs.google.com/spreadsheets/d/1TkQ_dLmGF9Iz_h0Jx4zGRpiNJZN3UloC/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true Nepal TAL Integration tool: https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true Monte Carlo Analysis: https://docs.google.com/spreadsheets/d/1AOT_hd6qw4yVZsGWiQ5MwiwnnZH4l-V4/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true 2 and 3 - The following table with AGB, BGB, and total biomass values was included in Section 3 of ERMV and Section 8 of Annex 4, indicating the root:shoot values used to calculate BGB. Land Cover; AGB (tCO₂e/ha); BGB (tCO₂e/ha); Total Biomass (AGB+BGB) - Intact Forest; 348.26; 153.23; 501.49; - Degraded Forest; 175.65; 77.29; 252.94

	- Very Deg Forest; 31.86; 14.02; 45.88 - grassland; 36.10; 68.12; 104.22 - other land; 47.17; 89.01; 136.18 - unshaded cropland; 99.16; 187.11; 286.27 Below-ground biomass for forest lands was estimated using a root-to-shoot ratio of 0.44 (2019 refinement to the 2006 IPCC guidelines for national GHG inventory, Table 4.4 -Subtropical dry Asia, . B > 125 tons/ha). BGB for non-forest lands was estimated using R::S 1.887 (Mokany et al., 2006; Table 2).
Aster Findings - Round 5 (16 May 2025)	1) The VVB confirmed the correction made; root:shoot ratio is now correctly applied to determine total C/ha for all land cover types. 2) The VVB reviewed the revisions to Section 3 of ERM and Section 8 of Annex 4. The addition of aboveground, belowground, and total CO₂e/ha clarifies the VVB's prior finding. Closed.
Item	7
Carbon Methodological Framework Version 3, April 2020	Criterion 6: Key data and methods that are sufficiently detailed to enable the reconstruction of the Reference Level, and the reported emissions and removals (e.g., data, methods and assumptions), are documented and made publicly available online. In cases where the country's or ER Program's policies exempt sources of information from being publicly disclosed or shared, the information shall be made available to the third party validation and verification body and a rationale is provided for not making these data publicly available. In these cases, reasonable efforts shall be made to make summary data publicly available to enable reconstruction. (Additional Findings)
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_TAL_AD_tool_v2.xlsx, FCPF-Activity_script_v4.R, Collect_Earth_Sample_Location.shp

Aster Global Findings (12 May 2024)	1. Upon review of “Nepal_TAL_AD_tool_v2.xlsx”, the VVB noted following: CEO plots/Deforestation 2004-2021: - Plot 123b appears to be very degraded forest during 2004-2014 and deforested during 2018-2021. - Plot 116b appears to be deforested during 2004-2014 period instead of 2015-2017. - Plot 921b appears to be still forest during 2018-2021. - Plot 9b still appears to be an intact forest during 2018-2021. CEO plots/ Forest Gain 2004-14 - Plot 1205b appears to be forest in 2003/2004. - Plot 256b appears to be a degraded forest during 2004-2014. - Plot 768b appears to be a very degraded forest in 2003/2004. - Plot 499b appears to have no tree cover in 2014. - Plot 134a appears to be degraded forest in 2003/2004, changed to very degraded forest during 2004-2014. CEO plots/ Forest Gain 2015-17 - Plot 610b appears to be forest in 2014. - Plot 388b appears to be forest in 2014. - Plot 234b appears to be forest in 2014. - Plot 227b appears to be forest in 2014. CEO plots/ Forest Gain 2018-2021 - Plot 623b appears to be a forest gain during 2015-2017. - Plots 612b appears to be a forest gain during 2004-2014. CEO plots/Degradation 2004-14 - Plot 892b appears to be degraded forest in 2003/2004. - Plot 1107b appears to be a stable forest during 2004-2014. - Plot 253b appears to be non forest (unshaded cropland) in 2003/2004. - Plot 251b appears to be degraded forest in 2003/2004. - Plot 220b appears to be degraded forest in 2003/2004. - Plot 284b appears be degraded forest in 2003/2004 and changed to very degraded during 2018-2021. CEO plots/Degradation 2015-17 - Plot 751b appears degraded forest in 2003/2004 and converted to very degraded forest during 2004-2014. - Plot 253b appears to be non forest (unshaded cropland) in 2003/2004. - Plot 115b appears to be stable forest during 2015-17. - Plot 104b appears to be very degraded forest throughout 2004-2021. - Plot 35b appears to be stable forest during 2015-17. CEO plots/Degradation 2018-21 AG - Plot 840b is labeled as stable forest while it appears to be a forest degradation. - Plot 319b appears non forest in 2003/2004. CEO plots/Stable Forest 2004-14, 2015-17, 2018-21 - Plot 110b appears to be intact forest in 2014 and converted to degraded forest in 2017 and stable throughout 2018-21. - Plot 1132b appears to be intact forest in 2014 and stable throughout 2018-21. - Plot 237b appears to be non forest in 2003/2004 and throughout 2015-17 and appears to be converted to cropland during 2018-21. - Plot 336b appears to be degraded forest throughout 2004-2021. 2. Upon review of “Nepal_TAL_AD_tool_v2.xlsx”, the VVB noted following: Nepal_TAL_AD_tool_v2.xlsx/Deforestation - Plot 438b appears to be deforested during 2018-2021 period. However, it has not been accounted as deforestation in the analysis. 3. Upon review of “FCPF-Activity_script_v4.R (see snippet of code below)”, the VVB
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	noted following that condition applied in line “1104-1106” above appears to be incorrect as several “stable forest” plots are labeled as “forest degradation”. Additionally, condition in line “1107-1109” appears to classify several “Enhanced Forest” plots as “stable forest”. Similar issues are noted for Time 2 and 3. “Line 1099-1119” # Time 1 ----- <pre>dataCEO\$t1_disturbance_type <- ifelse(dataCEO\$t0_type_forest == "permanent forest" & dataCEO\$t0_type == 'forest' & dataCEO\$t1_type == 'forest' & dataCEO\$t0_numbertrees >= dataCEO\$t1_numbertrees & dataCEO\$t1_numbertrees != 0, "forest degradation", ifelse(dataCEO\$t0_type == 'forest' & dataCEO\$t1_type == 'forest', "stable forest", ifelse(dataCEO\$t0_type == 'non forest' & dataCEO\$t1_type == 'non forest', "stable non forest", ifelse(dataCEO\$t0_type == 'non forest' & dataCEO\$t1_type == 'forest', "forest gain", ifelse(dataCEO\$t0_type == 'forest' & dataCEO\$t1_type == 'non forest', "forest loss", NA))))))"</pre> 4. It appears there is overlap between Plots 467b and 343b. 5. It is unclear why source of imagery used, and dates are not recorded for CEO plots analyzed.
Round 1 MCAR/mCAR/OBS (12 May 2024)	1. MCAR: Please clarify in line with the findings noted. Please make all necessary corrections and update the downstream calculations as necessary. 2. MCAR: Please clarify in line with the findings noted. Please make all necessary corrections and update the downstream calculations as necessary. 3. MCAR: Please address in line with the findings noted. Please make all necessary corrections and update the downstream calculations as necessary. 4. MCAR: Please address in line with the finding. 5. MCAR: Please clarify in line with the findings.

Round 1 Response from Program (18 September 2024)	1. Review of CEO plots. The senior interpreters of the Nepal MRV team reinterpreted CEO plots that displayed land cover/land use (86 plots) and canopy cover changes (95 plots) during monitoring periods T1, T2, and T3, as well as plots listed by the auditor. The reinterpreted CEO plots are in the "PlotRevision" worksheet of the Nepal_TAL_AD_tool_v4.xlsx Excel file [1]. It is important to note that the list of CEO plots for reinterpretation was created after errors in the compilation R-script were fixed. After the reinterpretation of the CEO Plots, a new reference data compilation file was generated with the fixed compilation R-script [2]. The reinterpreted reference data were uploaded to the activity data calculation tool Nepal_TAL_AD_tool_v5.xlsx [3]. This updated tool contains the corrected activity data. [1] Nepal_TAL_AD_tool_v4.xlsx Excel file can be found at the following link: https://docs.google.com/spreadsheets/d/1a4XGBAPwUF0nCoLxgzv_Ebqt2bNqFHOR/edit?usp=sharing&oid=100991295489415488908&rtpof=true&sd=true. [2] The re-interpreted dataset can be found at the following link: https://drive.google.com/file/d/1ZEXbB_4PHg8CBKcGKn_JGC_D7F23NyAo/view?usp=sharing. [3] The corrected activity data tool Nepal_TAL_AD_tool_v5.xlsx Excel file can be found at the following link: https://docs.google.com/spreadsheets/d/1G3ToJYNA-n8kl12GfFBurQ-m9C1bcVyr/edit?usp=drive_link&oid=100991295489415488908&rtpof=true&sd=true 2 and 3 Compilation R-script revision. Sub-findings 2 and 3 are related to an error in the compilation script. A coding error was noted earlier as well, where ">=" should be changed to ">." This has been fixed. The R code was rerun to create CEO plots for reinterpretation and to compile the reinterpreted reference data used in the recalculation of activity data (see sub-finding 1 above). 4. Overlap between Plots 467b and 343b. The plots have minimal overlap, intersecting at the corners with a total overlapping area of 0.04 hectares, approximately 10 meters at their corners. 5. Source of imagery used, and dates for CEO plots analyzed. The process assumes that decisions are made based on a series of images and multiple sources of imagery over specific monitoring periods. Sometimes, a high-resolution image for the required year is available, but interpreters are still advised to verify using surrounding imagery dates. Therefore, recording this information during interpretation would not be practical or helpful.
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Aster Findings - Round 2 (17 November 2024)	1a. Thank you for the response and clarification. The VVB reviewed the updated workbook (Nepal_TAL_AD_tool_v4.xlsx) and corrected R script and noted following CEO plots appear to have not changed: 256b appears degraded forest in t1,t2, t3 284b appears very degraded in t0 319b appears no forest in t0, degraded in t1 892b appears degraded forest in t0 1b. The VVB reviewed reinterpreted CEO plots in the “PlotRevision” tab and noted following: 56a - updated to intact from very degraded forest, appears incorrect. 140b - t1 and t2 tree numbers appear to have not changed in “CompiledData_CEO_GEE (7)” tab as mentioned in the “PlotRevision” tab. 2. Thank you for the response and clarification. This item is closed. 3. Thank you for the clarification and providing updated documentation. The VVB noted “>=” has been changed to “>” in “t_disturbance_type” categorization and “<=” has been changed to “<” in “t_canopyincrease” categorization. The VVB were able to run the R script provided and reproduced “..CompiledData_CEO..”. However, the VVB noted some discrepancies between CEO compiled data used in AD estimation and VVB reproduced CEO compiled data, specifically in “t_canopyincrease” class for all time period, t0, t1, t3. The VVB reviewed CompiledData CEO used in AD estimation and noted multiple CEO plots “t_canopyincrease” is labeled “canopy increase” even though the number of trees has remained unchanged. VVB compiled CEO data appear to have accurately labeled “t_canopyincrease”. It is unclear why such discrepancy exists in CEO compiled plots used in AD estimation. Additionally, the VVB noted the condition in categorizing “t1_disturbance_type” does not appear to consider the type of forest i.e., intact (7-9 points), degraded (4-6 points), very degraded forest (1-3 points). It is only based on tree numbers, which does not appear to be an accurate approach. 4. Thank you for the clarification. 5. Thank you for the clarification. The VVB understands that series of multiple sources of imagery are required to be assessed over a specific period of time. However, it is equally important to record sources of imagery and dates used as these elements are essential to ensure that interpretations are done using imagery within the specific time period and to avoid the possibility of using imagery outside of the period which can lead to an incorrect interpretation.
Round 2 MCAR/mCAR/OBS (17 November 2024)	1a & b . MCAR: Please clarify in line with the findings noted. Please make all necessary corrections and update the downstream calculations as necessary. 3. MCAR: Please address in line with the findings and make necessary updates. 4. OBS: The VVB determines the noted overlap is minimal and has immaterial impact on AD estimation. However, the VVB determines such issues bears the potential for having material impact in the future. Thus, the VVB has opted to issue an observation on this matter. 5. mCAR: Please clarify in line with the finding.

Round 2 Response from Program (25 February 2025)	1a&b and 3. We have discontinued using degradation categories in the “t_disturbance_type” and “t_canopyincrease” categorization variables in the Activity Data calculation as of a few versions ago. Consequently, errors may be present in these columns since the R script is no longer maintained or updated for these items. These columns have been retained to ensure consistency in the spreadsheet's size over time, facilitating easy updating or recalculating processes in the Activity Data spreadsheet tools (Nepal_TAL_AD_tool_v5.xlsx). It is important to note that the intact/degraded/very-degraded category labels in the Nepal TAL AD tool were created later within the spreadsheet tool, not in the R script, based on the canopy cover information in the tX_numbertrees variables. The t1_disturbance_type was developed in R and therefore has no input from the spreadsheet tool. Please be aware that in the variables t1_disturbance_type_subcat, t2_disturbance_type_subcat, and t3_disturbance_type_subcat, the "forest degradation" category is not utilized in any calculations of Activity Data (Degradation, Forest Gain, or Deforestation). Additionally, these variables are used exclusively to estimate forest gain area, referring to the categories "natural secondary forest gain," "plantation forest gain," or "shaded cropland gain." The table below illustrates the variables ultimately used to calculate the activity data for each REDD Activity. To minimize confusion, we have hidden columns that are not used in any capacity in Nepal_TAL_AD_tool_v5.xlsx [1]. [1] You can access the Nepal_Tal_AD_Tool_v5.xlsx Excel file at the following link https://docs.google.com/spreadsheets/d/1G3ToJYNA-n8kl12GfFBurQ-m9C1bcVyr/edit?usp=sharing&oid=100991295489415488908&rtpof=true&sd=true [Aster Global NOTE: see “Nepal Round 2 Findings - working file.docx” for Table provided as part of Round 2 Response, formatting issues prevent inclusion of table here] Notes: it is essential to clarify that the following pair of variables contain the same information: • Number.of.tree.covered.samples..2014.2015 and t1_numbertrees; • Number.of.tree.covered.samples..2017.2018. and t2_numbertrees; and • Number.of.tree.covered.samples..2021. and t3_numbertrees
Aster Findings - Round 3 (26 March 2025)	1 a&b,3: Thank you for the clarification and additional explanation. The VVB determined this item is addressed. However, it is essential to ensure the VVB is fully informed of Activity data tools, providing with a comprehensive overview of source of inputs. Additionally, it would be helpful to clearly highlight which specific columns in the Excel file are relevant to activity data calculations, along with clear descriptions and definitions for all variables used in the ER program quantification. Effective communication of these details will help ensure a more efficient resolution. Item closed.
Item	8
Carbon Methodological Framework Version 3, April 2020	Criterion 6: Key data and methods that are sufficiently detailed to enable the reconstruction of the Reference Level, and the reported emissions and removals (e.g., data, methods and assumptions), are documented and made publicly available online. In cases where the country's or ER Program's policies exempt sources of information from being publicly disclosed or shared, the information shall be made available to the third party validation and verification body and a rationale is provided for not making these data publicly available. In these cases, reasonable efforts shall be made to make summary data publicly available to enable reconstruction. (Additional Findings)
Requirement Met (Y/N/Pending)	Y

Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	NFI_TAL_Nepal CEO project; CarbonDensitiesToolV3.xlsx
Aster Global Findings (12 May 2024)	The VVB reviewed the Collect Earth Online "NFI_TAL_Nepal" project as well as "CarbonDensitiesToolV3.xlsx" and noted the following: 1. There appears to be inconsistencies within the NFI_Dataset tab between disturbance type, type, percentcanopychange, canopyincrease, etc. across time periods. For example, Plot 442b lists "forest degradation" for t2_disturbance_type; "permanent forest" for t2_type_final; and "0" for t2_percentcanopychange. Additionally, the CEO project states that plot 442b is undisturbed with 9/9 forested sample points. It is unclear the source of the data in the NFI_dataset tab and how/if it relates to the NFI_TAL_Nepal CEO project. 2. It is unclear how it is determined whether plots are considered intact forest, degraded forest, very degraded forest, grassland, other land, unshaded cropland, or secondary natural forest in the "CarbonDensities" tab and if this is connected to the NFI_dataset tab or the information available in CEO. Additionally, it is unclear the date and source of the imagery used to determine these classes. 3. The VVB reviewed a sample of points in the NFI_TAL_Nepal Collect Earth Online project and noted discrepancies between the project's analysis and the VVBs. For Plot 390b, the project states there are 2 forested points for t3 (2018-2021). The VVB reviewed imagery from 2/16/2021 and noted that 0 points appear to be forested. For Plot 450b, the project states there are 3 forested points for t1 (2004-2014). The VVB reviewed imagery from 4/24/2014 and noted that 0 points appear to be forest. For Plot 306b, the project states that there are 7 forested points for t2 (2015-2017). The VVB reviewed imagery from 11/3/2016 and 1/19/2018 and noted that 9 points appear to be forested. 4. Throughout the ERMR, the ER Program uses numerous acronyms; however, the acronyms are often not defined anywhere within the ERMR. The VVB notes that the ERMR contains an acronyms section where acronyms are defined; however, this list is not comprehensive. For example, TCC is never defined. 5. The ERMR states that "there are no seasonal or permanently flooded forest areas in Nepal. However, upon review of the a sample of the CEO sampling points for the NFI dataset, it appears that there are seasonally flooded forest areas. For example in, plots 360, 461, and 450. Additionally, the VVB notes that Nepal contains "Riverine Forest" which can experience seasonal flooding. It is unclear to the VVB if the above referenced statement from the ERMR is accurate.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings noted. Please make all necessary corrections, update the downstream calculations, and update the ERMR as necessary.

Round 1 Response from Program (18 September 2024)	1. Inconsistencies with canopy cover categories. Nepal has confirmed an inconsistency in plot 442b. The error in the compilation R-script resulted from using a $\geq$ instead of $>$. It was noted in the compilation R-script version 5 that the error was found and fixed. However, it appears that we ran version 4 for the NFI_dataset. Notably, as explained in issue 6.1, "t2_percentcanopychange" was not used in calculating the forest carbon densities. The canopy cover of Permanent Forest plots was assessed to determine their status as intact (7-9 points), degraded (4-6 points), or very degraded forest (1-3 points). The canopy cover categories were defined based on the number of points in the CEO plot falling within the canopy cover "Number.of.tree.covered.samples..2021". Therefore, the forest carbon density is not affected by the R-script error. 2. Date and source of the imagery used to determine canopy cover categories. The team reviewed the existing image archives available within Google Earth and Collect Earth Online (CEO), and used the best available satellite imagery of the stipulated year (2003/04, 2014/15, 2017/18, and 2021) for the analysis. The team did not precisely record the date and source of imagery. According to the team's established best interpretation practices, the interpreter would typically use the highest resolution imagery available (historical Google Earth Pro and/or Planet NICFI imagery) to make their decisions and reference one or more lower resolution imagery (Planet NICFI, Sentinel-2, and Landsat) and time-series graphs of vegetation indices (NDVI and NDFI from Landsat and/or Planet NICFI) if the answers were not immediately evident. In most cases, multiple sources of information were used to make interpretation decisions. 3. Interpretation discrepancies between NFI_TAL_Nepal CEO project assessment and VVB. The team has reviewed and updated the NFI_TAL_Nepal CEO project and resolved the discrepancies noted by the VVB. 4. Acronyms list. The Acronym table has been updated in the ERMR. 5. Seasonal or permanently flooded forest areas in Nepal. There are few forest areas that are affected by flood for a very short duration during the flooding season within the ER boundary. However, there are no forest areas that get seasonally or permanently flooded in Nepal.
Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification; however, it appears that the t2 CEO interpretation data is used in the calculation of the carbon density EFs for non-forest and non-forest EFs. It is unclear to the VVB why the ER Program uses a different time period to quantify non-forest carbon stocks. 2. Thank you for the clarification. This finding is closed. 3. The VVB reviewed the NFI_dataset tab of the CarbonDensitiesToolV5.xlsx workbook and found that the CEO data in this tab remains unchanged. It is unclear to the VVB why this occurs since the ER Program has responded saying the interpretation discrepancies have been rectified. 4. Thank you for the clarification, the VVB reviewed the updated ERMR and is reasonably assured that the ERMR now defines acronyms. This finding is closed. 5. Thank you for the clarification. Please provide evidence to support this statement. 6. The VVB reviewed the NFI_dataset-V2_column_order.csv and noted that this dataset has different values than the NFI_dataset tab of the CarbonDensitiesToolV5.xlsx and it is unclear to the VVB why the values are different and which dataset is correct.

Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with findings 1, 3, 5, and 6 and provide updated program documentation and quantification documents.
Round 2 Response from Program (25 February 2025)	1. Nonforest carbon stocks estimates: The carbon density estimates for forest and non-forest areas are calculated using data from the NFI biomass plots. The NFI gives two biomass measurements: the first was taken between 2011 and 2013, and the second in 2022. It's important to note that the first measurement was made during the ER-Program Reference Period 2004-2014. The determination of average carbon densities for non-forest lands is based on fourteen NFI plots, which provided biomass estimates for grassland, other land, and unshaded cropland. These estimates were obtained during the NFI's initial measurement phase between 2011 and 2013. The initial carbon density estimates for natural forests were based on the second measurement. However, these estimates were made after the signing of the ERPA in September 2021. Therefore, the carbon densities of natural forests were recalculated using only the first measurement (2011-2013). The carbon densities of intact, degraded, and very degraded natural forests were recalculated using the first measurement from NFI's 388 plots. 3. Revision of CEO data in CarbonDensitiesToolV5.xlsx The table below presents data collected for plots 390b, 450b, and 306b, which are used to estimate land use/land cover carbon densities in the Carbon Densities Tool (CarbonDensitiesToolV5.xlsx, worksheet "NFI_dataset" [1]). The data for these plots have been updated and are now consistent with the VVB assessment. It is essential to clarify that the corrections did not impact carbon densities, as explained below: ● Plot 390b: The number of trees in t3 (Number.of.tree.covered.samples..2021. / t3_numbertrees) has been updated to NA (0 samples in forest). Plot 390b corresponds to other lands (non-forest lands); the tree canopy cover is not utilized in the classification of the NFI plots for estimating non-forest land carbon density. Therefore, this correction does not impact the carbon density calculations. ● Plot 450b: The number of trees in t1 (Number.of.tree.covered.samples..2014.2015./t1_numbertrees) has been updated to NA (0 samples in forest). Plot 450b represents Forest gain (secondary natural forest); the tree canopy cover is not utilized in the classification of the NFI plots to estimate the removal rate; therefore, this correction does not impact the carbon density calculations. ● Plot 306b: The number of trees in t2 (Number.of.tree.covered.samples..2017.2018./t2_numbertrees) has been updated to 9 samples in the forest. Plot 450b corresponds to Stable Forest. The tree canopy cover is used in the classification of the NFI plots to estimate carbon density by forest type; however, the tree canopy cover used to define the forest type is the measurement t1_numbertrees. This correction does not impact the carbon density calculations since the t2 tree canopy cover measurement is not utilized. [1] You can access the CarbonDensitiesToolV5.xlsx Excel file at the following link https://docs.google.com/spreadsheets/d/1e3REqx13Oa7KqpC2vfHEdgZMUeLQQ52w/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true [Aster Global NOTE: see "Nepal Round 2 Findings - working file.docx" for Table provided as part of Round 2 Response, formatting issues prevent inclusion of table here] [2] Please note that the variables "Number.of.tree.covered.samples..2021. / t3_numbertrees" and "Number.of.tree.covered.samples..2017.2018./t2_numbertrees" are not used in

	calculating land use/land cover carbon densities (See round 1 response to finding 6). [Aster Global NOTE: see “Nepal Round 2 Findings - working file.docx” for images provided as part of Round 2 Response, formatting issues prevent inclusion of images here] 5. Seasonal or permanently flooded forest areas in Nepal. Paudel and Paudel (2018) has stated that there are no forest areas that get seasonally or permanently flooded in Nepal. The link to the support the statement that the forest areas in Nepal are only seasonally flooded is provided below: (PDF) Forest Reference Levels in the Hindukush Himalaya: A Comparative Overview 6. Different values between the dataset in the NFI_dataset-V2_column_order.csv and CarbonDensitiesToolV5.xlsx and correct dataset. This file, NFI_dataset-V2_column_order.csv, is simply an old version of the file output from the reference period analysis, which is only used to copy the column order so it remains consistent for all future output files. The data in this file is irrelevant, only the column names are used.
Aster Findings - Round 3 (26 March 2025)	1. Thank you for the response. The VVB notes that carbon density estimates for natural forests were calculated based on the first NFI biomass measurement (2011-2013). As such use of t1 CEO interpretation is appropriate. However, it is still unclear why t2 CEO interpretation was used even though carbon densities for non-forest lands were obtained during initial NFI measurement (2011-2013). 3. Thank you for the clarification. The VVB reviewed the updated workbook (CarbonDensitiesToolV6.xlsx) and confirmed that the discrepancies noted have been resolved. This item is closed. 5. Thank you for providing the supporting evidence. Based on the review of the supporting document and VVB’s assessment from internet sources, there is no evidence indicating the presence of seasonal or permanently flooded forest areas in Nepal. This item is closed. 6. Thank you for the clarification. This item is closed.
Round 3 MCAR/mCAR/OBS (26 March 2025)	1. MCAR: Please update the estimation of carbon densities for non-forest lands based on t1 CEO interpretation.

Round 3 Response from Program (16 April 2025)	1. Carbon density estimation for non-forest lands has been updated based on T1 CEO interpretation. The updated Carbon Densities tool can be accessed at the following link: https://docs.google.com/spreadsheets/d/1TkQ_dLmGF9Iz_h0Jx4zGRpiNJZN3UIoC/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true
Aster Findings - Round 4 (01 May 2025)	1. Thank you for the response. The VVB notes Carbon density estimation for non-forest lands has been updated based on T1 CEO interpretation in updated Carbon Densities tool. ER-MR reports 14 NFI plots; however, the update to the T1 CEO interpretation has now adjusted to 21 NFI plots. The VVB also noted CI for “Natural very degraded forest” is reported incorrectly in section 3.1/Page 36.
Round 4 MCAR/mCAR/OBS (01 May 2025)	1.MCAR: Please update NFI plot counts throughout the ER-MR. Please make sure to report CI for “Natural very degraded forest” correctly in line with the worksheet.
Round 4 Response from Program (12 May 2025)	The ER-MR report has been edited to reflect the correct number of non-forest NFI plots (21 non-forest NFI plots). Also, the CI for “Natural very degraded forest” has been corrected in Section 3.1 on Page 36.
Aster Findings - Round 5 (16 May 2025)	The VVB noted there are several sections in ER-MR where non forest NFI plots count is alphabetically written as “fourteen”. Additionally, CI for “Natural very degraded forest” remains inaccurately reported as 16.68. The correct value based on the worksheet is 10.68. Furthermore, Reporting period is incorrectly stated in table 6 in section 2.2 (page 23) and table 8 in section 9.1 Annex 4 (page 136).
Round 5 MCAR/mCAR/OBS (16 May 2025)	1.MCAR: Please make the necessary corrections in ER-MR.
Round 5 Response from Program (21 May 2025)	The number of NFI plots has been corrected to 21 in places where it was previously written as “fourteen.” CI for “Natural, very degraded forest” has been correctly reported as 10.68. Reporting period was corrected in table 6 in section 2.2 (page 23) and table 8 in section 9.1 Annex 4 (page 136) - Reporting Period (June 22, 2018 – December 31, 2021).
Aster Findings - Round 6 (22 May 2025)	The VVB confirms that the error noted for non forest NFI plots count has been corrected in the revised ER-MR. CI for “Natural very degraded forest” has been updated correctly in the revised ER-MR. Reporting period has been updated correctly in the revised ER-MR. Item closed.
Item	9
Carbon Methodological Framework Version 3, April 2020	Criterion 6: Key data and methods that are sufficiently detailed to enable the reconstruction of the Reference Level, and the reported emissions and removals (e.g., data, methods and assumptions), are documented and made publicly available online. In cases where the country’s or ER Program’s policies exempt sources of information from being publicly disclosed or shared, the information shall be made available to the third party validation and verification body and a rationale is provided for not making these data publicly available. In these cases, reasonable efforts shall be made to make summary data publicly available to enable reconstruction. (Additional Findings)

Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ERM, Nepal_TAL_Integration_tool_V2.xlsx
Aster Global Findings (12 May 2024)	1. It is unclear to the VVB how the ER Program incorporates transition periods in the development of the ER Program's Emission Factors and how transition periods are considered as part of the overall quantification. 2. The ERMR states "Since the FCPF Methodological Framework requires IPCC Tier 2 or higher method, the net annual CO₂ removals are calculated using equations 2.15 and 2.16 from the 2006 IPCC Guidelines, Volume 4, Chapter 2. These equations were simplified by assuming that the conversion from non-forest to forest occurs during a period from average carbon stocks in nonforest to average carbon stocks in forests." Based on this statement in the ERMT, it appears as though the ER Program has not applied equations 2.15 and 2.16. 3. The ERMR states "A conservative default period of 20 years is assumed for the forest to grow from the carbon stock levels of non-forest to the level of biomass in the average forest." However, it is unclear to the VVB where this assumption is applied in the quantitative analysis. The Nepal_TAL_Integration_tool_V2.xlsx workbook appears to attribute removal factors to non-forest land that was converted to forestland more than 20 years ago. It is unclear to the VVB how this approach is in line with the statement within the ERMR and the quantification procedure. 4. The VVB reviewed the Nepal_TAL_Integration_tool_V2.xlsx and it is unclear to the VVB how the ER Program is tracking the area converted to forest land in a certain year, since Activity Data do not appear to be collected on an annual basis. 5. The ERMR states "These equations were simplified by assuming that the conversion from non-forest to forest occurs during a period from average carbon stocks in nonforest to average carbon stocks in forests." It is unclear to the VVB what this statement means.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings and update the ERMR, quantification documents, and provide supporting evidence as necessary.

**Round 1 Response from Program
(18 September 2024)**

1. Transition Period and Removal Factor.

When non-forest land is converted to forest land, the removal of CO₂ has been estimated based on the assumption that the conversion from non-forest to forest occurs over a conservative default period of 20 years, following the recommendation set in the Guidance Note for accounting of legacy emissions/removals of the FCPF (version 1). The removal estimate takes into account changes in carbon stocks in aboveground and belowground biomass. The changes in total carbon stocks in biomass (removals) during the Reference Period were determined as the sum of the total carbon stocks in biomass of all land units with forest cohorts with ages no longer than 20 years.

Note that the "Carbon Enhancement Model NF-F" has been updated accordingly. The updated version of the Emission Reduction calculation tool can be accessed at the following link:

https://docs.google.com/spreadsheets/d/100Gu__isysou0ekiv8c4xlaVLupQtWvH/edit?usp=drive_link&ouid=100991295489415488908&rtpof=true&sd=true

The removal rate was calculated using two methods: Opt1) Calculating the biomass increment between measurements taken in NFI plots located in secondary forest, and Opt2) Estimating the Mean Annual Increment (MAI) in biomass. To apply these calculation methods, the NFI plots were evaluated and categorized by their land use type, including non-forestland use, Permanent Forest, or Secondary Forests, along with the date the forest was regenerated.

A total of 16 NFI plots were established in Secondary Forests. However, only 8 had biomass measurements after regeneration to calculate the MAI (Option 2), and only 3 plots had two measurements to obtain the biomass increment (Option 1). The worksheet "Natural Forest reg removal rate" in the Carbon Densities Tool contains the calculations to obtain the two estimates of the removal factor [1]. The MAI removal (8.97 tdm/ha/yr) was ultimately used for the removal calculation because it had a lower estimation error and was consistent with the peer review estimate made by Joshi et al. in 2021 [1].

Statistics Biomass increment

Opt 1 tdm/ha/yr MAI

Opt 2 tdm/ha/yr

Average 7.27 9.69

Standard deviation 5.82 8.97

n 3 8

CI 9.82 6.01

ERROR% 135% 62%

[1]The updated version of Carbon densities tool (CarbonDensitiesToolV5.xlsx) can be accessed at the following link:

https://docs.google.com/spreadsheets/d/1e3REqxl3Oa7KqpC2vfHEdgZMUeLQ52w/edit?usp=drive_link&ouid=100991295489415488908&rtpof=true&sd=true

[2]Joshi, V. C., Negi, V. S., Bisht, D., Sundriyal, R., & Arya, D. (2021). Tree biomass and carbon stock assessment of subtropical and temperate forests in the Central Himalayas, India. *Trees, Forests and People*, 6, 100147.

<https://doi.org/10.1016/j.tfp.2021.100147>

2 and 5. Reference to the use of Equations 2.15 and 2.16 IPCC 2006.

The ERMN mistakenly stated that equations 2.15 and 2.16 of IPCC 2006 should be used to estimate the removal rate. In reality, the removal rate was directly estimated from the NFI plots by calculating the Mean Annual Increment in plots established in secondary forests (see bullet 1 above). Therefore, it was not necessary to consider the average carbon stocks of forestland and the average carbon stocks in non-forest land to calculate the removal factor (see Box 2 in FCPF Guidance Note for accounting of legacy emissions/removals, March 2021, version 1).

3. A default period of 20 years is considered in the removal calculation.

	A conservative default period of 20 years is assumed for the forest to grow from the carbon stock levels of non-forest to the level of biomass in the average forest. The "Carbon Enhancement Model NF-F" has been updated accordingly. The updated version of the Emission Reduction calculation tool can be accessed at the following link: https://docs.google.com/spreadsheets/d/100Gu__isysou0ekiv8c4xlaVLupQtWvH/edit?usp=drive_link&ouid=100991295489415488908&rtpof=true&sd=true 4. Annual area converted to forest land. The annual area converted to forest land was calculated by dividing the forest gain area in the period by the years of the period.
Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification, this item is addressed. 2. Thank you for the clarification; however, the ERMR still appears to contain the language referenced by the VVB resulting in the issuance of a Round 1 Finding. The ER Program's response indicates that this language was included in error; however, this language still appears in the ERMR it is unclear to the VVB why this occurs. 3. Thank you for the clarification. This finding is closed. However, the VVB notes that other findings have been issued regarding the quantification applying the 20 year default period. 4. Thank you for the clarification. This finding is closed. 5. Pending findings already issued.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with finding 2 and update the ERMR as necessary.
Round 2 Response from Program (25 February 2025)	2. Section 2.2.2 of ERMR and section 8.3.1 of Annex 4 has been edited accordingly.

Aster Findings - Round 3 (26 March 2025)	Although reference to Equations 2.15 and 2.16 has been removed in some of Section 2.2.2, there are still references in the equations within that section (See the two references to Equation 3, 4 and 10).
Round 3 MCAR/mCAR/OBS (26 March 2025)	mCAR: Please clarify the reference to Equations 2.15 and 2.16 where noted.
Round 3 Response from Program (16 April 2025)	The ER-MR has been revised and references to Equations 2.15 and 2.16 have been removed from the ER-MR.
Aster Findings - Round 4 (01 May 2025)	The VVB confirmed references to Equations 2.15 and 2.16 have been removed from Section 2.2.2 of the MR. This item is addressed.
Item	10
Carbon Methodological Framework Version 3, April 2020	Criterion 6: Key data and methods that are sufficiently detailed to enable the reconstruction of the Reference Level, and the reported emissions and removals (e.g., data, methods and assumptions), are documented and made publicly available online. In cases where the country's or ER Program's policies exempt sources of information from being publicly disclosed or shared, the information shall be made available to the third party validation and verification body and a rationale is provided for not making these data publicly available. In these cases, reasonable efforts shall be made to make summary data publicly available to enable reconstruction. (Additional Findings)
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_TAL_integration_MC_V2.xlsx, Nepal_TAL_Integration_tool_SensitivityAnalysis_V2.xlsx, ER-MR

Aster Global Findings (12 May 2024)	1. The activity data and emissions factors are treated independently by the Project while root to shoot ratio is appropriately shared. It is unclear however why the uncertainty associated with carbon fraction is not incorporated as stated in 5.1 of the ER-MR. 1a. Also, assessment of this requirement is pending resolution of whether it is appropriate to exclude the uncertainty associated with biomass allometry. 2. It is unclear if expert opinion was incorporated in the decision to use a truncated normal PDF 3. The Program used the RandTruncNormal function using the average, 90th percent confidence interval and 0 as the lower bound. This function is meant to be supplied with the standard deviation rather than the confidence interval 4. It is unclear why the Results tab Cell C50 in Nepal_TAL_Integration_tool_MC_V2 sources the mean of SimVoi iterations in the Defo Summary tab rather than the median 5. The Program reports their Sensitivity Analysis results in the ER-MR Sec 5.3 and 12.2.3. The set of parameters appear to be disaggregations of the parameters used for the Monte Carlo analysis. It is not clear if this is congruent with the presentation of parameters presented in 12.2. and 5.2.1. The Program used SensIt excel add-in to perform the sensitivity analysis. The VVB was not able to determine the exact procedure used in the Nepal_TAL_Integration_tool_SensitivityAnalysis_V2.xlsx workbook and it does not appear to be the same procedure as used for the Monte Carlo workbook (except that all other sources of uncertainties are held at 0). Specifically, it not clear what "low output" and "high output" values are (e.g. are they min/max or the 90th percentile?) or how these were used to determine high and low estimations of Emission Reductions or percent swing² as these are flat values.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the finding 1 and 1a, updated the ERM as necessary, and all downstream quantification. MCAR: Please clarify in line with finding 2. MCAR: Please clarify the use of the confidence interval instead of the parameters' respective standard deviations as described in Finding 3. MCAR: Please clarify in line with finding 4, updated the ERM as necessary, and all downstream quantification. MCAR: Please clarify in line with finding 5 and provide greater description of the sensitivity analysis as required in the ER-MR and workbook.

**Round 1 Response from
Program
(18 September 2024)**

1. Carbon Fraction uncertainty.

Monte Carlo analysis was updated, including Carbon Fraction uncertainty [1].

1a. Biomass allometry uncertainty.

The Country used a local volume tree equation to estimate biomass. The volume of the tree, which is further converted into biomass and carbon, is calculated using the allometric equation developed by Sharma and Pukala in 1990. There are more than 21 species of trees with specific parameters, along with two additional groups of species found in lower and higher altitudes, each with their respective parameters. The maximum and minimum standard error percentages of the regression model are 9.9% and 5.8%, respectively. The R² of the model for every species is higher than 95% (Sharma and Pukala, 1990). The country has not determined whether the uncertainty from this source is lower than the uncertainty from sampling error. Since the country is unable to include this error source in the Monte Carlo simulation due to a lack of covariance table, the sampling uncertainty of carbon density in different land uses based on the NFI dataset has been increased by 10% at a 90% confidence level using the quadrature approach. The combined error was then included in the Monte Carlo simulation.

2. Use of truncated normal PDF.

In a Monte Carlo simulation, a normal distribution generates simulation values within a range that includes both positive and negative values. However, in certain cases, negative values may be inappropriate because of the quantity being simulated's inherent physical or biological nature. For example, how must be interpreted a negative Activity Data value of deforestation, forest gain, or degradation.

To address this issue, the normal probability density function (PDF) or bootstrap iterations are restricted to strictly positive values in the Monte Carlo simulation to accurately represent the random variation according to physical or biological constraints. This allows for the natural limits of the Emission Factors, Activity Data, and Removal Rates to be taken into account. For example, the truncated normal PDF ensures that the Activity Data values are restricted to only positive values, as negative values are not feasible in this context.

3. Use of Confidence Interval to obtain simulation values.

Nepal uses a sample-based approach to estimate the activity data for deforestation, forest gain, and degradation. The activity data was estimated using the stratified random estimator based on the formulas described by Cochran (1977). According to these formulas, it is not possible to calculate a standard deviation (SD) for the activity data estimate. Instead, the sampling error calculation is based on the standard error (SE), which quantifies the precision of the estimates based on the sample data.

In Monte Carlo simulations, the standard deviation (SD) is commonly used to represent the variability of input parameters. Initially, the country used the 90th percentile confidence interval and the normal probability density function (PDF) formula because no standard deviation was available for the activity data. Later on, the Monte Carlo simulation was updated to utilize the standard error (SE) in the normal PDF functions when no standard deviation (SD) was available [1].

4. Use of the mean to calculate Emission Reduction Confidence Interval.

Monte Carlo analysis was updated, using the median instead of the mean in the ER tab ROW 10007 for the Nepal_TAL_Integration_tool_V5_MC [1].

5. Consistency between tables in sections 5.3/12.2.3 and 5.2.1/12.2.

The consistency between the tables in sections 5.3/12.2.3 and 5.2.1/12.2 has been updated. The table below lists the variables used to calculate ER, grouped by activity data type (deforestation, degradation, and forest gain), emission factors (deforestation and degradation), and removal factors.

Sensit add-in "low output" and "high output" values: Sensitivity analysis was

	updated [2]. The "low output" and "high output" values in the Sensit add-in do not correspond to the minimum or maximum values or 90th percentile. According to the Sensit guide (see section 4.4 and Figure 4.7) [3], the "low output" and "high output" columns correspond to the input values that resulted in the lowest and highest output ER estimate with the variable in the table row. [1] The updated Monte Carlo analysis tool can be accessed at the following link https://docs.google.com/spreadsheets/d/11mM9bnqVLZ6hiFvupfaviTksvHlfpF3u/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true [2] The updated Sensitivity analysis tool can be accessed at the following link https://docs.google.com/spreadsheets/d/1VEQ35wxJIKzawYdcBt5Jn-qXG0sVsp1w/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true [3] https://treeplan.com/wp-content/uploads/Sensit-161-Guide.pdf Parameter included in the model Parameter values Range or standard deviations Error sources quantified in the model (e.g. measurement error, model error, etc.) Probability distribution function Assumptions Range %Error ratio R::S 0.44 0.30 68% 90% Confidence Interval Normal Mean 0.44, SD 1.184 Only values > 0. ratio R::S Grassland 1.887 0.499 26% 90% Confidence Interval Normal Mean 1.887, SD 0.304 CF 0.47 0.020 4% 90% Confidence Interval Normal Mean 0.47, SE 0.0120 CD-natural intact forest 203.84 9.77 5% 90% Confidence Interval Bootstrapping Only values > 0. CD-natural degraded forest 102.77 37.79 37% 90% Confidence Interval Bootstrapping Only values > 0. CD-natural very degraded forest 19.28 11.97 62% 90% Confidence Interval Bootstrapping Only values > 0. CD-grassland 4.07 6.07 149% 90% Confidence Interval Bootstrapping Only values > 0. CD-other land 39.95 53.09 133% 90% Confidence Interval Bootstrapping Only values > 0. CD-settlements 4.07 6.07 149% 90% Confidence Interval Bootstrapping Only values > 0. CD-unshaded cropland 48.69 36.41 75% 90% Confidence Interval Bootstrapping Only values > 0. RF-natural secondary forest gain 16.69 9.41 56% 90% Confidence Interval Normal Mean 16.69, SD 8.97 Only values > 0. RF-plantation forest gain 13.79 9.41 68% 90% Confidence Interval Normal Mean 13.79, SD 8.97 Only values > 0. It is assumed the same SD as Nat Sec forest gain removal rate RF-shaded cropland gain 10.23 2.46 24% 90% Confidence Interval Normal Mean 391, SE 1.50 Only values > 0. AD-Defo_Intact Forest-Grasslands-2004-2014 391 639 163% 90% Confidence Interval Normal Mean 391, SE 389 Only values > 0. AD-Defo_Intact Forest-Other Land-2004-2014 1,564 1,261 81% 90% Confidence Interval Normal Mean 1564, SE 767 Only values > 0. AD-Defo_Intact Forest-Settlements-2004-2014 1,676 2,199 131% 90% Confidence Interval Normal Mean 1676, SE 1337 Only values > 0. AD-Defo_Intact Forest-Unshaded Cropland-2004-2014 4,818 3,983 83% 90% Confidence Interval Normal Mean 4818, SE 2422 Only values > 0. AD-Defo_Degraded Forest-Other Land-2004-2014 3,506 3,672 105% 90% Confidence
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	Interval Normal Mean 3506, SE 2233 Only values > 0. AD-Defo_Degraded Forest-Settlements-2004-2014 2,017 2,748 136% 90% Confidence Interval Normal Mean 2017, SE 1670 Only values > 0. AD-Defo_Degraded Forest-Unshaded Cropland-2004-2014 3,897 3,726 96% 90% Confidence Interval Normal Mean 3897, SE 2265 Only values > 0. AD-Defo_Intact Forest-Other Land-2018-2021 1,627 2,674 164% 90% Confidence Interval Normal Mean 1627, SE 1626 Only values > 0. AD-Defo_Secondary natural forest 2007-other land-2015-2017 1,627 2,674 164% 90% Confidence Interval Normal Mean 1627, SE 1626 Only values > 0. AD-Deg_Intact forest-Degraded forest -2004-2014 5,991 4,120 69% 90% Confidence Interval Normal Mean 5991, SE 2505 Only values > 0. AD-Deg_Intact forest-Very degraded forest-2004-2014 391 639 163% 90% Confidence Interval Normal Mean 391, SE 389 Only values > 0. AD-Deg_Degraded forest -Very degraded forest-2004-2014 1,627 2,672 164% 90% Confidence Interval Normal Mean 1627, SE 1625 Only values > 0. AD-Deg_Degraded forest -Intact forest-2004-2014 7,904 5,553 70% 90% Confidence Interval Normal Mean 7904, SE 3376 Only values > 0. AD-Deg_Very degraded forest-Degraded forest -2004-2014 3,254 3,780 116% 90% Confidence Interval Normal Mean 3254, SE 2298 Only values > 0. AD-Deg_Intact forest-Degraded forest -2018-2021 391 639 163% 90% Confidence Interval Normal Mean 391, SE 389 Only values > 0. AD-Deg_Degraded forest -Very degraded forest-2018-2021 782 900 115% 90% Confidence Interval Normal Mean 782, SE 547 Only values > 0. AD-Deg_Degraded forest -Intact forest-2018-2021 3,505 3,671 105% 90% Confidence Interval Normal Mean 3505, SE 2232 Only values > 0. AD-Deg_Very degraded forest-Degraded forest -2018-2021 1,627 2,672 164% 90% Confidence Interval Normal Mean 1627, SE 1625 Only values > 0. AD-ForestGain_Natural Forest_1983-2003 7,996 5,869 73% 90% Confidence Interval Normal Mean 7996, SE 3570 Only values > 0. AD-ForestGain_Natural Forest_2004-2014 17,136 8,467 49% 90% Confidence Interval Normal Mean 17136, SE 5150 Only values > 0. AD-ForestGain_Natural Forest_2015-2017 3,114 3,615 116% 90% Confidence Interval Normal Mean 3114, SE 2199 Only values > 0. AD-ForestGain_Natural Forest_2018-2021 19,156 8,888 46% 90% Confidence Interval Normal Mean 19156, SE 5406 Only values > 0. AD-ForestGain_Plantation Forest_1983-2003 1,627 2,674 164% 90% Confidence Interval Normal Mean 1627, SE 1627 Only values > 0. AD-ForestGain_Plantation Forest_2015-2017 1,627 2,674 164% 90% Confidence Interval Normal Mean 1627, SE 1627 Only values > 0. AD-ForestGain_Shaded cropland_2015-2017 391 639 163% 90% Confidence Interval Normal Mean 391, SE 389 Only values > 0. AD-ForestGain_Shaded cropland_2018-2021 1,627 2,674 164% 90% Confidence Interval Normal Mean 1627, SE 1627 Only values > 0.
Aster Findings - Round 2 (17 November 2024)	The response from the Program has largely addressed this finding with exception of the following. 1. A post-hoc approach to truncating a normal distribution does not appear appropriate using $=ABS(NORM.INV(RAND(),mean,Sd))$. Per convention, a truncated normal distribution is fit to data rather than fitting a non-truncated distribution and then applying limits as the standard deviation and mean are different under a truncated distribution. 2. The Program explained it is using the standard error. Several of the NORM.INV formulae in the DEFo_Deg_AD tab in Nepal_TAL_Integration_tool_V5_MC use the margin or error rather than standard error. It appears to be in error.

Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify the appropriateness of truncating simulation results from a normal PDF rather than fitting and applying a truncated normal PDF. MCAR: Please ensure that std dev or std error are used rather than margin of error.
Round 2 Response from Program (25 February 2025)	1 It is crucial to note that fitting a PDF function or implementing the bootstrap method is unfeasible when dealing with Activity Data derived from sample-based analysis. Sample-based activity data yields only one value for each transition. Consequently, the Monte Carlo simulation analysis required an assumption of normal distribution. Additionally, the function was truncated to values greater than zero to prevent negative AD values. The table below displays results obtained from the formula $ABS(NORM.INV(RAND(), \text{mean}, Sd))$ compared to the RoundTruncNormal function from the SINVOI add-in, which is designed for truncated normal distributions. With 10,000 simulations, both formulas yield similar results. Additionally, the frequency distributions of $ABS(NORM.INV(RAND(), \text{mean}, Sd))$ and the RoundTruncNormal Excel function closely align (see graph below). The median value and CI from both simulations is nearly identical to the observed figure of 1,563.69 ha $\pm$ 1,260.82 ha for the transition activity data. This evidence indicates that the $ABS(NORM.INV(RAND(), \text{mean}, Sd))$ formula is appropriate for use in simulations with a truncated normal distribution. [Aster Global NOTE: see “Nepal Round 2 Findings - working file.docx” for Table provided as part of Round 2 Response, formatting issues prevent inclusion of table here] Source: PruebaNORMINV.xlsx worksheet accessible at https://docs.google.com/spreadsheets/d/1pHNh4B6Ys7a3RmyRhQ8evodgutT3hTNq/edit?usp=drive_link&ouid=100991295489415488908&rtpof=true&sd=true [Aster Global NOTE: see “Nepal Round 2 Findings - working file.docx” for images provided as part of Round 2 Response, formatting issues prevent inclusion of images here] Source: PruebaNORMINV.xlsx worksheet. 2. Monte Carlos simulation tool has been updated. Simulations in the DEFo_Deg_AD tab now use the standard error in the NORM.INV formulare. The updated Monte Carlo tool (Nepal_TAL_Integration_tool_V6_MC) can be accessed at the following link: https://docs.google.com/spreadsheets/d/1AOT_hd6qw4yVZsGWiQ5MwiwnnZH4l-V4/edit?usp=drive_link&ouid=100991295489415488908&rtpof=true&sd=true
Aster Findings - Round 3 (26 March 2025)	1. The VVB reviewed the demonstration in PruebaNormINV.xlsx. The Program used the mean and standard error from Intact Forest to Other Land as their example. The VVB does not find this distribution to be a useful comparison of absolute-transformed normal distribution samples versus truncated distribution samples, as there is only a 2% chance under these parameters that a value would be 0 or less. Therefore, only 200 observations from 10,000 samples of a normal distribution are expected to be absolute-transformed. Consequently, one would expect very little difference between an absolute-transformed normal distribution versus an untransformed normal distribution versus a normal distribution truncated at 0. However, the VVB used a similar process to investigate the impact of simulating 10,000 realizations from a truncated normal distribution versus an absolute-transformed normal distribution across all cases of deforestation. The VVB found significant differences in the distributions when simulating using a truncated distribution versus simulating from a normal distribution and then absolute-transforming samples. Namely, the VVB found that the Program's approach overstates the variance across samples. This outcome is conservative because it can lead the Program to overstating the overall uncertainty of the estimate of emission

	reductions. Closed 2. The VVB confirms the cell referencing was corrected in the revised Nepal_TAL_Integration_tool_V6_MC.xlsx Closed.
Item	11
Carbon Methodological Framework Version 3, April 2020	- Definition of classes of forests, (e.g., degraded forest; natural forest; plantation), if applicable;
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Interpretation_Key_25april2023 (https://docs.google.com/document/d/1z-jMtUqBjFt9z7atHKv2kr9nt6r57eS7/edit?usp=drive_link&oid=101304895378504185754&rtpof=true&sd=true), ERM

Aster Global Findings (12 May 2024)	1. The VVB reviewed the Interpretation_Key_25april2023.docx and notes that all forest classes used within the ER Program are not defined within this document and do not appear in the ERM. 2. The Interpretation_Key_25april2023.docx defines Unshaded Cropland (TCC 10% or less) as "This is agricultural areas or fields in which little trees area scattered, usually area has less than and equal to 10 percent canopy cover of trees." Since the word "usually" is used, it is unclear to the VVB if there can be unshaded cropland that contains TCC >10%. 3. The Interpretation_Key_25april2023.docx defines a forest type called "natural forest or planted native forest"; however, this forest type does not appear to be used by the ER Program. It is unclear to the VVB why this occurs. 4. The Interpretation_Key_25april2023.docx defines tree-shaded-cropland / silvopasture as "The term "tree-shaded cropland" refers to agricultural fields or farmland that has trees deliberately placed or interspersed throughout to offer shade and other advantages to the crops cultivated there. This practice combines elements of traditional farming with agroforestry, which is the intentional integration of trees and shrubs into agricultural systems." It is generally unclear to the VVB how the ER program determines whether or not "trees" have been "deliberately placed." While this document is linked in the ERM, the VVB is issuing an observation to include the definition of all classes both forest and non-forest in the ERM to improve the cohesiveness of the document. 5. The ERM states "During the compilation process, land-use interpretation points with impossible transitions are identified and sent back to the interpreter for review until the compilation process detects no inconsistencies." However, the ERM contains no information on what these "impossible transitions" are and is requesting a clear presentation of the these impossible transitions.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the Finding provide supporting evidence to demonstrate compliance with this requirement. OBS: The VVB is issuing an observation to include the definition of all classes both forest and non-forest in the ERM to improve the cohesiveness of the document.

Round 1 Response from Program (18 September 2024)	1. Forest Class Definition. The link to the updated interpretation key is: [1] https://docs.google.com/document/d/1IVVCtC19JiZx48e4SMhKZB3dwBlu6z0a/edit?usp=drive_link&oid=113437415151435538893&rtpof=true&sd=true 2. Unshaded Cropland with TCC more than 10%. The Tree Canopy Cover (TCC) $\leq 10\%$ is considered as the unshaded cropland. However, in certain cases, where $TCC > 10\%$ are identified using high-resolution satellite imagery, the supporting visual evidence is analyzed to classify whether the land use is 'unshaded cropland' or not. The updated interpretation key has a revised definition of the Unshaded Cropland, and the link is in [1]. 3. Forest Type - "Natural forest or planted native forest" This forest type is only used to analyze and attribute whether the forest gain is through natural forest or through plantation. The major forest types used in the ER are permanent and secondary forests. 4. Tree-shaded Cropland/Silvopasture and inclusion of a definition of all classes of both forest and non-forest in the ERMR The interpretation key has used the definition of the tree-shaped cropland/silvo pasture to better delineate and understand the forest transitions. The trees may or may not be deliberately placed. The definitions of all classes of both forest and non-forest are included in the ERMR. 5. Impossible transitions during land-use interpretation Using a requirement in R, a quality control search is used to find impossible transitions that do not meet our logic requirement. This refers to sequential events that do not make sense between forest changes indicated in the three time periods or do not make sense with the land covers indicated in each time period. For example, a forest gain event could not have occurred in period 2 if period 1 already had a land cover of the forest. This requirement is using the answer to the survey question "Is this answer different from the label in (previous period)", and the questions about "Forest in (current time period)" and "Forest in (previous time period)". Logic requirements (all other transitions would be flagged as logically impossible and requiring correction) Explanation An answer of "No - consistent land cover of forest or non-forest" requires the previous LC and the current LC to be the same. It is impossible to have a stable forest or stable other LC type if the LC labels for period A and period B are different. An answer of "Yes - forest was GAINED..." requires the previous LC to be non-forest and the current LC to be a forest. Tree densification does not count as a forest gain; it must be a conversion of LC from non-forest to forest. An answer of "Yes - forest was LOST..." requires the previous LC to be forest and the current LC to be non-forest. A degradation of trees does not count as a forest loss, as it requires a change in land cover from a forest to a non-forest If any of these requirements are not met, an 'impossible transition' has occurred, and the QA/QC team reviews the sample plot to make sure the marked events make sense with the marked LC types. [1] https://docs.google.com/document/d/1IVVCtC19JiZx48e4SMhKZB3dwBlu6z0a/edit?usp=drive_link&oid=113437415151435538893&rtpof=true&sd=true
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Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification. The VVB reviewed the updated ERMR and confirmed that the additional classes have been defined and it is consistent with the updated interpretation key. This finding is closed but the VVB notes that the ER Program may need to update the ERMR and interpretation key based on other findings issued by the VVB. 2.. The VVB reviewed both the Interpretation_Key_25april2023.docx and the Copy of Interpretation_Key_Revised_Nepal_FCPF and the revised definition does not appear to have been updated. 3. Thank you for the clarification. This finding is closed. 4. The ER Programs response states "The trees may or may not be deliberately placed."; however, this statement is not congruent with the definition stated in the Interpretation key and ERMR. It is unclear to the VVB why these two statements are not congruent. The OBS has been addressed. 5. Thank you for the clarification. This finding is closed.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with findings 2 and 4 and provide updated program documentation and quantification documents. .
Round 2 Response from Program (25 February 2025)	2. Unshaded Cropland with TCC more than 10%. Thank you for the comment. The team reviewed the definition, first round of response and has now updated the definition of “unshaded cropland”. The revised definition of “Unshaded Cropland” is as follows: “This is agricultural areas or fields in which little trees are scattered, and the area has less than and equal to 10 percent canopy cover of trees.” 4. Definition of Tree-shaded Cropland/Silvopasture not congruent in the Interpretation Key and ERMR. The definition of ‘Tree-shaded cropland/silvopasture’ has been updated in the interpretation key and ERMR. The updated definition of ‘Tree-shaded Cropland’ is as follows: “The term "tree-shaded cropland" refers to agricultural fields or farmland that have trees that may or may not have been deliberately placed or that are interspersed throughout the agricultural fields or farmland to offer shade and other advantages to the crops cultivated there. This practice combines elements of traditional farming with agroforestry, which is the intentional integration of trees and shrubs into agricultural systems.”
Aster Findings - Round 3 (26 March 2025)	2. The VVB confirmed that the definition has been revised appropriately in the interpretation key document. However, the definition does not appear to have been updated in ER-MR definition section 8.2. 4. The VVB confirmed that the definition has been revised appropriately. This item is closed.
Round 3 MCAR/mCAR/OBS (26 March 2025)	2. MCAR: Please make the necessary revisions.

Round 3 Response from Program (16 April 2025)	The definition of "Unshaded Cropland" has been updated in the ER-MR.
Aster Findings - Round 4 (01 May 2025)	The VVB confirmed the definition of "unshaded cropland" has been updated in Section 8.2 of the ERM. This item is addressed.
Item	12
Carbon Methodological Framework Version 3, April 2020	- Choice of activity data, and pre-processing and processing methods;
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ER-MR, https://drive.google.com/drive/folders/1oMjfeDERNpJarcloG9F2UJ2OAMCvHFBL , Nepal_TAL_AD_tool_v2.xlsx
Aster Global Findings (12 May 2024)	1. The VVB reviewed the Nepal_TAL_AD_tool_v2.xlsx workbook and tried to apply the 6 logic rules described in Section 2.2 of the MR and was unable to confirm the results in the GEEcombo_strata_readable column of the CompiledData_CEO_GEE (7) tab. For example, plotid 1a has been identified by the CCDCSMAstrata as 3 which appears to be equal to "GAIN" and thus per the aforementioned rules should be classified as gain; however, this plot is classified as "DEG". Similarly, the VVB noted that there do not exist any plots in which all algorithms labeled the pixel as Forest; however, there appear to be plots that are classified as "Forest." 2. The VVB understands that the pixel size for all 4 algorithms is 30x30 meters and that the CEO AD sampling unit is 70x70 meters. As a result, it is unclear to the VVB how the results of the Agreement map are mapped to the CEO AD sampling units since the areas of interest are different sizes. 2a. Additionally, it would see that a single CEO AD sampling point could straddle multiple strata and it is unclear to the VVB how this situation would be handled. 3. The VVB reviewed the FCPF-Activity_script_v4.R; however, the VVB was unable to run the script as the VVB was unable to find nor reproduce the required inputs for the referenced script. Please provide the referenced input files necessary to run the FCPF-Activity_script_v4.R. 3a. Additionally, please clarify if the FCPF-Activity_script_v4.R script is intended to be made public. 4. The VVB reviewed the FCPF-Activity_script_v4.R and it is unclear to the VVB if the process for making the agreement through the combination of the four different algorithms (as described in Table 8) occurs in the FCPF-Activity_script_v4.R. If yes, please clarify for the VVB where this occurs in this script. If the construction of the agreement map does not occur within this script please provide the script of where this occurs. 5. The VVB reviewed the FCPF_2004_2021_TAL_clipped_Agreement.tif and noted that there are values of 0 within this file, it is unclear to the VVB why this occurs and



	how this is incorporated into the downstream analysis as the value of 0 does not appear to be defined as strata within the ERMR.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings noted. Please make all necessary corrections, update the downstream calculations, and update the ERMR as necessary.

**Round 1 Response from
Program
(18 September 2024)**
1. GEEcombo_strata_readable definition.

It is assumed that the original file copied into the Drive had issues with the labels for the individual readable map strata. None of these issues are seen in the final file.

There are several data rows where the four strata are marked as stable-forest, and thus the GEEcombo_strata is marked as stable-forest. It is recommended to look at the 'readable' columns at the end of the dataset rather than the numbers for the strata for each map, as they switch between each algorithm and are difficult to interpret quickly. A summary of the individual map strata values is below.

Map Stable Forest Stable Non-forest Degradation Deforestation Reforestation

Agreement 5 4 1 2 3

MTDD 1 4 2 3 5

LandTrendr 1 4 2 3 5

CCDC-SMA 3 4 1 2

CODED (gui) 1 2 4 3

*5 for CODED unknown

2 and 2a. Strata assigned to the CEO plot. The strata assigned to the CEO plot correspond to the strata value from a single point of a 30x30 m pixel in the stratification map (Agreement Map). Since a 70x70m plot size is used in CEO, we recognize that this could potentially lead to errors of omission or commission in the final confusion matrix. However, this error will be accounted for in the confidence interval and error estimate, and will therefore be reflected in the overall uncertainty through Monte Carlo analysis.

3 and 3a. Inputs to run UPDATED_FCPF-

Activity_script_v14_remadefromARTTREESv9version.R. A final version of the script will be shared (associated input scripts are in the host folder and data subfolder), and this can be shared publicly for the purposes of reporting. There is a README file in that folder as well that should be followed before running the input files through R. However, the R-script has a limited use case, so it is not intended or beneficial to be shared widely for reuse. Recent and future improvements to the CEO may soon eliminate the need for this data-cleaning process to be performed externally by the CEO. Recent improvements enforce the logical arguments directly within the survey. Future improvements will report rates of interpreter disagreement and not allow grids of points to have different survey responses accidentally.

4. Process for making the agreement through the combination of the four different algorithms. The combination of the four different algorithms does not occur in the FCPF-Activity_script_v4.R. The agreement map is created in GEE. A GEE repository can be provided. It is also described in the workshop website and in the SOP for the sampling design.

5. Zero values in the Agreement Map. The only 0 values can be found in the area outside the Accounting Area of the ER-P.

Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification. The VVB reviewed the https://training.sig-gis.com/NEPALworkshopAE/ reference included in the ERM which links to this file https://docs.google.com/document/d/1KUUDM_9KaykxP0cW28JfAnuwnOmkdAY_BLEgByFm-yLE/edit?tab=t.0 and noted that this source describes the LandTrendr model as only having 4 values. This information appears to contradict the information provided in the ER Programs response. 2. Thank you for the clarification, the VVB agrees with the ER Program. This finding is closed. 2a. Please clarify the approach that was used when CEO point stratifies multiple classes derived from the various algorithms. 3/3a. Thank you for the clarification. This finding is closed. 4. Thank you for the clarification. Please provide a written summary of logic as applied in GEE script (Agreement_v3_nocombo). 5. Thank you for the clarification. This finding is closed.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with findings 1 , 2a, and 4 and provide the additional requested files and as necessary provide updated program documentation and quantification documents.

Round 2 Response from Program
(25 February 2025)

1. This data dictionary was correct at the time of the original workshop, but the LandTrendr tool was later improved to include another strata of Forest Gain. This only includes the test files used for the workshop, on a small AOI. The updated data dictionary for FCPF work is here:
https://docs.google.com/document/d/1KUDM_9KaykxP0cW28JfAnuwnOmkdAY_BLEgByFm-yLE/edit?tab=t.0. This is a living document that is added to over time. You can see the correct strata values in the table labeled “Map values for classes for each map result”. — I added a link to this living document in the file present on the website, explaining this discrepancy.

2a. If you are asking about what happens when there are multiple pixels in the 70mx70m CEO plot with different strata, then please always refer to the central point. The strata values are extracted for the data at a point location, which is then displayed as a larger square plot in CEO for interpretation. The data points are not locked to the center of a pixel, but instead have the opportunity to be located anywhere within the map. Note the original stratification map was based on Landsat, but the imagery used for interpretation has a range of pixel sizes, which is why we do not perform analysis on a pixel-basis as much as possible.

If you are asking what strata is used to allocate the points in CEO when the different algorithms indicate a different label (e.g. some forest loss and some stable forest), refer to the final aggregate map strata which is generated based on a series of rules that summarize the strata from the four separate algorithm maps.

From the living data dictionary for FCPF work:
https://docs.google.com/document/d/1KUDM_9KaykxP0cW28JfAnuwnOmkdAY_BLEgByFm-yLE/edit?tab=t.0.

“The following rules were applied to get strata based on the labels of the 4 algorithms.

- GAIN trumps all others
- if DEG and LOSS equal, LOSS trumps
- if more DEG than LOSS, label DEG
- if more LOSS than DEG, label LOSS
- all 4 labels are Forest, label Forest
- all 4 labels are Nonforest, label Nonforest”

To further clarify, from the question “CEO point stratifies multiple classes derived from the various algorithms”, this statement may be a misunderstanding. The algorithms result in strata, these are aggregated into summary strata in the ‘agreement map’ that is used for stratification, then points are randomly allocated within these strata, and interpreted in CEO. CEO does not stratify the classes or impact the algorithms.

4. See the rules from the living data dictionary for FCPF work:
https://docs.google.com/document/d/1KUDM_9KaykxP0cW28JfAnuwnOmkdAY_BLEgByFm-yLE/edit?tab=t.0.

“The following rules were applied to get strata based on the labels of the 4 algorithms.

- GAIN trumps all others
- if DEG and LOSS equal, LOSS trumps
- if more DEG than LOSS, label DEG
- if more LOSS than DEG, label LOSS
- all 4 labels are Forest, label Forest
- all 4 labels are Nonforest, label Nonforest”

I believe you have the current GEE scripts, but here is the repo link:
https://code.earthengine.google.com/?accept_repo=users/cwespestad_SIG/Nepal_

	WorkshopScripts_2024. And the direct link to the agreement GUI script(1_MakeAgreementMap_Nepal_nocombo): https://code.earthengine.google.com/267d4c0c58d1ee3cdf9f1c811c957e58 and the related api script (Agreement_v3_nocombo): https://code.earthengine.google.com/7d828eb1728509d2d0d30529284bf388.
Aster Findings - Round 3 (26 March 2025)	1. Thank you for the clarification. The VVB reviewed the updated data dictionary provided and determined that this item is addressed. Item closed. 2a. Thank you for the detailed clarification. The VVB is reasonably assured that this item is addressed. Item closed. 4. Thank you for the detailed explanation. The VVB determined this item is addressed. Item closed.
Item	13
Carbon Methodological Framework Version 3, April 2020	- Choice of emission factors and description of their development;
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ERM, Sharma and Pukkala, 1990

Aster Global Findings (12 May 2024)	The VVB reviewed the ERMR and the referenced Sharma and Pukkala, 1990 paper and noted that the paper references both minimum and maximum DBHs for which the presented allometric models are valid. It is unclear to the VVB how this has been considered in the development of the emissions factors.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings noted. Please make all necessary corrections, update the downstream calculations, and update the ERMR as necessary.
Round 1 Response from Program (18 September 2024)	1. Minimum and maximum DBH in Sharma and Pukkala, 1990. The minimum and maximum DBHs for the sample plots are mostly within the DBH range provided by Sharma and Pukkala. Therefore, the allometric models of Sharma and Pukkala have been used to develop the Emission Factors.
Aster Findings - Round 2 (17 November 2024)	1) Thank you for the clarification; however, the ER Programs response does not address the VVB's concern and the ER Program has provided no information to demonstrate that the use of these equations is appropriate. The VVB maintains that it is inappropriate to apply these allometric equations to trees with DBHs outside of these ranges. 2) The VVB reviewed the package of R files in 00_MRC_14july2024. a) Generally, the Program has applied Sharma and Pukkala's equations strictly within Equations.csv. For example, the equation for <i>Acacia catechu</i> is applied only to <i>Acacia catechu</i> and not to other species within the genus (e.g. <i>Acacia pennata</i>). However, Equations.csv applies <i>Abies pindrow</i>'s equation for <i>Abies spectabilis</i> and <i>Michelia champaca</i>'s equation for <i>Michelia kisopa</i> and <i>Michelia velutina</i>. The VVB referenced Harvard's Flora of China and the <i>Abies</i> and <i>Michelia</i> species appear to be distinct, separate species and not synonyms. b) In <code>Tree_analysis_MRV.R</code>, <code>data_equation <- data_equation %>% mutate(USED._HT = ifelse(USED._HT2 > 40, Pre_ht, USED._HT2))</code>, it is unclear why trees with heights above 40 m, including those that are measured in the field (i.e. <code>tree_sample</code> type of 1 or 2), use the predicted heights. c) The ER-MR states "The species-specific wood density is referenced from Table 1 of Sharma and Pukkala, 1990. [Sharma_and_Pukkala_1990_Volume_equations_and_biomass_prediction_of_forest_trees_of_Nepal.pdf]". However, that paper does not contain wood densities for Miscellaneous in Hills and Miscellaneous in Terai. It is unclear how wood densities of these species were sourced. d) The VVB is unable to verify the branch and foliage ratio coefficients. These are described in Sharma and Pukkala as sourced in the Master Plan but not listed. e) The purpose of <code>"data_equation <- data_equation %>% mutate(b_ratio_final = ifelse(crown_class == 7, b_ratio*0.75, ifelse(crown_class == 8, b_ratio*0, b_ratio*1)))"</code> is unclear as it is not described in <code>FRA_data_analysis_manual_2021.pdf</code> f) The logic behind <code>"data_equation <- data_equation %>% mutate(volume_BA_tree = BA_tree_sqm*USED._HT*0.7)"</code> is unclear as it is not described in <code>FRA_data_analysis_manual_2021.pdf</code> g) <code>FRA_data_analysis_manual_2021.pdf</code> states "Volume ratio is 1 for all normal trees and is less than 1 for all top broken trees". It is unclear why stumps receive a volume ratio of 1. It is unclear why trees other than crown class 6 (top broken trees) had volume ratios less than 1 in <code>MRV_tree_data_with_V_ratio</code>. The VVB is unable to independently recalculate volume ratio for trees with a value less than 1. h) The VVB is unable to reconstruct carbon stock in <code>tree_data_2013_updated_8Aug</code> using <code>00_MRC_14july2024</code>.

Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please address in line with the finding and update the project documentation and ER quantification as necessary. MCAR: Please explain why the equation for <i>Michelia champaca</i> is applied to <i>Michelia kisopa</i> and <i>Michelia vultina</i>, and why <i>Abies pindrow</i>'s equation is applied to <i>Abies spectabilis</i>. MCAR: Please clarify why heights were modified when over 40 m. MCAR: Please revise the ER-MR to adequately describe the sourcing of wood densities. MCAR: Please provide the Master Plan with Appendix Table 2.3. MCAR: Please clarify the additional calculation related to branch and foliage ratios for crown classes 7 and 8. MCAR: Please clarify with respect to the calculation of volume_BA_tree. MCAR: Please provide calculations of volume ratio. MCAR: Please provide calculations for tree biomass for the plots measured in tree_data_2013_updated_8Aug.
Round 2 Response from Program (25 February 2025)	1. Allometric equations of Sharma and Pukkala not appropriate for trees with DBHs outside of these ranges. The majority of the trees' DBHs of sample plots under the ER program are within the ranges specified under Table 1 of Sharma and Pukkala. The number of trees with DBHs that are outside of the ranges as per Sharma and Pukkala are outliers (1,758 out of 10,649 total trees are seen as outliers). Therefore, the use of allometric models and equations of Sharma and Pukkala is appropriate for the ER program. In addition, the equations provided by Sharma and Pukkala have been widely used as official national equation in Nepal. Until new equations are available, the current ones best represent the forests of Nepal to the best of the team's knowledge, despite some limitations. Furthermore, on a national scale, the impact of using different allometric equations, including pantropical ones, has been shown to have minimal effect on plot-level forest AGB, except in stands with very high biomass, such as those with Brown Oak. https://www.sciencedirect.com/science/article/abs/pii/S0378112723009131 2a. Equations.csv applies <i>Abies pindrow</i>'s equation for <i>Abies spectabilis</i> and <i>Michelia champaca</i>'s equation for <i>Michelia kisopa</i> and <i>Michelia velutin</i>. The ER program team reviewed the tree_data_2022.xlsx file and tallied it with the field data sheet and has following observations: Observation 1. The team found that the two trees, one from Plot Number 51-51-5 (Tree Number 3) and other from Plot Number 52-51-6 (Tree Number 4) had been inadvertently labelled as <i>Abies pindrow</i> and <i>Abies spectabilis</i> respectively. The team has correctly labelled the tree species of Plot Number 51-51-5 (Tree Number 3) as <i>Adina cordifolia</i> and tree species of Plot Number 52-51-6 (Tree Number 4) as <i>Acacia catechu</i>. Observation 2. The team found that the two trees, one from Plot Number 16-79-3 (Tree Number 2) and other from Plot Number 105-36-6 (Tree Number 11) had been inadvertently labelled as <i>Michelia champaca</i> and <i>Michelia velutina</i> respectively. The team has correctly labelled the tree species of Plot Number 16-79-3 (Tree Number 2) and Plot Number 105-36-6 (Tree Number 11) as <i>Streblus asper</i> (species code 6641). The allometric equation has used the equation of "Miscellaneous Terai" as per Sharma and Pukkala, 1990. 2b. In Tree_analysis_MRV.R, The ER program found some trees' heights typos, mistakes in data entry like 102 for

	10.2 and 71 for 7.1. So the script <code>USED._HT = ifelse(USED._HT2 > 40, Pre_ht, USED._HT2)</code> was developed to avoid those errors by better using the model (predicted) heights. But now, during the second round revisions, the ER program has corrected the issues related to tree height data entry mistakes and finally removed the above script. 2c. Species-specific wood densities for Misc Hills and Misc Terai The ER-MR states "The species-specific wood density is referenced from Table 1 of Sharma and Pukkala, 1990. [The paper does not contain wood densities for Miscellaneous in Hills and Miscellaneous in Terai. It is unclear how wood densities of these species were sourced. The ER program has uploaded an excel file "Density Clarification.xlsx" with detail clarifications: https://docs.google.com/spreadsheets/d/197-519-DYs_HipuC-VV5xeKfjrCd-r84/edit?gid=1282810174#gid=1282810174 2d. Listing MPFS (scanned full document) The VVB is unable to verify the branch and foliage ratio coefficients. These are described in Sharma and Pukkala as sourced in the Master Plan but not listed. 2e. Branch ratio for dead trees The purpose of <code>"data_equation <- data_equation %>% mutate(b_ratio_final = ifelse(crown_class == 7, b_ratio*0.75, ifelse(crown_class == 8, b_ratio*0, b_ratio*1)))"</code> is unclear as it is not described in <code>FRA_data_analysis_manual_2021.pdf</code> The FRA data analysis manual and the "Tree_analysis_MRV.R" scripts are both primarily based on that designed for Nepal's National FRA data analysis. But in the MRV calculations, we have performed calculations only for live trees excluding the dead trees, see script # 27 <code>"data_equation <- subset(data_equation, crown_class < 7)"</code>. Thus, the aforementioned script is not applicable in the MRV context, however, we have updated the FRA data analysis manual as well. 2f. Use of optimum form factor 0.7 for cross verification of calculated volumes from allometric models The logic behind <code>"data_equation <- data_equation %>% mutate(volume_BA_tree = BA_tree_sqm*USED._HT*0.7)"</code> is unclear as it is not described in <code>FRA_data_analysis_manual_2021.pdf</code> The number (form factor = 0.7) used in the script is the maximum value of form factor used for validation during calculating tree volume. According to Petrin and Bogdanov (2017)[Petrin, R., & Bogdanov, K. (2017). Comparative investigations of the form factor for different tree species. Uniform average form factor. Management and Sustainable Development, 63(2), 1-6.], the form factor of commercial tree species typically ranges from 0.473 to 0.567. This study provides reliable reference values to minimize the risk of overestimating tree volume when applying allometric equations. In the context of FRA data analysis, the form factor 0.7 was chosen as a conservative estimate to ensure that the volume calculated using allometric equations does not overestimate the actual volume. This approach is felt as an important step when applying equations developed by Sharma and Pukkala (1990), which were based on a specific range of sample tree diameters at breast height (DBH). When these equations are used for trees with DBH values outside the original sample range (extrapolated values), the volume estimates can deviate significantly. However, it is important to note that the volume calculated using the form factor-based formula is used only to verify whether the volume calculated from the allometric equation exceeds a reasonable threshold. This step provides an additional layer of validation to ensure that the estimates remain accurate and do not result in inflated volumes due to the extrapolation of DBH values beyond the original dataset.
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	By employing this conservative form factor, we aim to maintain the reliability of volume estimates while mitigating potential errors from extrapolated data. The FRA_data_analysis_manual_2021.pdf has also been updated accordingly! 2g. Why stumps receive a volume ratio of 1 During FRA calculations, we used total volume of stumps to calculate tree volume removals from the forests. However, the aforementioned script is not applicable in the MRV context since we took only live trees (crown class 1 to 6) >> see script # 27 “data_equation<-subset(data_equation, crown_class < 7)”. It is unclear why trees other than crown class 6 (top broken trees) had volume ratios less than 1 in MRV_tree_data_with_V_ratio. Volume ratio were calculated to further calculate the intact tree volumes. Case I : For normal trees (with tree top, not broken > crown class 1 to 5), volume ratio = 1. Case II : For top broken trees (crown class 6, 7, 8), volume ratio < 1. The ER program further suggests VVB to follow Annex 3 of FRA_data_analysis_manual_2021 or see Heinonen, J., Saramäki, J., & Sekeli, P. M. (1996). A polynomial taper curve function for Zambian exotic tree plantations. Journal of Tropical Forest Science, 8(3): 339-354. to independently recalculate volume ratio for trees. 2h. Reconstruct the carbon stock in tree_data_2013_updated_8Aug using 00_MRC_14july2024 The MRV team checked and updated the file tree_data_2013_updated_8Aug as ‘calculated_tree_data_2013_updated_feb20’ in a new folder named “Biomass_data_2013” folder. The link to the updated file as follows: https://drive.google.com/drive/folders/1vxkLA7L-iZnFbp-soq3roEG5igApuoBP The link to the folder is as follows: https://drive.google.com/drive/folders/1vxkLA7L-iZnFbp-soq3roEG5igApuoBP The MRV team has included the R-script ‘Tree_analysis_2013.R’ and ‘updated_tree_biom_data_feb202025.Rproj’ for the ease of VVB’s reference to reconstruct the carbon stock in ‘calculated_tree_data_2013_updated_feb20’ file. These files are in the “Biomass_data_2013” folder. The link to the folder is as follows: https://drive.google.com/drive/folders/1vxkLA7L-iZnFbp-soq3roEG5igApuoBP
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Aster Findings - Round 3 (26 March 2025)	1) Although Sharma and Pukkala do state the allometric models are not valid outside of the DBH ranges listed in Table 1 of their article, affecting ~17% the VVB recognizes that the Program's statement that the article represents the best available science and the VVB's search did not identify other applicable articles. Additionally, the VVB recognizes that allometry as a source of uncertainty in the ERMR is elevated, which does capture some of the uncertainty associated with extrapolating the allometric equations to larger diameter trees. 2a) It remains unclear why all Abies and Michelia species are assigned to species specific equations from Sharma and Pukkala. However, for other genera, only the specific species is assigned the species-specific equation (only Acacia catechu is assigned the Acacia catechu equation while other Acacia species are not; only Cassia fistula is assigned the Cassia fistula equation while other Cassia species are not; Hymenodictyon excelsum is assigned to the Hymenodictyon excelsum equation, while other Hymenodictyon species are not, etc.). 2b) The Program performed additional QA/QC to correct erroneous heights and now has removed the code which caps heights at 40 m. The VVB finds this to be an improvement and did not identify additional outliers. Closed. 2c) Thank you for providing 'Density Clarification'. 2c(1): The VVB notes that the ER-MR still states that Sharma and Pukkala is the source paper; however Density Clarification reveals that DEVAGIRI et al is the source paper. please correct. 2c(2): It is unclear how DEVAGIRI was used to populate the wood density in the 2022 tree list. For example, 'Density Clarification' states that the wood density of any Bauhinia species is 675 kg/m³. For example, 'Density Clarification' lists 700 kg/m³ wood density for Bauhinia spp. As a second example, Terminalia tomentosa does not have a specific gravity in 'Density Clarification' but a wood density of 900 is used, As a third example, Syzygium cumini has a wood density of 760 in Density Clarification but the value 770 is used instead. 2d) The VVB is unable to verify the branch and foliage ratio coefficients. These are described in Sharma and Pukkala as sourced in the Master Plan but not listed. 2e) Thank you for the clarification. Closed. 2f) Thank you for the clarification. Closed. 2g) Thank you for the clarification. Closed. 2h) Thank you for the revised Tree_analysis_MRV.R. Note it still is not reproducible. For example, Tree 11-73-1 has a preht of 8.58 and a height of 102. The VVB is confident that the provided output from this script used a height of 8.58 for the volume equation even though the following line would have resulted in a height of 102 being used to calculate volume: <pre>data_equation <- data_equation %>% mutate(USED_HT1 = ifelse(crown_class==6,ifelse(Pre_ht<height,height*1.1,height), ifelse(is.na(height),Pre_ht,height)))</pre> Consequently, the tree-level volumes and carbon stock output in mrv_analysis_2022 are different than was provided. for example, Tree 6-76-3=1 has a dbh of 72.2 and a height of 26.5 (and a Pre_ht of 21.3, and an hpred of 26.806). However, the ht used by the Program for this tree was 29.15. It is unclear where this height comes from.
Round 3 MCAR/mCAR/OBS (26 March 2025)	MCAR: Please clarify how Sharma and Pukkala equations are mapped to species not listed in Sharma and Pukkala, with specific reference to Abies and Michelia species MCAR: Please revise the ERMR to explain how wood densities were sourced. MCAR: Please clarify how Density Clarification.xlsx was used to assign wood densities to individual trees. MCAR: Please provide the Master Plan with Appendix Table 2.3. MCAR: Please provide a working Tree_analysis_MRV.R that clearly explains how

	heights for trees are selected, including whether height values do not match measured or predicted heights.
Round 3 Response from Program (16 April 2025)	1 Sharma and Pukkala equations: During the second round of responses to Aster Global's comments, this issue had been solved. The Abies species (2 trees) were initially misinterpreted (typos during the data entry) and later corrected in the final dataset (MRV tree data). Furthermore, for Michelia species, we have its own allometric equation (Sharma and Pukkala) which has been used during the volume estimation. 2 Wood densities sources: Besides Sharma and Pukkala and Masterplan for forestry sector, wood densities for rest of the species were also taken from an Indian research (Devagiri et al, 2013). Devagiri, G. M., Money, S., Singh, S., Dadhawal, V. K., Patil, P., Khaple, A., ... & Hubballi, S. (2013). Assessment of above ground biomass and carbon pool in different vegetation types of south western part of Karnataka, India using spectral modeling. Tropical Ecology, 54(2), 149-165. 3. Wood densities / Density Clarification.xlsx: For individual trees, we used all available wood specific densities sourced from Sharma and Pukkala and Masterplan for forestry sector, and Devagiri et al, 2013. For rest of the species, how we used the density has been elaborated in Density Clarification.xlsx: https://docs.google.com/spreadsheets/d/197-519-DYs_HipuC-VV5xeKfjrCd-r84/edit?usp=sharing&oid=101304895378504185754&rtpof=true&sd=true. 4 Master Plan with Appendix Table 2.3: Master Plan with Appendix Table 2.3 can be accessed at the following link https://drive.google.com/file/d/12FGaJnNuMBB1zMJEoqSNexfYvW451uvH/view?usp=sharing 5 Working Tree_analysis_MRV.R: All scripts and required files (including the data) are updated and located in the shared folder: https://drive.google.com/drive/folders/1PjGk4otWt-S5gmFZy1STkylbtgulLnGS?usp=sharing

Aster Findings - Round 4 (01 May 2025)	The VVB has determined that the 21 species use values from Sharma and Pukalla. 182 species use the average of wood densities from a list of species and their respective wood densities, extracted from Devagiri, and 6 species use species-specific wood densities from the Nepal Master Plan. The VVB infers the following: 1) There is clear preference from using wood densities from Sharma and Pukalla. For example, values of wood density for <i>Anogeissus latifolia</i> are 880, 780, and 900 from Sharma and Pukalla, Devagiri, and the Master Plan, respectively. Where any 'non-miscellaneous' species has conflicting values between the three sources, the value from Sharma and Pukalla is used. 2) If there is no value for a "non-miscellaneous" species in Sharma and Pukalla, then a value from the Master Plan is used, if available (e.g., <i>Betula utilis</i>) 3) Even if a "miscellaneous" species has a species-specific wood density in Devagiri, the composite wood density of 674 (an average wood density of a list of species belonging to the misc list) is used. If these are in fact the correct rules (note that the explanation in Density Clarification is not comprehensive, so the VVB must infer), it is unclear how the following are treated: <i>Myrica</i> spp is given a value of 750, which comes from the value of <i>Myrica esculenta</i> in the Nepal Master Plan. It is unclear if this is or is not considered a 'Misc species' and should have a value of 674 instead of assuming that all <i>Myrica</i> spp have the value of 750. <i>Rhododendron</i> spp is given a value of 640, which comes from the value of <i>Rhododendron arboreum</i> in the Nepal Master Plan. It is unclear if this is or is not considered a 'Misc species' and should have a value of 674 instead of assuming that all <i>Myrica</i> spp have the value of 750. Lastly, it is unclear how "In the list" or "out of the list" was determined in Density Clarification. It appears to exclude species not within Nepal. However, <i>Diospyros</i> spp was measured in the plots but is listed as 'out of the list'.
Round 4 MCAR/mCAR/OBS (01 May 2025)	MCAR: Please provide very clear rules for how wood densities were assigned using the different sources. MCAR: Please clarify why species-specific wood densities from Devagiri were not used when available. MCAR: Please clarify which species are considered 'miscellaneous' and how that was determined. MCAR: Please clarify why in some cases (e.g., <i>Myrica</i>) one species-specific wood density is used to impute the wood densities of all species in that genus, while the same is not done for other species, e.g., <i>Terminalia bellirica</i> has no species-specific wood density, but the wood density for <i>Terminalia tomentosa</i> is not used. MCAR: In the previous round, the ERM was not revised to give the sources of wood densities. Please ensure the ERM clearly states the sources of wood densities.
Round 4 Response from Program (12 May 2025)	The rules for assigning wood densities for different species in calculations: - For 21 major species, the team referenced species specific wood densities from Sharma and Pukalla, 1990 to align and make it consistent with FRA. - For the remaining species which are listed in Master Plan for the Forestry Sector Nepal, the team used species specific wood densities as per Appendix Table 2.2 of the Master Plan.

	3. In order to identify the wood density of the species not listed in Sharma and Pukkala, 1990, and Master Plan for the Forestry Sector Nepal, the team referred to Devagiri et al. and averaged the wood density values of those species found in Nepal from Devagiri et al. These species were categorized under 'Miscellaneous' category. This methodology is consistent with the FRA's methodology. The detailed methodology of deriving the wood density under 'Miscellaneous' category is as follows: - The 82 species and their wood densities are taken from paper Devagiri et.al. - Later, these species are categorized as 'if it is found in Nepal or is in the list of 21 species in Sharma and Pukala, 1990,' based on expert knowledge and available databases (Column D). - Later the average density of those species with the category "In the List" is calculated and truncated to 3 digits. - Finally, the Wood density for all miscellaneous species is calculated as 0.674 gm/cm³ which has been used as a standard since the FRA data analysis. - Here, we wanted to make it uniform with FRA data analysis so that this value was used as a default for miscellaneous species. The comprehensive calculations is in the following document: https://docs.google.com/spreadsheets/d/197-519-DYs_HipuC-VV5xeKfjrCd-r84/edit?usp=sharing&ouid=100676661080379738388&rtpof=true&sd=true The following excel document provides the references for the species' wood density derived from different sources: https://docs.google.com/spreadsheets/d/1YMDUcQpTWCWQDHGBPFkfdioDVEpHEWWz/edit?rtpof=true Regarding not using species-specific wood density from Devagiri when available: - For 21 major species, the team referenced species specific wood densities from Sharma and Pukkala, 1990 to align and make it consistent with FRA. - For the remaining species which are listed in Master Plan for Forestry sector, the team used species specific wood densities as per Appendix Table 2.2 of the Master Plan. - In order to identify the wood density of the species not listed in Sharma and Pukkala, 1990, and Master Plan for the Forestry Sector Nepal, the team referred to Devagiri et al. and averaged the wood density values of those species found in Nepal from Devagiri et al. These species were categorized under 'Miscellaneous' category. This methodology is consistent with the FRA's methodology. Therefore, to maintain consistency with the FRA, the team did not use species-specific wood densities from Devagiri even when available. Species considered under 'Miscellaneous' category For the species not listed in Sharma and Pukkala, 1990, and Master Plan for the Forestry Sector Nepal, the FRA team has categorized those species under 'Miscellaneous' category. Th Nepal MRV team followed similar methodology and categorized the species not listed in Sharma and Pukala, 1990, and Master Plan for the Forestry Sector Nepal as 'Miscellaneous' category. The Nepal MRV team referred to Devagiri et al and averaged the wood density values of the species found in Nepal and use the consequent average wood density for 'Miscellaneous' category.
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	Sources sheet of 'Miscellaneous' wood density calculation: https://docs.google.com/spreadsheets/d/197-519-DYs_HipuC-VV5xeKfjrCd-r84/edit?gid=1282810174#gid=1282810174 Please clarify why in some cases (e.g., <i>Myrica</i>) one species-specific wood density is used to impute the wood densities of all species in that genus, while the same is not done for other species, e.g., <i>Terminalia belerica</i> has no species-specific wood density, but the wood density for <i>Terminalia tomentosa</i> is not used: Yes, we acknowledge the inconsistency and appreciate the opportunity to clarify. While using genus-level wood density as a proxy for species without specific data can be practical, we exercised caution in applying this approach. In the case of <i>Myrica</i>, and a few other less abundant species, we used genus-level wood density due to the lack of species-specific data and because these species are relatively minor in terms of their contribution to overall volume, making their impact on emissions factor is minimal. However, for genera like <i>Terminalia</i>, we did not use the density of <i>Terminalia tomentosa</i> as a proxy for <i>Terminalia Billerica</i> because of clear ecological and functional differences between the species. <i>T. Billerica</i> is generally classified as a non-timber forest product (NTFP) with soft wood characteristics, while <i>T. tomentosa</i> is known for its use in timber and fodder, reflecting a significantly different wood density profile. In such cases, applying genus-level averages would likely introduce more error than benefit. Therefore, we opted for a more conservative approach, avoiding proxy use where notable species-level differences are known or expected. Sources of wood densities: The ERM has been revised and all the sources of wood densities have been included in the ERM. The sources are: - Sharma and Pukala 1990 for 21 listed species: https://drive.google.com/drive/folders/18XDguLvp82cbX0uoxZGfIRY-cqNzVDgz - Master Plan for the Forestry Sector Nepal https://drive.google.com/drive/folders/18XDguLvp82cbX0uoxZGfIRY-cqNzVDgz (Devagiri et al., 2013) : https://drive.google.com/drive/folders/18XDguLvp82cbX0uoxZGfIRY-cqNzVDgz
Aster Findings - Round 5 (16 May 2025)	1) The ER Program has provided greater clarity with regards to how wood densities for individual species (and genus-level identifications of trees) were applied. This clarification resolves any concerns over inconsistent selections across the three different sources of wood densities. 2) The ER Program has acknowledged inconsistent substitutions (e.g. where genus-level wood density was applied to species sometimes but not always, or where a single species' wood density was applied at the genus level). The ER Program has explained this occurs in specific instances because either from lack of available data or because of known differences between species of a genus. While the VVB does highlight that a complete database at the species level could resolve this issue, the VVB recognizes that expert-based opinions must be made where databases are incomplete.

	And so the VVB defers to the expert-based opinions, while importantly noting that the applications of wood densities have now been clearly documented to the VVB and accurately applied in calculations. 3) finally, the VVB notes the revised passage in the ERMR, "The species-specific wood density is referenced from Table 1 of Sharma and Pukkala, 1990, Master Plan for the Forestry Sector Nepal , and Devagiri et al., 2013 ." now references all three sources. Therefore, this finding is closed.
Item	69
Carbon Methodological Framework Version 3, April 2020	- Choice of emission factors and description of their development;
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ERM, Sharma and Pukkala, 1990
Aster Global Findings (12 May 2024)	The VVB reviewed the ERMR and the referenced Sharma and Pukkala, 1990 paper and noted that the paper references both minimum and maximum DBHs for which the presented allometric models are valid. It is unclear to the VVB how this has been considered in the development of the emissions factors.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings noted. Please make all necessary corrections, update the downstream calculations, and update the ERMR as necessary.
Round 1 Response from Program (18 September 2024)	1. Minimum and maximum DBH in Sharma and Pukkala, 1990. The minimum and maximum DBHs for the sample plots are mostly within the DBH range provided by Sharma and Pukkala. Therefore, the allometric models of Sharma and Pukkala have been used to develop the Emission Factors.
Aster Findings - Round 2 (17 November 2024)	2) i) The VVB notes that Volume Ratio.R runs into errors for specific broken top trees. E.g. tree 4 on Plot 5-79-3. The VVB notes that the MRV_tree_data_with_V_ratio lists the volume ratio as NA in the cases of these trees. This appears at odds with FRA_data_analysis_manual_2021.pdf which states "Volume ratio is 1 for all normal trees and is less than 1 for all top broken trees"
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with finding

Round 2 Response from Program (25 February 2025)	2 (i). Volume Ratio as 'NA' for tree 4 Plot 5-79-3 and volume ratio of normal trees and top broken trees. The MRV team checked the data "MRV_tree_data_with_V_ratio" for tree 4 on Plot 5-79-3 and other datasets. The team found that the volume ratio for tree 4 on Plot 5-79-3 to be 0.9975315 and did not find any datasets with volume ratio as NA in the file. The MRV team would like to ask the VVB to rerun the R-script and check the The Rscript for calculating the volume ratio has been updated and the link to the Rscript is as follows: G drive. Initially, the volume ratio is 1 for all trees, so far they are assumed to be normal (no top broken trees). However, for those trees having crown_class = 6 (top broken trees), we need to calculate a ratio with Fibonacci function.
Aster Findings - Round 3 (26 March 2025)	The script Volume ratio.R does not execute on line 115 in the for loop. The error, due to NA values for H_broken\$h is: Error in if ((H_broken\$h[i] < H_broken\$hpred[i]) & H_broken\$h[i] > 0) { : missing value where TRUE/FALSE needed If the Program will notice, many values of h in "tree_data_2010_2013_with_pred_heights.csv" are NA. The VVB also notes that there is no output from this script so it is unknown how this script calculates the field volume_ratio for the file "MRV_tree_data_with_V_ratio"
Round 3 MCAR/mCAR/OBS (26 March 2025)	MCAR: Please produce a reproducible script for Volume ratio.R. MCAR: Please clearly articulate how Volume ratio.R informs MRV_tree_data_with_V_ratio.
Round 3 Response from Program (16 April 2025)	1 Volume ratio.R script: updated volume ratio R script can be accessed at the following link https://drive.google.com/drive/folders/1FLSPtqmdJbkRZ7uAvrrRMhHdIJ6t7Kma?usp=sharing 2 How Volume ratio.R informs MRV_tree_data_with_V_ratio: The volume ratio had been estimated and used only for the top broken trees (crown class=6) to estimate the actual volumes occupied by those respective trees. In normal cases, volume ratio to is 1 which means the tree holds the same volume that was estimated by the allometric equation (Sharma and Pukkala). However, in cases of top broken trees, use of allometric equation (with DBH, model predicted total heights) would overestimate the volume contained by those trees for which the volume ratio (always less than 1) is multiplied to estimate the actual volume of the trees
Aster Findings - Round 4 (01 May 2025)	The revised R script to determine volume for broken trees is now executable and includes output; the VVB re-executed the script and was able to independently reproduce results. Item closed.
Item	14
Carbon Methodological Framework Version 3, April 2020	- Accounting Area
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ER-MR, https://drive.google.com/drive/folders/1oMjfeDERNpJarcloG9F2UJ2OAMCvHFBL

Aster Global Findings (12 May 2024)	1. The VVB notes that this information is made publicly available through references in the ERMR; however, it is unclear to the VVB what the total area of the ER Program boundary is as this is not stated in the MR rather a general statement that states "The ER Program covers a geographic area of approximately 2.4 million hectares." 2. The VVB notes that the Nepal_TAL_AD_tool_v2.xlsx appears to show the total ER Program area to be approximately 2.6 million hectares, which appears to contradict the statement within the ERMR that the ER Program covers a geographic area of approximately 2.4 million hectares. The VVB recalculated the area of the ER Program Boundary Shapefile and found that the area of this shapefile is approximately 2,286,508.82 hectares.																
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with Finding 1 and clearly state the total area of the ER Program Boundary in the MR. MCAR: Please clarify in line with Finding 2 and update the ERMR and all downstream quantification as necessary.																
Round 1 Response from Program (18 September 2024)	1 and 2. ER Program boundary. The ER program area has not been changed. The differences in the reported ER Program Boundary between the ERMR, the ER-P boundary shapefile, and the pixel count used in the "Nepal_TAL_AD_tool_v2.xlsx" worksheet for estimating activity data are due to the fact that the strata areas in the Agreement map, which was projected in degrees (EPSG 4326-WGS 84), were calculated using pixel count areas assuming a 30m x 30m pixel size, which was incorrect. The Agreement map file was projected to the local projection EVEREST 1830_LCC_NEPAL to obtain the pixel size in meters [1]. Upon reprojecting this map, the obtained pixel size is 27.0814 m x 27.0814 m, and the pixel count values have also undergone slight changes (Refer to the table below). These changes in the pixel count values are attributable to the reprojection process. Regarding this issue, the Nepal_TAL_AD_tool has been updated, and activity data has been recalculated using the EVEREST 1830_LCC_NEPAL projected version map for strata area calculations. You can access the updated version of the Nepal_TAL_AD_tool_V5.xlsx at the following link: https://docs.google.com/spreadsheets/d/1G3ToJYNA-n8kl12GfFBurQ-m9C1bcVyr/edit?usp=drive_link&ouid=100991295489415488908&rtpof=true&sd=true The area specified in the "Nepal_TAL_AD_tool_v5.xlsx" pertains to the Agreement Map (stratification map) utilized for estimating Activity Data. This area, measuring 2,287,325 hectares, represents the ER Program boundary area. It is noteworthy that this figure closely aligns with the shapefile ER-P boundary area, which measures 2,286,509 hectares. Discrepancies in the measured area between the Agreement Map UTM projected and the ER Program boundary shapefile can be attributed to the respective file formats, one is in raster format, and the other in vector format. [1] FCPF_2004_2021_TAL_clipped_Agreement_Everest1830_LCC_NEPAL accessible at the following link https://drive.google.com/drive/folders/1ehLiof_pj4JpsXtRk-CioWi2cPEQOJgP?usp=sharing Agreement map pixel count area used to estimate activity data calculated with two different map projections. <table><tr><th>Map value</th><th>Pixel count</th><th>Area (ha)</th><th>Strata</th></tr><tr><td>EPSG:4326 - WGS 84</td><td>EVEREST 1830_LCC</td><td>2,287,325</td><td>LOSS</td></tr><tr><td>EPSG:4326 - WGS 84</td><td>EVEREST 1830_LCC</td><td>2,286,509</td><td>GAIN</td></tr><tr><td>EVEREST 1830_LCC</td><td>2,287,325</td><td>2,286,509</td><td>Forest</td></tr></table>	Map value	Pixel count	Area (ha)	Strata	EPSG:4326 - WGS 84	EVEREST 1830_LCC	2,287,325	LOSS	EPSG:4326 - WGS 84	EVEREST 1830_LCC	2,286,509	GAIN	EVEREST 1830_LCC	2,287,325	2,286,509	Forest
Map value	Pixel count	Area (ha)	Strata														
EPSG:4326 - WGS 84	EVEREST 1830_LCC	2,287,325	LOSS														
EPSG:4326 - WGS 84	EVEREST 1830_LCC	2,286,509	GAIN														
EVEREST 1830_LCC	2,287,325	2,286,509	Forest														

	4 13,037,220 14,089,421 1,173,350 1,033,324 Nonforest Total 28,889,983 31,187,780 2,600,098 2,287,325
Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification. The VVB reviewed the agreement map file and associated projection and was able to recreate the ER Programs values reported in the Nepal_TAL_AD_tool_v5.xlsx. Additionally, the VVB notes that the ERM has been updated and now states that the ER Program boundary is 2,287,325 hectares. However, it is unclear to the VVB why the ER Program does not use the same projected coordinate system throughout all analyses. The VVB's concern is that this adds additional uncertainty and errors into the complex analyses conducted by the ER Program. 2. This finding is closed as it is now covered under the finding 1 (above).
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with finding 1.
Round 2 Response from Program (25 February 2025)	It's important to note that when calculating emission reductions and removals, only the ER Program boundary area is considered for estimating activity data. However, for estimating emission factors or calculating emission reductions and removals, referencing the ER Program boundary is not required.

Aster Findings - Round 3 (26 March 2025)	Thank you for the additional explanation. The VVB determined this item is addressed; however, the VVB notes it is crucial that rasters must be properly projected in an appropriate projection system for ensuring spatial accuracy and consistency, especially when performing calculations like area estimation. Item closed.
Item	15
Carbon Methodological Framework Version 3, April 2020	- Activity data (e.g., forest-cover change or transitions between forest categories)
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ER-MR, https://drive.google.com/drive/folders/1oMjfeDERNpJarcloG9F2UJ2OAMCvHFBL
Aster Global Findings (12 May 2024)	The VVB reviewed the Activity Data collection through CEO and ERMR; however, the ERMR does not provide a decision tree for determining how AD were classified and therefore there are cases in which it is unclear to the VVB how CEO sampling units were classified.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the finding and provide a clear decision tree for how the various land cover classes were assigned.
Round 1 Response from Program (18 September 2024)	1. Visual interpretation decision tree. Detailed documentation and decision tree on forest degradation is provided in the following link: https://training.sig-gis.com/NEPALworkshopAE/ Please refer to the interpretation key and the logic supplement regarding the initial labels in CEO. The distinction of degradation event severity occurs in the subsequent analysis in Excel. [1] Link logic supplement https://docs.google.com/presentation/d/1zFTo0Nzo0h8tMJmrXkE5bqlilf8gum0CnbbDBZczm-k/edit?usp=sharing
Aster Findings - Round 2 (17 November 2024)	1. The VVB reviewed the https://training.sig-gis.com/NEPALworkshopAE/ and was unable to find a decision tree for AD classification for all categories.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with finding 1 and provide the additional requested files and as necessary provide updated program documentation and quantification documents.
Round 2 Response from Program (25 February 2025)	1. There is no decision tree for our interpretation, rather a very simple majority rule for the land use of the plot. The logic supplement details this process further and explains any types of confusing points that may occur. Essentially the majority land use (LU) is the label of the plot, but if that is forest it must also be checked that it meets the definition thresholds of forest of canopy cover percent and minimum stand size. If one of these is not met (following the guidelines of the logic supplement), the interpreter must correct their land use label to a non-forest majority land use.
Aster Findings - Round 3 (26 March 2025)	Thank you for the additional explanation. The VVB is reasonably assured that this item is addressed. Item closed.

Item	16
Carbon Methodological Framework Version 3, April 2020	- Emission factors
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERP, ERM or Supporting Documents)	
Aster Global Findings (12 May 2024)	The VVB is unaware of whether a shapefile for the NFI Collect Earth Sample Points is publicly available.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the finding.
Round 1 Response from Program (18 September 2024)	1. NFI Collect Earth Sample Points are publicly available. The shapefile for the NFI Collect Earth Sample Points is freely available upon request.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. After the clarification provided by FMT and since the ER Program has provided the Shapefile to the VVB. This finding is closed.
Item	17
Carbon Methodological Framework Version 3, April 2020	Indicator 8.1: Systematic errors are minimized through the implementation of a consistent and comprehensive set of standard operating procedures, including a set of quality assessment and quality control processes that work within the local circumstances of the ER Program.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERP, ERM or Supporting Documents)	ER-MR

Aster Global Findings (12 May 2024)	Regarding emission factors, program SOPs include a field inventory manual, a data analysis manual for field data, an inventory design document and Quality Control and Quality Assurance of National Forest Inventory. - Section 12.1 states, under emission factors "For all above-mentioned processes, a strong QA/QC was carried out using QA/QC Manual approved by the FRTC." It is unclear what document QA/QC Manual refers to. - Table 8 has the following text "For the statistical analysis to check for the quality of the results, over 10% of the total PSPs measured were systematically selected (with a random start) and re-measured, link: 1_ QAQC_manual.pdf (frtc.gov.np)". However no link or URL is provided. As described in 2.2 of the ER-MR, regarding activity data, land cover mapping SOPs and an Interpretation Key for forest cover change are described in National Land Cover Monitoring System of Nepal. - Table 6 states "v. Performing QA/QC with reference data collection" but does not list any details or references to external documents. - Section 12.1 states, under activity data "Nepal has taken measures to address this issue by implementing QA/QC procedures for collecting reference data." However, it is unclear if the underlined portion is meant to be a hyperlink or footnote to reference the appropriate QA/QC document. The VVB is requesting a sample of plot data sheets to assess whether the nature and extent of potential transcription errors. Please provide scanned data sheets for the following plots: 414b,370b,395b,390b,328b,399b,123b,371b,420b,398b,424b,232b,591b,335b,131b,72b,199b,554b.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please describe or link to the QA/QC procedure used to QA/QC the emission factors. MCAR: Please elaborate in Table 6 under the heading v. Performing QA/QC with reference data collection to describe QA/QC procedures. MCAR: Please describe or link to the QA/QC procedure used to QA/QC the activity data. MCAR: Please provide scanned data sheets for the referenced plots for review by the VVB.
Round 1 Response from Program (18 September 2024)	Quality assurance of forest inventory data. The QA/QC Manual for NFI Biomass Plots measurement mentioned in ERM, Annex 4, Table 8, and section 12.1 can be found at the following link: https://drive.google.com/file/d/1TcgEb8kDoGp3trxlKlpp-ofZ1QoUxecF/view Reference data collection (ERM Table 6 and Annex 4 Section 12.1). You can find detailed information on the reference data collection process, including the Data Collection Projects (Collect Earth Online), SOPs used, R analysis script used, Final QA/QC Controlled Data, Collection procedure, Trainers involved, and Interpreters list in the SOP_QAQC_FCPF_Nepal.docx document. Access the document using the following link: [insert link here] https://docs.google.com/document/d/17ui9eYcPciKghHKHUS34f5hqv80QrT0B/edit Sample of plot data sheets. The inventory data will be scanned and uploaded in a shared folder, and the link will be shared with the VVB team for the following plots: 414b, 370b, 395b, 390b, 328b, 399b, 123b, 371b, 420b, 398b, 424b, 232b, 591b, 335b, 131b, 72b, 199b, and 554b.

Aster Findings - Round 2 (17 November 2024)	1. The VVB notes that Section 12.1 references the precise QA/QC document when referring to "a strong QA/QC" but Table 7 does not. An OBS is issued to add specificity. 2. The VVB notes the hyperlink in "v. Performing QA/QC with reference data collection" but does not list any details or references to external documents" provides greater detail. This portion is closed. 3. Where stated "Nepal has taken measures to address this issue by implementing QA/QC procedures" in Section 7, the URL differs from Section 12.1. It is unclear why these both differ considering the sections are analogous to one another. 4. The VVB received only scanned data sheets from:123b, 232b, 390b, 395b, 199b.The URL containing those PDFs (https://drive.google.com/drive/folders/1GNCh_Ox8qES_Ke86cmuuEy30rozMTK6t) did not contain: 414b,370b,395b,390b,328b,399b,,371b,420b,398b,424b,232b,591b,335b,131b,72b, 199b,554b. The VVB is requesting those. 5. Of the received data sheets, the VVB confirms that 390b and 395b contained no trees. In 199b, the VVB asks the Program to double check the digitized dbh for trees 5, 15, 20 and 21; the distance for tree 14, the species code for tree 16, the quality class and crown class for tree 13, the sample tree code for tree 19, the height for tree 20 and 3, and the height to crown for tree 8.3. Note that the tree numbering as digitized differs from the plot data sheet which is in counterclockwise fashion. In 232b, the VVB asks the Program to double check the digitized dbh for tree 2, 14 and 32, crown class for tree 20, base tree ht for tree 26, species code for tree 26 which has a species name that does not appear to match the correct code. In 123b, the VVB asks the program to check the species code for tree 16.
Round 2 MCAR/mCAR/OBS (17 November 2024)	OBS: In Table 7, be specific by naming or referencing what document "QA/QC Manual " refers to. MCAR: Please clarify in line with the third finding. MCAR: Please provide scanned data sheets for the referenced plots for review by the VVB. MCAR: Please review the instances of possible transcription errors and make corrections as needed.
Round 2 Response from Program (25 February 2025)	1. Reference to QA/QC Manual The reference to the QA/QC Manual has been provided in the revised ER-MR. The reference is as follows: https://docs.google.com/document/d/17ui9eYcPciKghHKHUS34f5hqv80QrT0B/edit 3. Different URL for QA/QC manual/procedures in Section 7 and Section 12.1 The link to the QA/QC procedures in section 12.1 has been edited and now both links refer to the same document. The edited links is as follows: https://docs.google.com/document/d/17ui9eYcPciKghHKHUS34f5hqv80QrT0B/edit 4. Scanned datasheets of plots 414b, 370b, 395b, 390b, 328b, 399b, 371b, 420b, 398b, 424b, 232b, 591b, 335b, 131b, 72b, 199b, 554b. The scanned datasheets for all plots (except 399b, 420b and 424b) have been uploaded in the google drive: https://drive.google.com/drive/u/0/folders/1PLJmNlt69kYH8MSI--Qq9iCg2zRelns The plots 399b, 420b and 424b (called ZERO forest plots in NFI/FRA because of being non forested plots and having no trees) were never re-measured after their first field visits during FRA 2010-2014. So, we do not have hard copies of those plots. The program has uploaded scanned plot data for 414b of year 2013 and scanned plot data for 398b of year 2018 because both these plots are non forest plots and so re-measurement (in 2022) was not done.

Aster Findings - Round 3 (26 March 2025)	1. The VVB notes that the Program opted not to implement the OFI by adding the document reference to Table 7. Closed. 3. The VVB notes that Table 7's hyperlink for "Nepal has taken measures to address this issue by implementing QA/QC procedures for collecting reference data" refers to the QA/QC for FCPF NEPAL document, while "Nepal has taken measures to address this issue by implementing QA/QC procedures for collecting reference data" in Table 12.1 references "Quality Control and Quality Assurance of National Forest Inventory (FRA Permanent Sample Plots)". As both sections refer to activity data QA/QC, the hyperlink for "Quality Control and Quality Assurance of National Forest Inventory (FRA Permanent Sample Plots)" appears inappropriate. The response stated the hyperlinks both refer to the QA/QC for FCPF NEPAL document but that does not appear to be the case. 4. Thank you for the additional plot cards. 5. Of the received data sheets, the VVB confirms that 390b and 395b contained no trees. In 199b, the VVB asks the Program to double-check the digitized DBH for trees 5, 15, 20 and 21; the distance for tree 14, the species code for tree 16, the quality class and crown class for tree 13, the sample tree code for tree 19, the height for tree 20 and 3, and the height to crown for tree 8.3. Note that the tree numbering as digitized differs from the plot data sheet, which is in counterclockwise fashion. In 232b, the VVB asks the Program to double-check the digitized DBH for tree 2, 14 and 32, crown class for tree 20, base tree height for tree 26, species code for tree 26, which has a species name that does not appear to match the correct code. In 123b, the VVB asks the program to check the species code for tree 16.
Round 3 MCAR/mCAR/OBS (26 March 2025)	MCAR: Please double-check that "QA/QC for FCPF NEPAL document " is hyperlinked in Table 12.1, as described in the finding 3. MCAR: Please review the instances of possible transcription errors, and make corrections as needed. Please explain why/how QA/QC procedures did not find these errors, and demonstrate how this does not contribute to systematic error.
Round 3 Response from Program (16 April 2025)	The QA/QC procedures in Table 12.1 has been hyperlinked to 'QA/QC for FCPF Nepal document'. In 199b, the Program has double-checked and (corrected wherever required) each task as asked by the VVB. In 232b, the tree number 20 with sample tree type 11 (stump) has been removed as stumps are not calculated in MRV. The species code for tree 26, which has a species name "Sal" but has code "6651" is a typo in scanned sheet but has been corrected in the data sheet. Other tasks related to this plot data sheet asked to the program have also been performed. In 123b, the VVB had asked to the program to check the species code for tree 16, it is done now. Note: Aforementioned updates have been performed in "4.tree_data_2022_with_V_ratio.csv" in the folder "NFI_Tree_Data" : https://docs.google.com/spreadsheets/d/1g7QXiQYI-i3cLI5j1qBD7Of4ruTnbdfxakopaUrwLwJs/edit?gid=1952888566#gid=1952888566 Please do not refer to the older version of this file "MRV_tree_data_with_V_ratio.csv" in the folder "NFI_Tree_Data"
Aster Findings - Round 4 (01 May 2025)	3. The VVB confirmed Table 12.1 now links to the QA/QC Manual for Nepal. This item is addressed. 5. The VVB notes corrections were made for several of the trees identified by the VVB as transcription errors.

Item	18
Carbon Methodological Framework Version 3, April 2020	Indicator 10.1: The Reference Level is expressed in tonnes of carbon dioxide equivalent per year.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ER-MR
Aster Global Findings (12 May 2024)	Equation 1 in Section 2.2.2 of the ER-MR states RL_{RP} is in units of tCO ₂ e which is incongruent with this requirement and Section 2.2.2 in the monitoring report template. Other references in the MR uses appropriate units for the reference level.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please revise in line with finding
Round 1 Response from Program (18 September 2024)	Units' inconsistencies. The unit of Equation 1 in Section 2.2.2 of the Er-MR has been revised.
Aster Findings - Round 2 (17 November 2024)	The VVB confirmed the correction in the revised ER-MR
Item	19
Carbon Methodological Framework Version 3, April 2020	Indicator 10.2: The ER Program explains how the development of the Reference Level can inform or is informed by the development of a national Forest Reference Emission Level or Forest Reference Level, and explains the relationship between the Reference Level and any intended submission of a Forest Reference Emission Level or Forest Reference Level to the UNFCCC.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ER-MR
Aster Global Findings (12 May 2024)	The VVB reviewed the ERM, specifically Section 8.6, and found that the ERM does not sufficiently and explicitly address how the development of the Reference Level could be was informed by the development of the FREL. Additionally, the ERM does not sufficiently and explicitly address the relationship between any intended submission of the FREL to the UNFCCC. It is unclear to the VVB if the ER Program intends to submit an additional/updated FREL to the UNFCCC.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the finding and update the ERM to provide sufficient and explicit information to demonstrate conformance with this requirement.

Round 1 Response from Program (18 September 2024)	Relationship between Reference Level and UNFCCC FREL submission: The Reference level of the ERPA has employed a significantly better methodology compared to the FREL. More specifically, the Reference Level has adopted a robust method and QA/QC protocols for the AD preparation. In addition, the limitations of the FREL and the learnings informed the ER program's Reference Level. In particular, advancements in technology and methodology and the availability of data have improved the ER program's reference level. The Government of Nepal (GoN) is considering submitting the updated FREL to the UNFCCC.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB reviewed the updated ERM and is reasonably assured that ER Program has provided sufficient information in the ERM to satisfy this requirement.
Item	20
Carbon Methodological Framework Version 3, April 2020	Indicator 10.3: The ER Program explains what steps are intended in order for the Reference Level to achieve consistency with the country's existing or emerging greenhouse gas inventory.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ER-MR
Aster Global Findings (12 May 2024)	The relationship between the ER Program and the FREL, which may or may not be informing the GHG Inventory, is not made clear in Section 8.6. The second and third paragraphs describe differences in steps but do not explain how consistency is achieved. Additionally, elaboration on the GHG Inventory steps are not explained in Section 8.6, which is necessary to ascertain if consistency is maintained. Section 8.6 of the ERM does not describe Nepal's "existing or emerging greenhouse gas inventory."
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the finding and update the ERM to provide sufficient and explicit information to demonstrate conformance with this requirement.
Round 1 Response from Program (18 September 2024)	Relationship between Reference Level and UNFCCC FREL submission: National greenhouse gas (GHG) inventories necessitate information at the national scale. However, given the varying scales of subnational projects—such as the current REDD+ program—emission factors and forest degradation monitoring need a more robust approach. These efforts would serve as valuable references for national GHG inventory and reporting, especially in meeting requirements like the Biennial Transparency Report. The first Biennial Transparency Report/Biennial Update Report of Nepal is being prepared in Nepal. This report will take into account and report REDD+ programs, including this one.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB reviewed the updated ERM and is reasonably assured that ER Program has provided sufficient information in the ERM to satisfy this requirement.
Item	21

Carbon Methodological Framework Version 3, April 2020	Indicator 11.1: The end-date for the Reference Period is the most recent date prior to two years before the TAP starts the independent assessment of the draft ER Program Document and for which forest-cover data is available to enable IPCC Approach 3. An alternative end-date could be allowed only with convincing justification, e.g., to maintain consistency of dates with a Forest Reference Emission Level or Forest Reference Level, other relevant REDD+ programs, national communications, national ER program or climate change strategy.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Section 8.1 of the ERM, Nepal Tap Report.pdf
Aster Global Findings (12 May 2024)	The end date for the Reference Period is 31 December 2014 (the start date is 01 January 2004), which makes the duration of the Reference Period 11 years. The ERM states this period is based on available data for estimation of activity data and defining deforestation and forest degradation. The ERM does not appear to discuss how this end date relates to when the TAP started independent assessment of the program. Additionally, the VVB notes that the TAP assessment which is dated 30 May 2018, more than 2 years after the end date of the Reference Period. If the end date does not coincide with the TAP starting assessment, then the ERM should provide convincing justification, as noted in the examples in the Indicator 11.1.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please describe how the end date relates to the TAP independent assessment, or provide convincing justification of the alternative end date, as required.
Round 1 Response from Program (18 September 2024)	The country sought clarification from FMT regarding this finding and received the following explanation: The end date of the reference period for Nepal is August 2014. This is more than two years prior to the start of the TAB's assessment for Nepal (which started in August 2017). As such this date complies with the FCPF MF. Please note that the MF does not limit the date to two years, but rather says that the day should be prior to two years. Also note that the FCPF Methodological Framework includes the following condition: "the end-date for the Reference Period is the most recent date prior to two years before the TAP starts the independent assessment of the draft ER Program Document AND for which forest-cover data is available to enable IPCC Approach 3. In the case of Nepal, the forest cover mapping producing geographically referred information on the forest cover change was only available until December 2014 given that such data was produced as part of Forest Resource Assessment (FRA) covering the period 2010 to 2014 (see here and here). As such, the end date of the reference level is December 2014, given that, only until that date, there was data available to produce the reference level consistent with the IPCC Approach 3.
Item	22
Carbon Methodological Framework Version 3, April 2020	Indicator 12.1: The definition of forest used in the construction of the Reference Level is specified. If there is a difference between the definition of forest used in the national greenhouse gas inventory or in reporting to other international organizations (including an Forest Reference Emission Level or Forest Reference Level to the UNFCCC) and the definition used in the construction of the Reference

	Level, then the ER Program explains how and why the forest definition used in the Reference Level was chosen. 5
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ER-MR Section 8.2
Aster Global Findings (12 May 2024)	1. For the construction of the Reference Level, the Program uses the following definition: "forest as an area of land of at least 0.5 ha and a minimum width/length of 20 m with a tree crown cover of more than 10% and tree heights of 5 m at maturity." This is identical to the definition in the Forest Resource Assessment 2010 FAO proposed for countries internationally. The VVB notes that this definition is more concise than the definition provided in the document "National Forest Reference Level of Nepal (2000 – 2010)", available at: https://redd.unfccc.int/media/nepal_frl_jan_8__2017.pdf, and provided below: "Land with tree crown cover of more that 10 percent and area covering more than 0.5 ha, with minimum height of the trees to be 5 m at maturity and in-situ conditions. The land may consist either of closed forest formations where trees of various storied and undergrowth cover a high proportion of the ground, or of open forest formations with a continuous vegetation cover in which tree crown cover exceeds 10 percent. Young natural stands and all plantations established for forestry purposes which have yet to reach a crown density of 10 percent or tree height of 5 m are included under forest, as are areas normally forming part of the forest area which are temporarily un-stocked as a result of human intervention or natural causes but which are expected to revert to forest. This includes forest nurseries and seed orchards that constitute an integral part of the forest; forest roads, cleared tracts, firebreaks and other small open areas within the forest; forest in national parks, nature reserves and other protected areas such as those of special environmental, scientific, historical, cultural or spiritual interest; windbreaks and shelterbelts of trees with an area of more than 0.5 ha and a width of more than 20 m. Land predominantly used for agricultural practices are excluded." It is unclear why there is a different definition provided and if this has material implications. For example, a CEO sampling unit, which has a resolution of 0.49 ha, landing in a windbreak of 0.49 ha, may be classified as forest in the Program but would not be classified forest in the Forest Reference Level. 2. The VVB reviewed the Interpretation Logic - Nepal.pdf and noted that on page 6 titled "Very sparse or thinned forest" there is an example that shows that 0/9 points within the CEO Sampling Unite are forest; however, this page indicates that this case should be classified as having 10% TCC. It is unclear to the VVB instance such as this do not undermine the entire basis of the CEO analysis.

	2a. Similarly, it is unclear to the VVB what occurs if the vast majority of the CEO sampling unit is covered by trees but none of the 9 points within the sampling unit fall on tree canopy. In this instance, it is unclear to the VVB what TCC % would be assigned. 2b. Additionally in the slide on page 6, it states "100% forest land use" which appears to indicate that land use should be considered; however, the ER Program's definition of forest does not appear to consider land use, rather it appears to only consider land cover.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with findings, update the quantification and ERM as necessary.

**Round 1 Response from
Program
(18 September 2024)**

1. ER-P Forest definition. In essence there are no differences in the forest definition between RL and FREL. The only difference is that in the case of the latter, additional descriptions that came from the extended definition from the FAO document were copied. However, in terms of biophysical implications as applicable to our assessment, we consider they do not contribute to differences. For example, the key variables are anyway related to canopy cover., minimum mapping unit and stand height. Note that due to Landsat pixel size, the closest approximation that we could achieve while keeping whole pixel units is 0.49 ha.

2. "Very sparse or thinned forest" interpretation rule. In exceptional cases like the one highlighted by the reviewer, the differences could have resulted from the interpreter's decision, the available base image used for interpretation, and the phenology of the tree (e.g. leaf off-season). We chose to add this very rare case to the logic document in case the 9-point grid was not dense enough to capture the trees within the plot. This logic is saying that if a 100-point grid had instead been used, 10 or more of them would be covered by trees. However, we simplified the grid to 9 points because 100 points is not a feasible number for interpreters to easily analyze and count one by one. This logic rule is attempting to resolve missing a forest label simple grid that was chosen rather than reality. This situation should be very rare and was only included as a technically possible edge case. The grid is then later used to calculate the severity of change in increments of 10%, since again, using a 100-point grid and 1% changes would not be feasible or useful to measure. Our overall goal of using a grid is to decrease the subjectivity of percentage change estimation while still making it an efficient tool for interpreters and ensuring that it is not too sparse or dense for the size of trees observable in the landscape.

2a. The CEO sampling unit is covered by trees but none of the 9 points. The TCC % will be given based on experts' knowledge, experiences, extent of forest patch, and analysis of near-temporal images, change of land cover. The TCC% within a 70*70 m sampling plot is estimated based on the ratio of the total area of crown cover of all trees within the plot and the plot's area. This would be a rare edge case, and we do not have knowledge of this problem occurring during interpretation. For strange cases like this, the interpreters were encouraged to mark low confidence on the plot and review it with other colleagues.

2b. "100% forest land use". We propose the ERM will be revised to use the term 'land cover/land use'. Although land cover is the overall goal, we have used the term "land use" within the logic supplement purposely to distinguish cases where tree-cover is present but should not be considered forest (e.g., trees within an urban landscape), and where tree-cover is temporarily not present but is not being used for anything other than forest (e.g., a temporarily unstocked or severely degraded forest). This second case may not be explicitly in the ERM definition of forest but is very important to our applied definition of forest degradation. We think land use is important to consider in other cases such as for plantations, where the land cover is forest and the only distinguishing factor in the definitions between a natural forest and a plantation is how they are used.

There is a statement within the interpretation key that implies this edge case of a severely degraded forest that is temporarily devoid of trees:

"Forest degradation events are of differing severity. Some events result in the temporary loss of all tree canopy, and may take a significant time to regrow. Other events cause very little change in the canopy and the area quickly returns to intact forest cover. However, as mentioned, the key characteristic of forest degradation is that following a degradation event, the area reverts to intact forest canopy."

We will provide a more clear and explicit definition of forest degradation in the interpretation key (since this is currently only implied in the descriptions and in the logic supplement), and can also add this to the ERM report that states. This definition will be something like "a decrease in the amount of canopy cover of a forest, whether partial or complete, that does not result in a change in land use. This means if a forest is completely cut down but is immediately allowed to regrow and

	the land is not used for any other purpose, it will be considered a severely degraded forest. If the forest is completely cut down and the land is used for another purpose, so that a new land use / land cover should be assigned such as for agriculture, then this would be considered deforestation rather than forest degradation." We have thus far avoided trying to assign an official definition for degradation so we can rely on the non-subjective measure of the 9-point grid, but recognize clarity is needed in order to deal with these edge cases where the land use is necessary to fully understand and properly label the land cover instead of a very temporary condition of the land cover.
Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification. The VVB notes that Indicator 12.1 requires the ER Program to "explain how and why the forest definition used in the Reference Level was chosen." and it is unclear to the VVB where this information is included in the ERMR. 1a. Additionally, the VVB notes that the definition from the "National Forest Reference Level of Nepal (2000 – 2010)" contains an explicit statement considering land use (i.e. "Land Predominantly used for agricultural practice are included"); however, the ER Program has specifically included a forest type (i.e. tree-shaded-cropland / silvopasture) that when applying the definition from the "National Forest Reference Level of Nepal (2000 – 2010)" would determine that tree-shaded-cropland / silvopasture should not be classified as forest. 1b. Thank you for the clarification regarding why 0.49 as a sampling unit is appropriate, the VVB agrees with the ER Program. This finding closed. 2/2a. Thank you for the clarification. The VVB understands the intention of this approach; however, the VVB notes that a systematic approach is more appropriate. The VVB is issuing a minor corrective action for the ER Program to conduct further investigation to determine if the 9 point grid is appropriate. 2b. Thank you for the clarification. This finding remains open as this additional information has not been included in the ERMR.

Round 2 MCAR/mCAR/OBS (17 November 2024)	mCAR: At the time of the next verification, the VVB will request evidence from the ER Program to demonstrate that a 9-point grid is appropriate. MCAR: Please ensure that the ERMR is updated appropriately in-line with the ER Programs Round 1 Finding Response.
Round 2 Response from Program (25 February 2025)	1a. Inclusion of forest type 'tree-shaded-cropland/silvopasture' 1a. The definition of the 'tree-shaded-cropland/silvopasture' forest type in the ER-MR states that it is a farming system that combines the agroforestry with traditional farming. The 'tree-shaded-cropland/silvopasture' forest type is a form of land management that integrates the trees and shrubs alongside the crops and the land is not predominantly used only for cultivating crops or general agriculture practice. Therefore, the inclusion of the 'tree-shaded-cropland/silvopasture' forest type does not contradict with the definition of the forest of 'National Forest Reference Level (2000-2010)'. 2/2a. Further Investigation on appropriateness of 9 point grid approach. 2/2a. The 9-point gridded approach was adopted after initial testing found that applying a definition of degradation in words in the interpretation key led to subjective interpretation. As there is no internationally accepted definition of degradation, we felt a quantifiable change was more appropriate than a subjective label based on a definition that may not have been sufficiently detailed or that may change if an official international definition is later created. We chose to use 9 points, so each point approximately ~11% of the plot area. We agreed on the team that 25 or 100 points was too dense to be able to see the underlying imagery (points cannot currently be hidden in CEO during interpretation) and would take more time for the interpreters and lead to greater rates of disagreement that required more time to review for small discrepancies. We found a quantifiable point-based method was previously used by Costa Rica. We made logic rules to handle cases when clear forest change was observed only in the spaces between the 9-points, so that events like this edge case were not ignored. Overall, the 9-points is the general method used for consistency, but edge cases where none of the points captured the change, were still considered according to the logic supplement and training of the interpreters.
Aster Findings - Round 3 (26 March 2025)	1. Thank you for the response and additional information in the updated ER-MR on definition of forest used. This item is closed. 1a. Thank you for the explanation and additional information in the updated ER-MR. The VVB determined this item is addressed. Item closed. 2/2a. Thank you for the clarification. The VVB acknowledges the additional explanation on decision of application of 9-point gridded approach. The VVB is reasonably assured that this approach is appropriate. This item is closed. 2b. This finding remains open as the VVB noted additional information has not been included in the ERMR as mentioned in Round 1 findings response.
Round 3 MCAR/mCAR/OBS (26 March 2025)	2b. MCAR: Please ensure that the ERMR is updated appropriately in-line with the ER Program's Round 1 Finding Response (2b).
Round 3 Response from Program (16 April 2025)	The ER-MR has been updated in-line with the ER Program's Round 1 Finding's Response.

Aster Findings - Round 4 (01 May 2025)	The VVB reviewed the updated ERMR and confirmed that the definition of "forest degradation" as described in the Round 1 Finding Response has been added to Section 8.2 of the ERMR. This item is addressed.
Item	23
Carbon Methodological Framework Version 3, April 2020	Indicator 13.1: The Reference Level does not exceed the average annual historical emissions over the Reference Period, unless the ER Program meets the eligibility requirements in Indicator 13.2:.. If the available data from the National Forest Monitoring System used in the construction of the Reference Level shows a clear downward trend, this shall be taken into account in the construction of the Reference Level.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ERM, ERMR Section 8.4, Nepal_TAL_Integration_tool_V2.xlsx
Aster Global Findings (12 May 2024)	The ER Program applies the average annual historical emissions from deforestation and degradation over the reference period. However, the VVB notes that the Results tab of the Nepal_TAL_Integration_tool_V2.xlsx does not appear to use the average annual historical removals by sinks over the reference period. It is unclear to the VVB why this occurs. The VVB reviewed the ERMR and the Nepal_TAL_Integration_tool_V2.xlsx workbook and found that currently the average emissions over the Reference Period = ~ -426,662 and the average emissions for the selected reporting period (1/1/2018-12/31/2021) = ~ -379,156, thus the reference level applied for the reporting period are larger (since both values are negative values). Therefore, it is unclear to the VVB if the ER Program is in compliance with this requirement. The VVB notes that this requirement is unclear on whether or the fact that these are negative values is relevant in the determination of whether or not this requirement is satisfied.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings and update the ERMR and quantification documents as necessary.
Round 1 Response from Program (18 September 2024)	Use of annual historical removals to calculate Emission Reductions: The calculation of emissions reductions is based on the table in section 4.3 of the ERMR template. The total reference level emissions during the Monitoring Period are based on ERMR Table 4.1, "ER Program Reference level for the Monitoring / Reporting Period covered in this report." The calculation of removals assumes a constant incremental area of forest gain by year during the Reference Period. Therefore, the total removals show a growing linear trend. Taking this into account, the country decided to use the annual historical removal instead of an annual historical average in Table 4.1 to obtain a more accurate estimate of emission reductions.

Aster Findings - Round 2 (17 November 2024)	1/2. Thank you for the clarification. The VVB reviewed the Results tab of the Nepal_TAL_Integration_tool_V5.xlsx and noted that the average annual historical net emissions over the reference period is -14,584. However, the ER Program applies a value of 16,550 in the quantification of ERs for the Monitoring Period and therefore the VVB understands that the Reference Level exceeds the average historical emissions over the reference period. Therefore the ER Program is required "to demonstrate to the satisfaction of the Carbon Fund that the following eligibility requirements are met: i. Long-term historical deforestation has been minimal across the entirety of the country, and the country has high forest cover; ii. National circumstances have changed such that rates of deforestation and forest degradation during the historical Reference Period likely underestimate future rates of deforestation and forest degradation during the Crediting Period." It is unclear to the VVB if ER Program has done this. 3. The VVB noted various errors in the Results tab of the Nepal_TAL_Integration_tool_V5.xlsx: 3a. The length of the monitoring period is reported as 47 months; however, the monitoring period is 4 years. 3b. Table 4.3 requires that the length of the monitoring period and reporting period be calculated in days not months.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please provide verifiable evidence in the form of written communication from the Carbon Fund that the ER Program is has the met the requirements to allow the ER Program to use a Reference Level that exceeds the average annual historical emissions over the Reference Period. MCAR: Please address findings 3 and 3a, provide updated quantification, and update all reporting documentation.
Round 2 Response from Program (25 February 2025)	1/2. The Excel worksheet Nepal TAL Integration tool has been updated to address other findings (such as finding 6). References to average annual historical net emissions during the reference period in cell G16 have been removed. The Results tab and the average annual historical net emissions (5,329*yr-1) in cell G47 of the Results tab have been updated. The ERs for the ER Program were calculated following Section 4.3 of the FCPF Carbon Fund ERMR template, utilizing the table below. "Average annual historical net emissions over the Reference Period" are used to calculate the emissions or removals in the Reference Level (during the monitoring period 2018-2021), which are 21,316 tCO₂. Those under the ER Program during the monitoring period are -3,690,338 tCO₂ (a negative number means net removals), resulting in emission reductions of 3,711,654 tCO₂ for the monitoring period. Notice that "Emission or removals in the Reference Level (tCO₂-e)" now corresponds to the result of multiplying the "Average annual historical net emissions over the Reference Period" by the number of years of the monitoring period (5,329 tCO₂*yr-1 X 4 yr =21,316 tCO₂). [Aster Global NOTE: see "Nepal Round 2 Findings - working file.docx" for Table provided as part of Round 2 Response, formatting issues prevent inclusion of table here] 3 and 3b. The monitoring and reporting period lengths have been recalculated in days. The length of the monitoring period is 1,460 days, and the size of the reporting period is 1,288 days.
Aster Findings - Round 3 (26 March 2025)	1/2. Thank you for the response with additional information. However, the VVB noted the values reported in response do not align with the workbook (Nepal_TAL_Integration_tool_V6.xlsx) and values presented in ER-MR. As such, VVB could not confirm whether the issued finding has been addressed.

	3, 3a,b. Thank you for the response. The VVB confirmed that this item has been addressed. Item closed.
Round 3 MCAR/mCAR/OBS (26 March 2025)	1/2. MCAR: Please clarify why such discrepancies exist and make necessary updates.
Round 3 Response from Program (16 April 2025)	Emissions and removals have been recalculated to address findings 6, 70, 8, 26, and 69. Updates were made to tree-level biomass data carbon densities and the Nepal TAL Integration tool. Discrepancies have been resolved, and all downstream calculations and ERMR values have been adjusted accordingly [1]. [1] Updated Nepal_TAL_Integration_tool_V6.xls can be accessed at the following link: https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true and the ERMR has been updated accordingly.
Aster Findings - Round 4 (01 May 2025)	1/2. Thank you for the response and updates made. However, this finding remains open upon closure of all upstream findings (6, 69) and review of all downstream calculations and final ER numbers pertaining to the findings.
Round 4 MCAR/mCAR/OBS (01 May 2025)	1/2. MCAR: Please address the findings noted and make sure that changes are accurately reflected in ER-MR.
Round 4 Response from Program (12 May 2025)	Finding 6 has been addressed, and all downstream calculations have been updated accordingly. Finding 69 is closed.
Aster Findings - Round 5 (16 May 2025)	This item is marked as closed following the resolution of findings 6 and 69.
Item	24
Carbon Methodological Framework Version 3, April 2020	Indicator 14.1: The ER Program monitors emissions by sources and removals by sinks included in the ER Program's scope (Indicator 3.1:) using the same methods or demonstrably equivalent methods to those used to set the Reference Level.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ERMR, ERMR Section 3

Aster Global Findings (12 May 2024)	The ERMV references the parameters "Activity Data: A(j,i) MP Equation 10; A(a,b)MP Equation 11; A(j,i) MP Equation 12." In the parameter table both degradation and forest gain are described as being in units "ha yr-1; however the "Data unit: states "hectare." Please ensure the units for each parameter are described accurately and ensure all information within the ERMV is accurate. Page 21 of the ERMV states "Degradation is measure only in Permanent Forest lands", it is unclear to the VVB the reasoning for excluding degradation emissions from secondary forests. The ERMV states "Fifteen values for the Reference Period and 17 Activity Data for the Monitoring Periods were included in MC analysis. See all values in the Uncertainty calculation tool, "Parameters and Models" sheet, cells F98..F115." It is unclear to the VVB why the AD between the referenced period and monitoring period are different.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings and update the ERMV and quantification documents as necessary.
Round 1 Response from Program (18 September 2024)	Activity data units: Data units for Deforestation, Degradation, and Forest Gain have been corrected to hectares per year in ERMV section 3.2 "Monitored Data and Parameters". Degradation in Secondary Forest: Secondary forests can also experience loss of biomass due to human activities. However, this type of forest, especially those less than 20 years old, continues to grow until it reaches a carbon density similar to permanent forest lands. Consequently, the impact of any human activity that reduces their biomass will be partially offset by the growth rate. For the secondary forests in the ER Program of Nepal, the removal factor used to estimate the removals is based on field observations and, therefore, includes the impact of degradation processes. A net removal factor has been directly calculated from NFI biomass plots in secondary forests. Therefore, no degradation factor is needed for secondary forests. Degradation activity data input values included in Monte Carlo simulation: The reference to the number of input values included in the Monte Carlo simulation has been updated. The ERMV now states the following: "The Monte Carlo simulation included 9 activity data for the reference and monitoring periods. See all the values in the Sensitivity Calculation Tool, 'Parameters and Models' sheet, cells B3..J42.."
Aster Findings - Round 2 (17 November 2024)	1. The VVB reviewed the updated ERMV and noted that the corrections have been made to Section 3.2; however, the parameters in Section 3.1 have not been updated and are still incorrect. 2. Thank you for the clarification, the VVB now understands the rationale for excluding degradation from secondary forests. This finding is closed. 3. The revisions to first table under 5.2.1 now align the parameters with the table in 5.3. Parameters used for the MC analysis are now consistently reported.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please ensure all parameters referenced in the ERMV have the correct units specified.
Round 2 Response from Program (25 February 2025)	Carbon densities 1. Incorrect parameter values in ERMV Section 3.1 have been corrected.

Aster Findings - Round 3 (26 March 2025)	The VVB acknowledges the revisions made correct the finding. Closed
Item	25
Carbon Methodological Framework Version 3, April 2020	Indicator 14.2: Activity data are determined periodically, at least twice during the Crediting Period, and allow for ERs to be estimated from the Crediting Period Start Date. Deforestation is determined using IPCC Approach 3. Other sinks and sources such as degradation may be determined using indirect methods such as survey data, proxies derived from landscape ecology, or statistical data on timber harvesting and regrowth if no direct methods are available.
Requirement Met (Y/N/Pending)	N
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ER-MR Eq 3
Aster Global Findings (12 May 2024)	The ERMR does not appear to state what the dates of the crediting period are therefore it is unclear to the VVB what is the length and dates corresponding to the start and end date of the crediting period are. It is unclear to the VVB how the ER Program complies with the requirement that Activity Data are collected at twice during the Crediting Period or will comply with this requirement in the future. The ERMR states "The canopy cover was visually evaluated in permanent forest only for the years 2003/2004, 2014/2015, 2017/2018, and 2021." Additionally, the VVB notes that the specific dates of the imagery used for AD data interpretation are not provided in any of the Nepal_TAL_AD_tool_v2.xlsx. The VVB is requesting clarification as to the specific imagery dates that were used for the Activity data interpretation for the 4 time periods stated in the ERMR.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings and update the ERMR and quantification documents as necessary.

Round 1 Response from Program (18 September 2024)	According to the Emission Reductions Payment Agreement (ERPA), the ER Program started on June 22, 2018. The first Reporting Period is from June 22, 2018, to December 31, 2021, and the second Reporting Period is from January 1, 2022, to December 31, 2024. Therefore, the Crediting Period is 6.5 years, starting on June 22, 2018, and ending on December 31, 2024. Additionally, it is confirmed that the ER Program will comply with the requirement for Activity Data to be collected twice during the Crediting Period, as two reporting periods are included in the Crediting Period. Dates of specific imagery used in Activity Data Interpretation were not included because the interpreters were encouraged to holistically consider all available imagery (starting with the highest resolution imagery available) until the required information to answer the survey questions was made clear. The interpreters had access to Google Earth Pro imagery, Planet NICFI, Sentinel-2, and Landsat imagery. For land use types and canopy cover at 2003/2004, 2014/2015, 2017/2018, and 2021 the interpreters would have looked at several sources of imagery as near as possible to the time period at the boundary of the two years (e.g. end of 2003 or start of 2004). Several images are especially needed for identifying land uses with seasonal variation from those without (e.g. identifying agriculture by observing harvesting). Interpretations of the timing of change events often would require observing images before and after the event, but narrowing down the exact year using a time-series graph of a vegetation index. Therefore, it was impractical for interpreters to try to identify what images were used. [1] ERPA: https://www.forestcarbonpartnership.org/system/files/documents/FCPF%20Carbon%20Fund%20ERPA-Nepal%20Tranche%20A.pdf
Aster Findings - Round 2 (17 November 2024)	1/2. Thank you for the clarification. The VVB understands that the crediting period is 22 June 2018 - 31 December 2024, which contains two reporting periods and thus the ER Program will collect AD twice during the crediting period. These findings are closed. 3. The VVB understands that series of multiple imagery sources are required to be assessed over a specific period of time. However, it is equally important to record sources of imagery and dates used as these elements are essential to avoid the possibility of using imagery outside of the specific period which can lead to an incorrect interpretation. As a result of this missing information, the VVB has taken additional steps to assess the AD interpretation completed by the ER Program for the Reference Level and Monitoring Period and is reasonably assured this missing error does not lead to a material error; however, the VVB is issuing a minor Corrective Action Request to ensure that future AD collection includes this information. This item will be assessed at the subsequent verification by the VVB.
Round 2 mCAR/mCAR/OBS (17 November 2024)	mCAR: Please ensure that for all future AD collection the ER Program records the date/s of the imagery used for the AD collection.
Round 2 Response from Program (25 February 2025)	
Aster Findings - Round 7 (29 May 2025)	The ER Program has not responded to this mCAR; this mCAR will be noted in the VVB's report for address in the next ERM.
Item	26

Carbon Methodological Framework Version 3, April 2020	Indicator 14.3: Emission factors or the methods to determine them are the same for Reference Level setting and for Monitoring, or are demonstrably equivalent. IPCC Tier 2 or higher methods are used to establish emission factors, and the uncertainty for each emission factor is documented. IPCC Tier 1 methods may be considered in exceptional cases.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERP, ERMR or Supporting Documents)	ERM
Aster Global Findings (12 May 2024)	1. The VVB reviewed the ERM which states "The carbon densities used for the ER monitoring report are Tier 2 (country specific data) and has been derived from the latest NFI (FRA) except the removal rates for forest plantation and shaded crops." As stated by the ER Program the ER Program employs Tier 1 IPCC defaults and it is unclear to the VVB why the ER Program has not used Tier 2 estimates. 2. The ERM states "In order to have more accurate estimates for the Terai Arc Landscape (TAL) area, the plots located in this area were used to generate TAL-specific Emission Factors." However, the VVB has not been provided the a spatial file showing all NFI plots within the country to allow the VVB to assess if the subset of plots within the TAL area has been appropriately defined. 3. The VVB reviewed the Nepal_TAL_Integration_tool_V2.xlsx and notes that the plantation forest gain value is reported as -13.79 tco2e/ha/year and that this value corresponds to the Sub-tropical Domain and the subtropical dry forest ecological zone as defined by the 2010 GEZ classification. However, the ER Program area appears to overlap with four different Ecological zones (Subtropical mountain system, tropical rainforest, tropical moist forest, and tropical dry forest) as a result it is unclear to the VVB if the selected removal factor is appropriate. 3a. Additionally, it is unclear to the VVB why the ER Program has assigned the CI of the natural secondary forest removal factor to the plantation forest removal factor. The VVB notes that the ERM states "In the case of forest plantations, the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 4 - Forest Land, Table 4.10 does not provide any reference to uncertainty. Therefore, it was assumed that the uncertainty of Natural Secondary Forests gain applies to Plantation Forests as well." However, considering these factors are derived from different IPCC Tier approaches, noting that Tier 1 Emission Factors significantly larger associated uncertainties, it is unclear to the VVB how the use of this confidence interval is appropriate. 3b. Similar to the VVB's finding above, it is unclear to the VVB how the R:S is appropriate considering the ER Program appears to span 4 different Ecological Zones. 4. The ER Program applies a shaded cropland removal factor of 2.79 tC/ha/yr which corresponds to the Tropical Dry climate region. However, it is unclear to the VVB how the ER Program determined this to be the appropriate climate region. The VVB notes that the Volume 4 Chapter 5 of the 2019 IPCC Refinement states "Cropland management classes must be stratified according to climate regions and major soil types, which can either be based on default or country-specific classifications." 5. IPCC defines "Alley cropping" as "Fast-growing, usually leguminous, woody species (mainly shrubs) grown in crop fields, usually at high densities." The ER Program defines "tree-shaded-cropland / silvopasture" in the Interpretation_Key_25April2023.docx as "The term "tree-shaded cropland" refers to agricultural fields or farmland that has trees deliberately placed or interspersed throughout to offer shade and other advantages to the crops cultivated there. This

	practice combines elements of traditional farming with agroforestry, which is the intentional integration of trees and shrubs into agricultural systems." It is unclear to the VVB how these two definitions are aligned, specifically, it appears that Alley Cropping as defined by the IPCC would contain trees planted a significantly higher density. 5a. Additionally, it is unclear to the VVB how shaded cropland is distinguished from forest and what LULC classification rule clearly defines how these two categories are distinguished. 6. The VVB reviewed the NFI_dataset tab of the CarbonDensitiesToolV3.xlsx and noted that the column "pl_mspdate_plot_id" appears to have plots in it that do not appear in either the Reference_period_Tree_data.xlsx nor the MRV_tree_data_with_V_ratio.xlsx. It is unclear to the VVB why this occurs. For example, there are 5 plots that appear to be classified as "unshaded cropland" in the column t2_type_final and only 1 out of these 5 plots appear within the above referenced workbooks. 7. The VVB reviewed a sample of the plots that have been determined to be unshaded cropland in the CarbonDensitiesToolV3.xlsx through the CEO analysis. It is unclear to the VVB how the ER Program determined that Plot 424, 387, and 200 is unshaded cropland. The VVB notes that the ER Program reports that the "unshaded cropland" tdm/ha is approximately 48.31, which is approximately 10 orders of magnitude larger than the reported IPCC value for annual cropland in the CarbonDensitiesToolV3.xlsx.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the finding and provide a rationale within the ERMR as how the application of this emission factor is considered an "exceptional case." MCAR: Please clarify in line with Findings 2-7 and update the ERMR and quantification documents as necessary.

**Round 1 Response from
Program
(18 September 2024)**

2. NFI location spatial file: On February 3, 2024, Mr. Nabaraj Pudasaini, Chief of the REDD Implementation Centre in Nepal, emailed Mr. Mansfield Fisher. In the email, he provided geospatial files, including ER Program boundaries, strata boundaries, forest inventory plot locations, and collect earth locations. Mr. Pudasaini included a link to a Google Document titled "List of files necessary for the validation/verification process of the Nepal ER Program"

<https://docs.google.com/document/d/1hrbklwZ1zU8oqR3eCc4jYpRexwnGbKbA/edit>

. The first row in the table in the document contains the link to the requested NFI location spatial file.

3, 3b, and 4. Plantation forest removal, R:S ratio, and cropland removal factor: The subtropical zones are located within the middle latitudes, spanning from approximately 23.5° to around 35° north and south of the equator. The ER Program area is situated between 26.7° and 29.1°, making it a subtropical region. According to the Köppen-Geiger Climate Classification [1], the ER-P is situated in the Cwa zone (C = Mild temperature, w = Dry winter, a = Hot summer). However, the country believes that the selected cropland and plantation forest removal factors and R:S Ratio have proper values because the majority of the forest areas in the TAL correspond to the subtropical domain and subtropical dry forest ecological zone. According to a local expert consultation during the REDD+ MRV capacity building workshop held in Kathmandu in January 2024, and organized by the World Bank and United States Forest Service [2], the tropical dry climate region is a more appropriate region for the project area than others available choices. In Nepal, western Nepal typically is drier and receives much less rainfall.

3a. CI of plantation forest removal factor: In the ER program, the main type of forest gain is natural secondary forest. There are no large-scale plantations in the program area. Therefore, using the CI of the natural secondary forest removal factor is a reasonable choice because this type of forest recovery has a low impact on the uncertainty of the removal estimate.

4. Tree-shaded croplands removal factor: Agroforestry IPCC removal factors for the Asia Tropical Dry regions range from 2.79 to 6.24 tC*ha⁻¹*yr⁻¹ (See Table 5.2 in Chapter 5 IPCC 2019). In a conservative approach, Nepal ER-P has opted for the lowest IPCC removal factor for Asia Tropical Dry, which corresponds to the alley-cropping agroforestry systems.

5. Visual interpretation rules to distinguish tree-shaded cropland from forest: The Nepal ER-P interpretation key provides definitions for tree-shaded cropland and forests to differentiate between these two land cover types. It's important to note that the IPCC's consistent representation of land areas (IPCC 2006 Chapter 3) includes cropland. This category encompasses cropped land such as rice fields, and agroforestry systems where the vegetation structure falls below the thresholds used for the Forest Land category. In Nepal, tree-shaded croplands are considered agroforestry systems, which are included in the forest definition.

6. NFI plots included in the Carbon Densities tool: The carbon accounting integration tools do not include the tree data values shared in the worksheet named Reference_period_Tree_data.xlsx. Additionally, the ER-PD or ER-MR documents do not refer to Reference_period_Tree_data.xlsx, as the team inadvertently shared the working file with the VVB.

In addition, the NFI dataset worksheet within the Carbon Densities tool contains 622 biomass measurement plots. Among these, 417 were measured between 2010 and 2013, while 571 were measured in 2022. The tree data file "MRV_tree_data_with_V_ratio.xlsx" includes 573 biomass plots measured in 2022. It is important to note that two additional plots ("33-61-3" and "17-67-4") were shared with the auditors in the tree data file "MRV_tree_data_with_V_ratio.xlsx," but these two plots were not used to calculate carbon densities.

The biomass values from the initial survey conducted between 2010 and 2013 were used to calculate the carbon density of unshaded crops. The file "MRV_tree_data_with_V_ratio.xlsx" only contains measurements from 2022, so it

	only includes the biomass measurements of unshaded crops from that year. Because of this, only one out of the 5 biomass plots for unshaded crops is found in the "MRV_tree_data_with_V_ratio.xlsx" file. However, it is critical to clarify that the Carbon densities estimate has been updated. The carbon density estimates for forest and non-forest areas are calculated using data from the NFI biomass plots. The NFI gives two measurements of biomass: the first was taken between 2011 and 2013, and the second in 2022. It's important to note that the first measurement was made during the ER-Program Reference Period 2004-2014. The determination of average carbon densities for non-forest lands is based on fourteen NFI plots, which provided biomass estimates for grassland, other land, and unshaded cropland. These estimates were obtained during the NFI's initial measurement phase, which was measured between 2011 and 2013. The initial carbon density estimates for natural forests were based on the second measurement. However, these estimates were made after the signing of the ERPA in September 2021. Therefore, the carbon densities of natural forests were recalculated using only the first measurement (2011-2013) [3]. The carbon densities of intact, degraded, and very degraded natural forests were recalculated using the first measurement from NFI's 388 plots. 7. Unshaded crop carbon density: The plots are classified as unshaded cropland based on experts' knowledge, experiences, the extent of the forest patch, and analysis of near-temporal images and changes in the land cover. In a conservative approach, Nepal has decided to use the country-specific average value for unshaded crops instead of the IPCC default factor. This is because the country-specific value is larger than the IPCC default value, resulting in a smaller emission factor for the transition from forest to unshaded crops. [1] https://koeppen-geiger.vu-wien.ac.at/present.htm [2] https://drive.google.com/drive/folders/1MTnBAaiiONdwnPJkaLYgTcBQISja2IYz?usp=sharing [3] The updated version of Carbon densities tool (CarbonDensitiesToolV5.xlsx) can be accessed at the following link: https://docs.google.com/spreadsheets/d/1e3REqxl3Oa7KqpC2vfHEdgZMUELQQ52w/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true
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Aster Findings - Round 2 (17 November 2024)	1. The VVB notes that no response has been provided to the Round 1 Finding issued by the VVB so this finding remains open. 2. Thank you for the clarification. The VVB confirms all stated geospatial files are provided for TAL area. However, the VVB clarifies that the requested NFI location spatial file in the original finding pertains to NFI plots across the entire country. 3. The ER Program provided the same response to findings 3, 3b, and 4 and therefore the finding responses are all assessed together. The ER Program states "The subtropical zones are located within the middle latitudes, spanning from approximately 23.5° to around 35° north and south of the equator." It is unclear to the VVB how this was determined by the ER Program. 3.1. The ER Program references the Köppen-Geiger Climate Classification; however, the IPCC values reference the Global Ecological Zones for FAO Forest Reporting 2010 Update and thus it is unclear to the VVB why the dataset referenced by IPCC is not applied. 3.2. The VVB reviewed the "Capacity Building" PowerPoints and it is generally unclear to the VVB what information is intended to be conveyed in these PowerPoints and how these PowerPoints support the use of the plantation forest gain value. 3.3. The VVB notes that the R:S ratio has a very high contribution to uncertainty and thus the accuracy of this value is critical. 3a. Thank you for the clarification. The VVB agree that the overall contribution of this parameter on uncertainty is low. This finding is closed. 4. Thank you for the clarification, the VVB agrees that the selection of a conservative value is in line with the Program's principles. This finding is closed. 5. Thank you for the clarification, this finding is closed. 5a. Thank you for the clarification, this finding is closed. 6. It is unclear to the VVB if the Reference_period_Tree_data.xlsx is a relevant dataset for the ER Program quantification. 6a. The ER Program states "The determination of average carbon densities for non-forest lands is based on fourteen NFI plots, which provided biomass estimates for grassland, other land, and unshaded cropland. These estimates were obtained during the NFI's initial measurement phase, which was measured between 2011 and 2013." The VVB notes that the CarbonDensities tab of the CarbonDensitiesToolV4.xlsx workbook using the variable t2_type_final and it is unclear to the VVB if this cover type also correspond to the initial time period (2010-2013) 7. This item is marked pending Finding 6a.
Round 2 MCAR/mCAR/OBS (17 November 2024)	1. MCAR: Please provide a response to the Round 1 Findings that were not responded to. 2. MCAR: Please provide the spatial file requested. 3, 3.1, 3.2, 3.3, 3a. 6, 6a. MCAR: Please clarify in line with the findings and provide updated quantification, supporting evidence, and program documents as necessary.

Round 2 Response from Program (25 February 2025)	1. The ER program states that Nepal's NFI (FRA) data has not sufficient number of sample plots in plantation ($N < 10$) and shaded crops ($N < 10$) due to which Tier 2 estimates were not used. 2. Requested NFI location file across the entire country was already shared in excel file https://drive.google.com/drive/folders/125INPqXpoWxZ05WjViX3BevNtSkZwl_T However, its spatial file is now uploaded in the same folder with name "NFI_Plots_Nepal" https://drive.google.com/drive/folders/125INPqXpoWxZ05WjViX3BevNtSkZwl_T 3. The subtropical zones. The ER Program says: Subtropics is the climate zone that situated near the tropical zone between the latitudes from 23.5 degree to 40 degree of the north and south hemispheres. Nepal lies between 26 degree 22 minutes to 30 degree 27 minutes north latitude and 80 deg. 4 min. to 88 deg. 12 min east longitude. (https://www.geocities.ws/gknepaleyn/data/data/location.html) 3.1 The ER Program needed to refer to the Köppen-Geiger Climate Classification since the Global Ecological Zones (GEZ) layer for the FAO Forest Reporting 2010 Update is unavailable for download on the FAO website [1]. The participant tried other websites but could not find or download this layer. A GIS layer for climate classification was essential to overlay with the Nepal ER Program boundary to determine the climate classification of the carbon accounting area. [1] https://www.fao.org/forest-resources-assessment/remote-sensing/global-ecological-zones-gez-mapping/en/ 3.2 The FRTC and REDD IC specialists who helped develop the ER Program were invited to the capacity-building workshop. PowerPoint presentations titled "Capacity Building" were shared to demonstrate to the VVB that methodologies for calculating forest emissions, removals, and reductions were revised during the workshop. This revision included discussions on various emission and removal factors, such as the forest plantation removal rate, culminating in final decisions on the EF and removal factor to be utilized. 3.3 The ER program agrees with VVB. However, due to lack of country specific R-S ratio, Nepal ER program used IPCC default values. 6. ER program has already uploaded the relevant dataset "tree_data_2010_2013" for the ER Program quantification: https://drive.google.com/drive/folders/1FdCoiHpMWaWqiOqOWkZDFDTWtzpMlfX56a 6a and 7. The pivot table's variable t2_type_final identifies non-forest land plots from the initial NFI survey. This classification relies on the non-forest land use type recorded for 2014/2015 in the CEO form. The average carbon densities for non-forest lands are determined from NFI plots surveyed during the initial measurement phase, which took place between 2011 and 2013, while the land use at the NFI plot locations was evaluated using imagery from 2014/2015. Since each plot has a different measurement date and considering that high-resolution Planet imagery has been available from 2014 onwards, it was decided to utilize the year immediately following the last measurement year of the initial NFI survey to expedite the land-use interpretation process and ensure that land-use interpretation is based on high-resolution imagery.
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Aster Findings - Round 3 (26 March 2025)	1. Thank you for the clarification. This item is closed. 2. Thank you for providing national NFI plots spatial file. This item is closed. 3. Thank you for the clarification. This item is closed. 3.1. Thank you for clarification. This item is closed. 3.2. Thank you for the additional explanation. This item is closed. 3.3. Thank you for the explanation. This item is closed. 6. Thank you for the clarification. This item is closed. 6a. Thank you for providing further clarification. However, the VVB has determined that using t2 CEO interpretations to estimate densities for non-forest lands is not appropriate when t1 CEO interpretations are available. The VVB also notes t2 CEO interpretations cover monitoring period of 2015-2017.
Round 3 MCAR/mCAR/OBS (26 March 2025)	6a. MCAR: Please update the estimation of carbon densities for non-forest lands based on t1 CEO interpretation. Please make sure all downstream calculations are updated and reflected in ER-MR.
Round 3 Response from Program (16 April 2025)	6a. Carbon density estimation for non-forest lands has been updated based on T1 CEO interpretation. The updated Carbon Densities tool can be accessed at the following link: https://docs.google.com/spreadsheets/d/1TkQ_dLmGF9Iz_h0Jx4zGRpiNJZN3UIoC/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true Emissions and removals have been recalculated to address findings 6, 70, 8, 26, and 69. Updates were made to tree-level biomass data carbon densities and the Nepal TAL Integration tool. Discrepancies have been resolved, and all downstream calculations and ERM values have been adjusted accordingly [1]. [1] Updated Nepal_TAL_Integration_tool_V6.xls can be accessed at the following link: https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true and the ERM has been updated accordingly.
Aster Findings - Round 4 (01 May 2025)	This item is closed as it duplicates Finding 8.
Item	27
Carbon Methodological Framework Version 3, April 2020	Indicator 14.3: Emission factors or the methods to determine them are the same for Reference Level setting and for Monitoring, or are demonstrably equivalent. IPCC Tier 2 or higher methods are used to establish emission factors, and the uncertainty for each emission factor is documented. IPCC Tier 1 methods may be considered in exceptional cases.
Requirement Met (Y/N/Pending)	Y

Evidence Used to Assess (Location in ERP, D, ERMR or Supporting Documents)	ERMR
Aster Global Findings (12 May 2024)	The VVB reviewed the Nepal_TAL_Integration_tool_V2.xlsx and noted the following: 1. It is unclear to the VVB what the basis for the number of years by which the Secondary Natural Forest EF is multiplied in the Parameters and Models tab. 2. There are multiple emission factors (EFs) that are expanded multiple times using the carbon fraction and CO₂e equivalent which results in the incorrect calculation of these EFs. 3. It is unclear to the VVB if it is appropriate to apply the root:shoot ratio to the shaded cropland, grassland, otherland, and unshaded cropland values as it is unclear to the VVB if these estimates only contain trees or consider other types of biomass (e.g. herbaceous plants and shrubs) and if R:S ratio applied by the ER Program is appropriate for these values. 3a. The ER Program applies a R:S ratio of 0.44 which is to be applied where AGB>125 TDM, it is unclear to the VVB why the ER Program has not applied an additional R:S for trees where AGB<=125 TDM/ha. 3b. Additionally, it is unclear to the VVB how the ER Program derived the SE for this value. 4. In the "Deforestation Model" of the Parameters and Models tab, the Final Land use is indicated as "Other Land" and the respective final land use emission factor is considered, it is unclear to the VVB why a final land use is considered as the description of this removal rate in the MR doesn't seem to involve a transition. 5. As stated in an email from a member of the WB Task Team for Nepal and dated January 23, 2024 the ER Program identified an error related to the natural forest removal rate and has proposed to use a removal factor that only considers 3 NFI plots rather than 16 NFI plots as originally stated in the ERMR. Please ensure that the ERMR, all quantification documents, etc. are updated in light of the error noted by the ER Program. 5a. The VVB reviewed the CarbonDensitiesToolV3.xlsx and there appears to be two options presented one option that uses 3 plots and another option that uses 8 plots. It is unclear to the VVB what the difference between these approaches are. 6. The VVB noted that 'Other Land Use' has a relatively high average carbon stocking. On investigation, this average appears to be elevated due to Sampling Unit 395b (FRA plot 16-69-3) which had high carbon stocking when it was forestland in 2011 during the initial measurement. However, this plot has since been deforested due to flooding. Yet, the stocks associated with the measurement in 2011 is attributed to the stocks of 'other land use' rather than forestland.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings and update the ERMR and quantification documents as necessary.

**Round 1 Response from Program
(18 September 2024)**

1. Secondary Natural Forest EFs: The Secondary Natural Forest EFs are calculated by multiplying the removal factor by the age of the forest when it is deforested. The forest's age in years is determined by subtracting the year the forest was gained from the middle point of the monitoring period when the secondary forest is deforested. Formulas in The Carbon Enhancement Model NF-F (AGB+BGB) [1] have been updated to consistently reflect the way the forest age is calculated.

2. EFs that are expanded multiple times: The Nepal TAL Integration tool has been updated to prevent the expansion of EFs multiple times [1]. The Carbon Enhancement Model NF-F (AGB+BGB) uses removal factors for natural secondary forest and plantation forest gains in units of $\text{tdm} \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$. Both removal factors are expanded to CO₂ by multiplying them by the conversion factor (CF) of 0.47 and the Carbon to CO₂ equivalent factor of 3.67, resulting in the removal factors of $16.69 \text{ tCO}_2 \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$ and $13.79 \text{ tCO}_2 \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$, respectively. The removal factor for tree-shaded crops is in units of $\text{tC} \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$, so it is only expanded to CO₂ by multiplying it with the Carbon to CO₂ equivalent factor of 3.67 ($-10.23 \text{ tCO}_2 \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$). The carbon densities in tons of dry matter per hectare per year ($\text{tdm} \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$) are used in the Deforestation and Degradation Models. These carbon density values are then converted to CO₂ by applying the Carbon Fraction (CF) of 0.47, the Carbon to CO₂ equivalent factor of 3.67, and the Root Shoot ratio of 0.44.

3, 3a, and 3b. Root to Shoot ratio. The root:shoot ratio value (0.44) and standard deviation (0.184) correspond to the Subtropical Dry/Asia/Origin Natural in Table 4.4 of the 2019 refinement to the 2006 IPCC guidelines for national GHG inventory. According to the reference column in Table 4.4, this value is taken from Mokany, K., et al., 2006 [2], and it applies for above-ground biomass less than or greater than $125 \text{ tdm} \cdot \text{ha}^{-1}$. Mokany et al. performed a comprehensive review of root biomass and root:shoot ratios for the major terrestrial biomes of the world, which involved a critical analysis of the methods used in each study to omit unreliable data from the final analysis. According to this review, the median root:shoot value for Tropical/subtropical grassland is 1.887 (SE 0.304), and for Shrubland is 1.837 (SE 0.589). These values are higher than the value for Subtropical Dry natural forest in Asia of 0.44. For conservative estimates, the Deforestation Emission Factors for grassland, other land, and unshaded cropland have been recalculated with the Mokany et al. median value for root:shoot value for Tropical/subtropical grassland [1.887 (SE 0.304)] [1].

4 and 6 Other lands: "Other lands" refers to non-forest areas. Therefore, when forests are converted into other lands, it is considered deforestation. Since Other Lands appear to have a high carbon density value, Nepal has decided to maintain the average value calculated to use a conservative Emission Factor for the transition from Forest to Other lands.

5 and 5a. Updated calculation of removals and Modified version of ERM. The updated version of the integration tools and the modified version of ERM can be accessed at the following links:

Integration tools:
https://drive.google.com/drive/folders/1vxEwgpDIQz70vfDhk2jmtf1_Fd6ikOzt?usp=sharing

Modified ERM: <https://docs.google.com/document/d/1PNjjYlpuggolwRXz0WjMg8-otpqoL00k/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true>

[1] The updated version of the Nepal TAL Integration tool can be accessed at the following link:
https://docs.google.com/spreadsheets/d/100Gu__isysou0ekiv8c4xlaVLupQtWvH/edit?usp=drive_link&ouid=100991295489415488908&rtpof=true&sd=true

[2] Mokany, K., et al., 2006 article can be accessed at the following link.
https://d1wqtxts1xzle7.cloudfront.net/67128747/j.1365-2486.2005.001043.x20210505-16161-16z805x-libre.pdf?1620309860=&response-content-disposition=inline%3B+filename%3DCritical_analysis_of_root_shoot_ratios_i.pdf&Ex



	pires=1721747142&Signature=JNXTINija7VACE8SPLDFbWoV-m0UgKd-9-bk6585KDmG8vv-6jguGY5-HDh2MI-GLRuYaLxII6s9OjXpMm6SphyLYWRXnMZhhWS8cYx0HJGVsIGL~psr2czSmO99UN3TxITSRJRRkj-vlluPiP0anH~ZvRB9xRIOM6I1RpgESlYImduo4YGlagLh90RoxwcE8AdjVxY09JINXOTRPyY9Soj8bFn4cZaoSyxyVS-fqwe-3Cfy~II~DNrGL4Z7k7YI7NcfwcOzPtI4fN~-jib2kSm98yuUllpyQ0iNG~CBI8VnxCTDhdIXS66ZNzUthR52gzhyk-Vsnp~kuYHXhg__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA
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Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification. The ER Program states " The forest's age in years is determined by subtracting the year the forest was gained from the middle point of the monitoring period when the secondary forest is deforested." It is unclear to the VVB if the ER Program is referencing the "Forestgain_date" column of the Natural Forest reg removal rate tab of the CarbonDensities tool of the or the formulas in cells N103:N105 of the Parameters and Models tab of the Nepal_TAL_Integration_tool workbook. 1a. In review of the formulas applied in cells N103:N105 of the Parameters and Models tab of the Nepal_TAL_Integration_tool workbook, the VVB noted that the formula in cell N103 uses (2016-1998), N104 uses (2016-2007), and N105 uses (2019.5). The VVB understands the 2016 and 2019.5 values represent the midpoint of the relevant monitoring period; however, it is unclear to the VVB what the basis of the years 1998 and 2007 are. 1b. Similarly the VVB notes that for example 2016-2007= 9 years; however, 12/31/2016-1/1/2007= 10 years. The VVB is requesting additional information on what the relevant dates for this calculation are and what evidence supports the use of these dates. 1c. The VVB reviewed the updated Removal factors and noted that the Confidence Intervals for the removal factors are not calculated correctly. 1d. It is unclear to the VVB what is the basis for excluding below ground biomass from the removal factors is, the VVB determined clarification is required to justify the reasoning for the exclusion of below ground biomass from removal emission factors. 2. Thank you for the clarification, the VVB notes that this issue still exists. The "Initial" carbon densities for Secondary Forests -> Other Land in the Deforestation Model table of the Parameters and Models tab are still incorrectly calculated. 3. Thank you for the clarification, the VVB reviewed the updated quantification in which the updated R:S, 1.887, is applied and is reasonably assured this is an appropriate factor. This finding is closed. 3a/3b. Thank you for the clarification, the VVB reviewed the referenced source and is reasonably assured this an appropriate value. This finding is closed. 4. Thank you for the clarification. The VVB notes that the ER MR states "It was assumed the carbon density of grasslands for Settlements." It is unclear to the VVB what evidence supports this assumption. 5. Thank you for the clarification. This finding is closed. 5a. Thank you for the clarification. The VVB notes that additional information regarding these differing approaches have been included within the ERM. This finding is closed. 6. Thank you for the clarification, the agrees that this a higher estimate results in a more conservative estimate. This finding is closed.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with the findings and provide updated quantification, supporting evidence, and program documents as necessary.

Round 2 Response from Program (25 February 2025)	1. "Forestgain_date" column of the Natural Forest reg removal rate tab of the CarbonDensities tool. The Forest gain date is crucial for determining the age of secondary forests, calculated as the fraction of the year between when the NFI plot measurement was taken and when the secondary forest transitioned from non-forest land use. This fraction is computed using the YEARFRAC function, which necessitates both start and end dates. For applying the YEARFRAC function, it is assumed that the forest gain date for each plot is set to June 1, the midpoint of the forest gain year. Consequently, the "Forestgain_date" column in the dataset reflects the date of forest gain in Excel's date format (year, month, day), derived from either the t1_forestgain_year or t2_forestgain_year. 1.a and 1b. In the Parameters and Models tab of the Nepal_TAL_Integration_tool workbook, the formulas located in N103:N105 have been updated. The years 1998 and 2007 mark the transitions of the secondary forest from non-forest land use. The age of the secondary forest at the time of deforestation in these formulas has been replaced with the YEARFRAC formula to provide pertinent dates for this calculation. This age, expressed as a year fraction, is determined using the YEARFRAC function, which needs both the start and end dates. It is assumed that the forest gain date is June 1, representing the midpoint of the forest gain year, while the year of deforestation is also set to June 1, corresponding with the midpoint of the monitoring period. 1.c The confidence interval of the removal factor in the "Parameters and Models" section of the Nepal TAL Integration tool has been corrected. Now, the CI refers to the correct cell in the Carbon Densities tool. 1.d. Below-ground biomass was already included in the removal factor. Notice that in cells N48..BC48 (natural secondary forest gain), N65..BC65 (plantation forest gain), and N82..BC82 (shaded cropland gain) in the Carbon Enhancement Model NF-F (AGB + BGB) in the Nepal Tal Integration tool, the removal factor is multiplied by 1 + R::S to obtain the AGB + BGB. 2. The "Carbon Density Final" in the Deforestation Model table of the Parameters and Model tab of the Nepal TAL Integration tool has been corrected. The R:S factor was incorrectly applied, which led to an underestimation of the EF, and emission reductions has been recalculated accordingly. 4. According to IPCC Good Practice Guidance for LULUCF, chapter 3, section 3.6.2, "the default assumptions for a Tier 1 estimate of change in carbon stocks in living biomass in land converted to settlements are that all living biomass present before conversion to settlements will be lost in the same year as the conversion takes place, and that carbon stocks in living biomass following conversion (CAfter) are equal to zero". However, to be conservative, the same carbon density for grasslands was assumed for settlements.
Aster Findings - Round 3 (26 March 2025)	1. Thank you for the confirmation. Closed. 1a. The program has provided clarification on the use of year frac to determine the duration of Secondary natural forest gain in the Parameters and Models tab of Nepal_TAL_Integration_tool_V6. Closed. 1b. The use of year frac addresses this finding. Closed. 1c. The VVB confirms the cell reference has been corrected in the Parameters and Models tab of Nepal_TAL_Integration_tool_V6, such that the CI of the natural forest removal rate is now referenced accurately. Closed. 1d. The VVB confirms that belowground biomass emission factors in the deforestation and degradation models of the Parameters and Models tab of Nepal_TAL_Integration_tool_V6 workbook appropriately incorporate the root:shoot ratios to account for belowground biomass. Closed. 2. As this is duplicate of Finding 70(2), this portion is closed. 4. The VVB acknowledges this choice is conservative. Closed.
Item	70

Carbon Methodological Framework Version 3, April 2020	Indicator 14.3: Emission factors or the methods to determine them are the same for Reference Level setting and for Monitoring, or are demonstrably equivalent. IPCC Tier 2 or higher methods are used to establish emission factors, and the uncertainty for each emission factor is documented. IPCC Tier 1 methods may be considered in exceptional cases.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERP, ERMR or Supporting Documents)	ERM
Aster Global Findings (12 May 2024)	Interpretation_Key_25April2023.docx, Nepal_TAL_Integration_tool_V2.xlsx, CarbonDensitiesToolV3.xlsx, MRV_tree_data_with_V_ratio.xlsx, Reference_period_Tree_data.xlsx
Round 1 MCAR/mCAR/OBS (12 May 2024)	New Line added to make the Findings Log more user friendly.
Round 1 Response from Program (18 September 2024)	1. Secondary Natural Forest EFs: The Secondary Natural Forest EFs are calculated by multiplying the removal factor by the age of the forest when it is deforested. The forest's age in years is determined by subtracting the year the forest was gained from the middle point of the monitoring period when the secondary forest is deforested. Formulas in The Carbon Enhancement Model NF-F (AGB+BGB) [1] have been updated to consistently reflect the way the forest age is calculated. 2. EFs that are expanded multiple times: The Nepal TAL Integration tool has been updated to prevent the expansion of EFs multiple times [1]. The Carbon Enhancement Model NF-F (AGB+BGB) uses removal factors for natural secondary forest and plantation forest gains in units of $\text{tdm} \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$. Both removal factors are expanded to CO_2 by multiplying them by the conversion factor (CF) of 0.47 and the Carbon to CO_2 equivalent factor of 3.67, resulting in the removal factors of $16.69 \text{ tCO}_2 \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$ and $13.79 \text{ tCO}_2 \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$, respectively. The removal factor for tree-shaded crops is in units of $\text{tC} \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$, so it is only expanded to CO_2 by multiplying it with the Carbon to CO_2 equivalent factor of 3.67 ($-10.23 \text{ tCO}_2 \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$). The carbon densities in tons of dry matter per hectare per year ($\text{tdm} \cdot \text{ha}^{-1} \cdot \text{yr}^{-1}$) are used in the Deforestation and Degradation Models. These carbon density values are then converted to CO_2 by applying the Carbon Fraction (CF) of 0.47, the Carbon to CO_2 equivalent factor of 3.67, and the Root Shoot ratio of 0.44. 3, 3a, and 3b. Root to Shoot ratio. The root:shoot ratio value (0.44) and standard deviation (0.184) correspond to the Subtropical Dry/Asia/Origin Natural in Table 4.4 of the 2019 refinement to the 2006 IPCC guidelines for national GHG inventory. According to the reference column in Table 4.4, this value is taken from Mokany, K., et al., 2006 [2], and it applies for above-ground biomass less than or greater than $125 \text{ tdm} \cdot \text{ha}^{-1}$. Mokany et al. performed a comprehensive review of root biomass and root:shoot ratios for the major terrestrial biomes of the world, which involved a critical analysis of the methods used in each study to omit unreliable data from the final analysis. According to this review, the median root:shoot value for Tropical/subtropical grassland is 1.887 (SE 0.304), and for Shrubland is 1.837 (SE 0.589). These values are higher than the value for Subtropical Dry natural forest in Asia of 0.44. For conservative estimates, the Deforestation Emission Factors for grassland, other land, and unshaded cropland have been recalculated with the Mokany et al. median value for root:shoot value for Tropical/subtropical grassland [1.887 (SE 0.304)] [1]. 4 and 6 Other lands: "Other lands" refers to non-forest areas. Therefore, when

	forests are converted into other lands, it is considered deforestation. Since Other Lands appear to have a high carbon density value, Nepal has decided to maintain the average value calculated to use a conservative Emission Factor for the transition from Forest to Other lands. 5 and 5a. Updated calculation of removals and Modified version of ERMR. The updated version of the integration tools and the modified version of ERMR can be accessed at the following links: Integration tools: https://drive.google.com/drive/folders/1vxEwgpDIQz70vfDhk2jmtf1_Fd6ikOzt?usp=sharing Modified ERMR: https://docs.google.com/document/d/1PNjYlPuggolwRXz0WjMg8-otpqoL00k/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true [1] The updated version of the Nepal TAL Integration tool can be accessed at the following link: https://docs.google.com/spreadsheets/d/100Gu__isysou0ekiv8c4xlaVLupQtWvH/edit?usp=drive_link&ouid=100991295489415488908&rtpof=true&sd=true [2] Mokany, K., et al., 2006 article can be accessed at the following link. https://d1wqtxts1xzle7.cloudfront.net/67128747/j.1365-2486.2005.001043.x20210505-16161-16z805x-libre.pdf?1620309860=&response-content-disposition=inline%3B+filename%3DCritical_analysis_of_root_shoot_ratios_i.pdf&Expires=1721747142&Signature=JNXTINija7VACE8SPLDFbWoV-m0UgKd-9-bk6585KdMg8vv-6jguGY5-HDh2MI-GLRuYaLxII6s9OjXpMm6SphyLYWRXnMZhhWS8cYx0HJGVsIGL~psr2czSmO99UN3TxITSRJRRkj-vlluPiP0anH~ZvRB9xRIOM6I1RpgESlyImduo4YGlagLh90RoxwcE8AdjVxY09JINXOTRPdysY9Soj8bFn4cZaoSyxyVS-fqwe-3Cfy~IL~DNrGL4Z7k7YI7NcfwcOzPti4fN~-jib2kSm98yuUllpyQ0iNG~Cbi8VnxCTDhdIXS66ZNzUthR52gzhyxk-Vsnp~kuYHXhg__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA
Aster Findings - Round 2 (17 November 2024)	The VVB reviewed the updated Nepal_TAL_Integration_tool_V5.xlsx and noted the following: 1. It is unclear to the VVB why Forest Gain for the period 1983-2003 starts in 1995 rather than 1983. Based on the VVB's understanding it seems that in 1995 there would actually be 4,950 hectares of forest gained rather than 381 hectares. 2. The "Carbon Density Final" in the Deforestation Model table of the Parameters and Models tab is incorrectly calculated.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with the findings and provide updated quantification, supporting evidence, and program documents as necessary.
Round 2 Response from Program (25 February 2025)	1. The Forest Gain Model has been revised to include the total area regenerated from 1983 to 2003 for natural forest and plantation forest, along with recalculated emission reductions. You can download the updated Nepal_TAL_Integration_tool_V6.xlsx at this link: https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true 2. The "Carbon Density Final" in the Deforestation Model table of the Parameters and Model tab has been corrected. The R:S factor was incorrectly applied, which led to an underestimation of the EF, and emission reductions has been recalculated accordingly. You can access the updated Nepal_TAL_Integration_tool_V6.xlsx at the following link:

	https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true
Aster Findings - Round 3 (26 March 2025)	The VVB's prior finding was in reference to the following in the Parameters and Models tab of Nepal_TAL_Integration_tool_V6.xlsx: - Cell O94 (Final carbon density of intact forest to unshaded cropland) reference cell F24 (unshaded cropland CI). It is unclear why the CI of unshaded cropland is referenced. In response to this finding, the Program changed formulae in cells O91:O105, such that the term (1+R:S) was changed to R:S. It is unclear why the aboveground biomass is now multiplied by the root:shoot ratio rather than 1 + the root:shoot ratio. The consequence is that the emission factors now represent belowground biomass only.
Round 3 MCAR/mCAR/OBS (26 March 2025)	MCAR: It appears only the belowground portion of CO₂e/ha of final deforested land uses are calculated. Please clarify how this is appropriate. MCAR: Please address the identified discrepancy and revise all downstream calculations accordingly. Please ensure the updated values are reflected in the ER-MR.
Round 3 Response from Program (16 April 2025)	Nepal_TAL_Integration_tool_V6.xls, Cell O94 (Final carbon density of intact forest to unshaded cropland) has been updated and now references cell E24 (unshaded cropland average). In cells O91..O105, the final carbon density of the transition is calculated. It is essential to clarify that for non-forest lands, the R::S for Grasslands (1.887) reported by Monaky et al. (2006, Table 2) is utilized. We consider it incorrect to use 1+1.887 to estimate the BGB for non-forest lands because it adds 1 twice. Discrepancies have been addressed, and all downstream calculations and ERMR values have been updated accordingly [1]. [1] Updated Nepal_TAL_Integration_tool_V6.xls can be accessed at the following link: https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true
Aster Findings - Round 4 (01 May 2025)	Closed as this finding is duplicative of Finding 6.
Item	28
Carbon Methodological Framework Version 3, April 2020	Indicator 16.1: The ER Program demonstrates that it has explored opportunities for community participation in Monitoring and reporting, e.g., of ER Program Measures, activity data, emission factors, safeguards and Non-Carbon Benefits, and encourages such community participation where appropriate.
Requirement Met (Y/N/Pending)	Y

Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ER-MR Section 2.1.3
Aster Global Findings (12 May 2024)	Section 2.1.3 'Role of communities in the forest monitoring system' describes how community based forest management groups are involved in monitoring of forest inventory plots. This means that there is community participation in monitoring of emission factors. That section also states communities' roles are "significant in...characteristics of deforestation and forest degradation including driver, causes and impacts". It is unclear what this means and whether this informs monitoring of activity data. This section does not appear to address whether communities participate in safeguards and Non-Carbon Benefits.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please state whether the ER Program has explored opportunities for community participation in Monitoring and reporting of safeguards and Non-Carbon Benefits. If so, please revise this Section 2.1.3 as appropriate. MCAR: Please clarify whether and how the ER Program uses community involvement to determine activity data. If so, please revise this Section 2.1.3 as appropriate to make clear how such monitoring and reporting is integrated in the Program's monitoring and reporting procedures.
Round 1 Response from Program (18 September 2024)	Community participation is not explicitly for monitoring activity data but more for implementing the forest management plan, protecting the forests, and sharing the forest's benefits. The forest management groups provide support during the inventory of the Permanent sample plot (National Forest Inventory). In addition, the community members also participate in sharing the benefits accrued from non-carbon benefits.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification on the scopes of community participation in monitoring and reporting. The VVB confirms that revisions to 2.1.3 of the ER-MR provide greater clarity with respect to this finding.
Item	29
Carbon Methodological Framework Version 3, April 2020	Indicator 17.3: By the time of verification, the ER Program has implemented its strategy to mitigate and/or minimize potential Displacement.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	Section 1.1.2 ER-MR

Aster Global Findings (12 May 2024)	1. In the ER-PD, the primary risk of displacement identified was unsustainable extraction of timber outside of the ER Program Area. The proposed mitigation of this was increasing availability of timber from the ER Program Area and increasing access to other energy sources. It is not clear in Section 1.1.2 how this has been achieved. 2. The VVB also notes a statement in Sec 1.1.2 appears to contradict the ER-PD: "The demand of timber in the ER program area, and Nepal, exceeds the sustainable supply.". If the timber harvesting in the ER program area is not sustainable, it is unclear how "the ER Program primarily proposes to increase the supply of timber from the ER Program Area". 3. The VVB reviewed the ERM and while Section 1.1.2 provides information on the measures necessary to mitigate and/or minimize potential displacement the ERM does not provide details regarding the implementation of the necessary measures (e.g. the number of community forests that have been handed over, specific actions that have been implemented to improve sustainable forest management, etc.).
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with findings 1 and 2 and update the ERM to provide additional clarification as necessary. MCAR: Please revise the ERM to provide information on the implementation of the ER Program's strategy to mitigate/minimize potential displacement and provide the supporting evidence/documentation to the VVB to demonstrate that the statements within the revised ERM are accurate in line with Finding 3.
Round 1 Response from Program (18 September 2024)	1. Unsustainable extraction of timber outside of the ER Program Area: The formulation of new policy, in particular provincial forest regulation and "Silviculture based forest management procedure," has been enhancing the increasing availability of timber from the ER program area. Over time, this approach will increase the timber supply as and when all forest management regimes start implementing silviculture-based forest management procedures. It has been in practice in different districts of the ER Program area. 2. Supply of timber from the ER Program Area: The statement "The demand for timber in the ER program area and Nepal exceeds sustainable supply" in the ER-PD refers to the transition period of state restructuring. With forest policies and procedures in place, sustainable forest management practices have been initiated in most of the forest management regimes in the ER program area. Additionally, private plantation and forestry practices have been initiated to fulfill people's demand for timber and fuelwood. 3. Measures necessary to mitigate and/or minimize potential displacement: It is expected that all forms of forest management will implement measures to mitigate potential displacement. Additionally, in the next decade, all community forests, collaborative forests, and government-managed forests will adhere to sustainable forest management (SFM), ensuring a continuous supply of forest products.
Aster Findings - Round 2 (17 November 2024)	The revision in the ER-MR states "The formulation of new policy, particularly provincial forest regulation and "Silviculture based forest management procedure," will increase the availability of timber from the ER program area. ". It is unclear what this policy is; the ER-MR does not reference a law, regulation, administrative rule, or any other similar policy. It is also unclear if this policy has been enacted. The statement from the ER-MR says that new policy will increase timber availability. The phrasing of the sentence makes it unclear if the policy is planned versus recently enacted.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with finding and update the ERM to provide additional clarification as necessary.

Round 2 Response from Program (25 February 2025)	Nepal has adopted federal system of governance and has three-tier of governance system: federal, provincial and local levels. The legal mandate for overall management of national forest lies with the Provinces. Madhesh, Bagmati, Gandaki, Lumbini and Sudurpaschim Provinces (these Provinces cover the Terai Arc Landscape of ER program) have promulgated and enacted provincial forest acts and regulations. These Forest Acts, Regulations, guidelines and procedures have envisioned the silviculture-based forest management practices and promoted sustainable forest management. Based on these acts and regulations, community-based forest management groups are implementing the silviculture-based forest management practices. As a result, the sustainable supply of forest products including timber have increased from the ER program area. (MoFE Annual report - 2019 - 2021). The link to relevant Provincial Forest Acts and Regulations are below: [Aster Global NOTE: see “Nepal Round 2 Findings - working file.docx” for Table provided as part of Round 2 Response, formatting issues prevent inclusion of table here] The table below shows the annual increment in timber supply from ER Program area: [Aster Global NOTE: see “Nepal Round 2 Findings - working file.docx” for Table provided as part of Round 2 Response, formatting issues prevent inclusion of table here] Source: Consolidated reports of the Division Forest Offices of ERP Districts.
Aster Findings - Round 3 (26 March 2025)	The VVB appreciates the elaborated provincial acts and regulations to support Table 5 (B.1). This is sufficient elaboration to demonstrate the policies in place to mitigate the effect of Unsustainable / illegal timber extraction on forest degradation. Closed
Item	30
Carbon Methodological Framework Version 3, April 2020	Indicator 18.2: The ER Program demonstrates how effective ER Program design and implementation will mitigate significant risks of Reversals identified in the assessment to the extent possible, and will address the sustainability of ERs, both during the Crediting Period, and beyond the Crediting Period.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ER-MR 7.3

Aster Global Findings (12 May 2024)	In the ER-PD, Section 11 identifies risk sources for reversal and mitigation. This information is also located in Section 7.3 of the ER-MR. Sources and mitigation strategies include: 1) Lack of stakeholder support: The mitigation strategy is to involve community based forest management groups in management and protection of forestland. 2) Lack of institutional capacity. The mitigation strategy is cross jurisdictional coordination, empowered by law, to engage federal, provincial and local agencies. 3a) lack of effectiveness in addressing drivers. The first mitigation strategy is reducing need for fuelwood collection through addressing the energy market. It is unclear if any specific actions have been taken. For example, Section 7.3 states "Nepal is a landlocked country and is dependent on neighboring countries for trade. Any delay on trade and transit arrangements may exert undue pressure on forests for various issues including fuel. Nepal has substantially increased hydropower capacity and is diversifying its energy mix by expanding biogas and solar programs, which will provide alternative energy sources and minimize the pressure on forest for fuelwood". It is unclear if there is an evidentiary basis for these claims (i.e., no laws, trade agreements, specific development projects, or governmental/private groups have been identified). 3b) Lack of effectiveness in addressing drivers. The second mitigation strategy is transfer of management of forests to community based forest management groups. Because the ER-MR states "the stray cattle, especially oxen, may lead to uncontrolled grazing to some extent.", it is unclear how it is that community based forest management reduces uncontrolled grazing. It is also unclear why uncontrolled grazing may lead to reversals (e.g. do ranchers clear forest to increase pasture?). 4) Loss due to natural disasters. The ER-MR includes: 4a) reconstruction following earthquakes could spur timber harvesting. This section does not state whether this source can and will be mitigated. 4b) earth movement could erode forest soils. This section does not state whether this source can and will be mitigated. 4c) climate change. It is unclear in this section what "interventions to increase understanding of climate vulnerability" means and how these might mitigate reversal risk. It is unclear if a proposal in an ER-PD to mitigate climate change impacts through improved tree species selection is a sufficiently efficacious action which meets this requirement. 4d) fire. It is unclear what "timely action to mitigate the impact and losses from the forest fires" means in practice to mitigate reversal risk. It is also unclear whether fires present a significant risk of reversals this seems to conflict with statements in the ER-MR and ER-PD which state that fires are not a significant source of emissions in the historical period. Additionally the ER-PD states "there is insufficient information to rigorously assess the impact of fires in the Terai on forests or emissions" which may lead one to understand that it is not known whether fires present a significant risk of reversals.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please provide additional evidence to support the mitigation strategy regarding mitigation of "Lack of long term effectiveness in addressing underlying drivers" with respect to energy markets and energy policy. MCAR: Please provide additional description of the risk of uncontrolled grazing and its mitigation MCAR: With respect to natural disturbances, please provide sufficient elaboration to describe what actions will be used to mitigate risks of reversal and ensure the descriptions are sufficiently to describe how these will be efficacious. If risks are not able to mitigate, please make this clear. MCAR: Please provide clarity on whether fires present a significant risk of reversal. If so, please provide clarity on how community based forest management actions mitigate emissions (i.e., "losses from forest fires").

Round 1 Response from Program (18 September 2024)	1 and 2. Additional evidence to support the mitigation strategy regarding mitigation of “Lack of long-term effectiveness in addressing underlying drivers”: The evidence supporting these claims includes government policies aimed at addressing climate change impacts. Specific examples of these policy commitments include progressive NDC with sectoral goals, NDC implementation plans, long-term strategies, and environmental regulations addressing issues such as carbon trading, reducing deforestation, forest degradation, and environmental preservation. In Nepal, activities such as forest clearance by ranchers are not permitted. The community forests are primarily focused on forest conservation, and therefore, grazing is strictly regulated. Most community forests do not allow cattle grazing, and many have implemented fencing to enforce this rule. Divisional Forest Offices (DFOs) regularly assist Community Forest User Groups (CFUG) in installing fences to protect the forests from uncontrolled grazing. The Forest Operation Plans of CFUGs include a grazing management scheme and the practice of stall feeding for cattle. Additionally, communities receive support from DFOs to plant fodder trees in their farmlands. 3. Natural disturbances. Nepal anticipates several potential risks to its forests and changes in product usage patterns following a disaster. However, Nepal is currently unable to address these risks due to the absence of data from reliable monitoring systems or studies, as well as a lack of long-term, strategic approaches to managing forests' vulnerability to climate change. There are still information, planning, and program design gaps that need to be filled in order to effectively address this challenge. 4. Forest fires. In the context of addressing the risk of forest fires in Nepal, it is important to note that previous assessments did not consider fires to be a significant source of historical emissions. Additionally, there is insufficient information to fully assess the impact of fires in the Terai on forests or emissions. While it's difficult to definitively determine whether fires pose a substantial risk of reversal based on existing information, it is worth noting that there has not been a documented case of stand-replacing fire in Nepal. This suggests that fire impacts on Nepal's forests are generally of low intensity, primarily affecting surface fuel while leaving the canopy mostly intact.
Aster Findings - Round 2 (17 November 2024)	Revisions to the ER-MR have provided additional elaboration on each of the individual risks of reversal . These changes are sufficient to close each individual sub-finding.
Item	31
Carbon Methodological Framework Version 3, April 2020	Indicator 19.1: ERs from the ER Program are deposited in an ER Program CF Buffer, managed by the Carbon Fund, based on a Reversal risk assessment. ERs generated during the Crediting Period and deposited in the ER Program CF Buffer (Buffer ERs) will not be transferred. In the event that a Reversal event occurs, an amount of Buffer ERs will be cancelled from the ER Program CF Buffer equivalent to the amount of transferred ERs affected by the Reversal event ⁷ .
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	Cover page, Section 7 and 8 of ERMR

Aster Global Findings (12 May 2024)	The requirement will be satisfied at project verification completion, as the transactional occurrences will be handled as follows: Section 5 of the Buffer Guidelines state "The ER Program Entity and the World Bank or the Buffer Manager will instruct, or help instruct, as applicable, the ER Transaction Registry administrator to transfer and deposit a portion of the serialized ERs, as Buffer ERs, into the account." Therefore, the VVB is not required to review that process. The ER Program has accounted for reversals and designated amounts of buffer to be deposited into the CF Buffer account (485,361 ERs for uncertainty; 302,542 ERs for reversal buffer; 137,519 ERs for pooled reversal buffer). The total reversal risk set-aside percentage applied to the ER Program was calculated to be 16% in Section 7.2 and 8 of the ERM. However, the "Reversal Risk assessment" tab of the "Nepal_TAL_Integration_tool_MC_V2.xlsx" file depicts the score as 18%. It is unclear to the VVB why this discrepancy exists. The risk factors selected do not appear to coincide with the allowed percentages from the Buffer Guidelines v4.1 (February 2024). For example, the allowed deduction percentages are 0, 5, and 10, while the project uses 8%. However, it appears the Program is using the 2022 Buffer Guidelines. No reversals have occurred, as this is the first RP. Note the cover page of the ERM states "Quantity of ERs to allocated to...", which appears to be a grammatical error.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please ensure that the ERM and the quantification documents are consistent in reporting the Reversal Risk Set Aside Percentage. MCAR: Please clarify why the ER Program does not use the latest version of the FCPF Buffer Guidelines. OBS: Consider revising the language on the cover page to remove the duplicate use of "to."
Round 1 Response from Program (18 September 2024)	1 and 2. Reversal Risk set aside percentage. In the "Reversal Risk Assessment" section of the Nepal TAL Integration tool [1], the percentage set aside for reversal risk was updated to 16% in line with Sections 7.2 and 8 of ERM. The updated value of the reversal risk set aside percentage was revised taking into account discount factors in Buffer Guidelines v4.1 (February 2024). 3. Edition of ERM Cover page. The grammatical error has been corrected in the ERM cover page. [1] The updated version of the Nepal TAL Integration tool can be accessed at the following link: https://docs.google.com/spreadsheets/d/100Gu__isysou0ekiv8c4xlaVLupQtWvH/edit?usp=drive_link&ouid=100991295489415488908&rtpof=true&sd=true

Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification. The VVB confirmed that the error noted has been corrected. This item is marked pending the final review of the quantification once all findings have been closed. 2. Thank you for the clarification. The VVB notes that the VVB has received clarification from FMT that applicable version of the Buffer Guidelines in v4.2; however, the ER Program has a 6 month grace period to not apply the updates. Specifically, FMT stated "The applicable version of the Buffer Guidelines is version 4.2. However, the requirements covering the updates to the reversal risk assessment are still not applicable given the six-month grace period that started on September 23rd this year. As such, annex 1 of the Buffer Guidelines (and Annex 5 of the MR) does not apply to Nepal." This item is marked pending, as the 6-month grace period expires 22 February 2025. 3. The VVB confirms the ER Program has addressed the OBS.
Round 2 MCAR/mCAR/OBS (17 November 2024)	
Round 2 Response from Program (25 February 2025)	
Aster Findings - Round 3 (26 March 2025)	Please note the grace period expired on 22 March of 2025.
Round 3 MCAR/mCAR/OBS (26 March 2025)	MCAR: Please update conformance to the Buffer Guidelines, or clarify how v4.1 is still applicable.
Round 3 Response from Program (16 April 2025)	FMT Clarification: The FMT hasn't yet completed the adjustment of Annex 1 which requires incorporating the feedback received from the different FCPF Programs. As such, that annex is still not applicable to Nepal or any other Country.
Aster Findings - Round 4 (01 May 2025)	Based on FMT's Clarification this item is not applicable. Item closed.
Item	32
Carbon Methodological Framework Version 3, April 2020	Criterion 23: To prevent double-counting, ERs generated under the ER Program shall not be counted or compensated for more than once. Any reported and verified ERs generated under the ER Program and sold and/or transferred under an ERPA shall not be sold, offered or otherwise used or reported a second time by the ER Program Entity. Any reported and verified ERs generated under the ER Program that have been sold and/or transferred, offered or otherwise used or reported once by the ER Program Entity shall not be sold and transferred to the Carbon Fund.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ERMR

Aster Global Findings (12 May 2024)	The VVB reviewed the ERMR which states " This includes matching forest-type sampling points with sample size to prevent double counting in the sample-based Activity Data estimate." It is unclear to the VVB what is meant by this statement. The VVB reviewed Section 6.4 of the ERMR which states that 100% of the Emissions Reductions (ER units) generated during the crediting period will be transferred to other entities; however, the ERMR does not provide information related to how verified ERs will not be counted more than once, including but not limited to details related to corresponding adjustments, ERs generated under the VCM, etc.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with Finding 1. MCAR: Please clarify in line with Finding 2 and updated the ERMR to provide additional detail regarding the system the ER Program will use and how the ER Program will ensure that ERs generated by the ER Program will not be counted more than once.
Round 1 Response from Program (18 September 2024)	1. Activity Data mechanism to avoid material errors. The statement "This includes matching forest-type sampling points with sample size to prevent double counting in the sample-based Activity Data estimate" is mentioned in Section 2.2 Table 6, the QA/QC procedures section of Activity Data Table Parameter in Section 3, and Section 5 Table 7. However, it does not refer to Criterion 23 of the Methodological Framework. This statement pertains to the QA/QC procedures included in the Activity Data Tool, which are designed to prevent material errors. 2. Prevent of ER double counting. The Ministry of Forest and Environment (MoFE) is responsible for managing the national carbon service, which includes accounting for the emission reductions from reducing deforestation and forest degradation. Since the Emission Reduction Purchase Agreement (ERPA) between the World Bank and the Forest Carbon Partnership Facility (FCPF) has already outlined the boundary area and the activities for emission reductions, the national authority will ensure that there is no double counting of the emission reductions.
Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification. This finding is closed. 2. Thank you for the clarification. This finding is marked pending other findings issued.
Round 2 MCAR/mCAR/OBS (17 November 2024)	
Round 2 Response from Program (25 February 2025)	
Aster Findings - Round 3 (26 March 2025)	Following closure of related findings, the VVB is reasonably assured that this requirement is met. Closed.
Item	33
Carbon Methodological Framework Version 3, April 2020	Indicator 37.1: Based on national needs and circumstances, the ER Program host country has made a decision whether to maintain its own comprehensive national REDD+ Program and Projects Data Management System, or instead to use a centralized REDD+ Programs and Projects Data Management System managed by a third party on its behalf. In either case of a country's use of a third party centralized REDD+ Programs and Projects Data Management System, or a country's own national REDD+ Programs and Projects Data Management System, the indicators below apply.

Requirement Met (Y/N/Pending)	N
Evidence Used to Assess (Location in ERP, ERMR or Supporting Documents)	ERM, Section 6.3
Aster Global Findings (12 May 2024)	The ERMR states "Thus, Nepal's REDD entity has decided to use a centralized ER transaction registry managed by a third party on its behalf – the REDD IC will use the World Bank ER transaction registry." However, the VVB notes that there are active carbon projects participating in the VCM through other Standards/Registries that do not appear to be listed or detailed within the World Bank ER Transaction Registry and thus it is unclear to the VVB if the ER Program is in compliance with this requirement.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the Finding and provide supporting evidence and update the ERMR as necessary.
Round 1 Response from Program (18 September 2024)	The MoFE is the designated national authority for the carbon service, which includes accounting for the ER for reductions in deforestation and forest degradation. As the ERPA between the World Bank and the FCPF has already defined the ER boundary area and the activities, the national designated authority will ensure that the double counting of the ER will not be done.
Aster Findings - Round 2 (17 November 2024)	The VVB understands that the DMS is not full operational. As requested by FMT, the VVB is issuing an mCAR to ensure at the time of the next verification the DMS is fully operational and compliant with the requirements of the FCPF CF.
Round 2 MCAR/mCAR/OBS (17 November 2024)	mCAR: The ER Program must ensure that the DMS is fully operational as required by the FCPF CF Program.
Round 2 Response from Program (25 February 2025)	FMT clarification: "CATS is the World Bank official registry system for all FCPF Programs. Only World Bank Programs can be registered in CATS. Other Programs from the voluntary carbon market should be registered in their corresponding registry system. This finding reflects the lack of understanding from the VVB of the purpose and functionality of CATS and the differences between the Data Management System (indicator 37.1 of the MF) and a transactional registry (criterion 38). The assessment of criterion 38 is not part of the scope of the assessment. If a new VVB team member has issued this finding, please ask him/her to refer to the training material shared with you during our different training sessions. We could also organize a short session with you to explain the DMS and CATS. Please let us know if you would be interested."
Aster Findings - Round 3 (26 March 2025)	The VVB understands that the DMS is not fully operational. As requested by FMT, the VVB is issuing an mCAR to ensure at the time of the next verification the DMS is fully operational and compliant with the requirements of the FCPF CF.
Round 3 MCAR/mCAR/OBS (26 March 2025)	mCAR: The ER Program must ensure that the DMS is fully operational as required by the FCPF CF Program.
Round 3 Response from Program (16 April 2025)	

Aster Findings - Round 4 (01 May 2025)	
Round 4 MCAR/mCAR/OBS (01 May 2025)	
Round 4 Response from Program (12 May 2025)	
Aster Findings - Round 5 (16 May 2025)	
Round 5 MCAR/mCAR/OBS (16 May 2025)	
Round 5 Response from Program (21 May 2025)	The ER Program has successfully installed the server system. The Data Management System (DMS) is in the process of being established and has not yet been operationalized, as it is undergoing testing and verification steps prior to deployment. The program expects the DMS to be fully functional by June 2025. Upon operationalization of the DMS, the program will inform FMT.
Aster Findings - Round 6 (22 May 2025)	Thank you for the response. The VVB acknowledges that the DMS is not fully operational during the first verification. As requested by FMT, the VVB is issuing an mCAR to ensure that at time of the next verification the DMS is fully operational and compliant with the requirements of the FCPF CF Program.
Round 6 MCAR/mCAR/OBS (22 May 2025)	mCAR: The ER Program must ensure that the DMS is fully operational at the time of the next verification as required by the FCPF CF Program.
Round 6 Response from Project Proponent (27 May 2025)	
Aster Findings - Round 7 (29 May 2025)	The ER Program has not responded to this mCAR; this mCAR will be noted in the VVB's report for address in the next ERM.
Item	34
Carbon Methodological Framework Version 3, April 2020	Indicator 37.3: The information contained in a national or centralized REDD+ Programs and Projects Data Management System is available to the public via the internet in the national official language of the host country (other means may be considered as required).
Requirement Met (Y/N/Pending)	N
Evidence Used to Assess (Location in ERP),	ERM, Section 6.3

ERM or Supporting Documents)	
Aster Global Findings (12 May 2024)	The VVB reviewed the World Bank ER Program Registry found at https://cats.worldbank.org/ and it is unclear to the VVB where this information has been made public in the national official language of the host country.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the Finding and provide supporting evidence and update the ERM as necessary.
Round 1 Response from Program (18 September 2024)	This information is not available in the National official language of Nepal.
Aster Findings - Round 2 (17 November 2024)	The VVB understands that the DMS is not full operational. As requested by FMT, the VVB is issuing an mCAR to ensure at the time of the next verification the DMS is fully operational and compliant with the requirements of the FCPF CF.
Round 2 MCAR/mCAR/OBS (17 November 2024)	mCAR: The ER Program must ensure that the DMS is fully operational as required by the FCPF CF Program.
Round 2 Response from Program (25 February 2025)	FMT clarification: "CATS is the World Bank official registry system for all FCPF Programs. Only World Bank Programs can be registered in CATS. Other Programs from the voluntary carbon market should be registered in their corresponding registry system. This finding reflects the lack of understanding from the VVB of the purpose and functionality of CATS and the differences between the Data Management System (indicator 37.1 of the MF) and a transactional registry (criterion 38). The assessment of criterion 38 is not part of the scope of the assessment. If a new VVB team member has issued this finding, please ask him/her to refer to the training material shared with you during our different training sessions. We could also organize a short session with you to explain the DMS and CATS. Please let us know if you would be interested."
Aster Findings - Round 3 (26 March 2025)	The VVB understands that the DMS is not fully operational. As requested by FMT, the VVB is issuing an mCAR to ensure at the time of the next verification the DMS is fully operational and compliant with the requirements of the FCPF CF.
Round 3 MCAR/mCAR/OBS (26 March 2025)	mCAR: The ER Program must ensure that the DMS is fully operational as required by the FCPF CF Program.
Round 3 Response from Program (16 April 2025)	
Aster Findings - Round 4 (01 May 2025)	
Round 4 MCAR/mCAR/OBS (01 May 2025)	
Round 4 Response from Program (12 May 2025)	

Aster Findings - Round 5 (16 May 2025)	
Round 5 MCAR/mCAR/OBS (16 May 2025)	
Round 5 Response from Program (21 May 2025)	The ER Program has successfully installed the server system. The Data Management System (DMS) is in the process of being established and has not yet been operationalized, as it is undergoing testing and verification steps prior to deployment. The program expects the DMS to be fully functional by June 2025. Upon operationalization of the DMS, the program will inform FMT.
Aster Findings - Round 6 (22 May 2025)	Thank you for the response. The VVB acknowledges that the DMS is not fully operational during the first verification. As requested by FMT, the VVB is issuing an mCAR to ensure that at time of the next verification the DMS is fully operational and compliant with the requirements of the FCPF CF Program.
Round 6 MCAR/mCAR/OBS (22 May 2025)	mCAR: The ER Program must ensure that the DMS is fully operational at the time of the next verification as required by the FCPF CF Program.
Round 6 Response from Project Proponent (27 May 2025)	
Aster Findings - Round 7 (29 May 2025)	The ER Program has not responded to this mCAR; this mCAR will be noted in the VVB's report for address in the next ERM.
Item	35
Carbon Methodological Framework Version 3, April 2020	Indicator 37.4: Administrative procedures are defined for the operations of a national or centralized REDD+ Programs and Projects Data Management System; and an audit of the operations is carried out by an independent third party periodically, as agreed with the Carbon Fund.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERP, ERM or Supporting Documents)	ERM, Section 6.3
Aster Global Findings (12 May 2024)	The VVB reviewed the ERM and noted the following: 1. The ERM does not state whether or not administrative procedures have been defined, thus it is unclear to the VVB if the ER Program complies with this requirement. 2. The ERM does not state whether or not an audit has been carried out or if this has been required by the Carbon Fund, thus it is unclear to the VVB if the ER Program complies with this requirement.

Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the Findings and provide supporting evidence and update the ERM as necessary.
Round 1 Response from Program (18 September 2024)	1. Administrative procedures for the REDD+ Programs and Projects Data Management System: The administrative procedures for the REDD+ programs are defined and elaborated in Section 1.1.3 of the ERM. The REDD Implementation Centre (REDD IC) has developed the National Forest Database (NFD) and the National Forest Information System (NFIS) as web-based platforms for data entry and visualization related to forests and Emission Reduction (ER) projects, accessible at http://nfis.redd.gov.np/nfis. The REDD IC is responsible for the development and implementation of ER projects across the country's national forests, ensuring a centralized approach that prevents multiple claims to the same ER credits. The NFIS system has been designed with a clear administrative procedure for data management, allowing for input and updates at both district and central levels. Forest officers in each district can enter management-level data, while the REDD IC has appointed a focal person in every forestry directorate and district to load primary information into the system. The REDD IC plays a key role in monitoring, controlling, and managing the data, with stakeholders having access to major open-source data through NFIS. In addition, the Forest Research and Training Center (FRTC) is developing the National Forest Monitoring Portal, a database management system supported by the UN REDD Programme, which is set to be deployed by December 2024. This portal, already installed, will house all data necessary for the Measurement, Reporting, and Verification (MRV) and Methodological Framework (MF) of the ERM. The manual for this database management system will be prepared following the deployment of the National Forest Monitoring Portal and the update of the NFIS. 2. REDD+ Programs and Projects Data Management System audit of the operations: The country sought clarification from FMT regarding this finding and received the following explanation: According to consultation made to FMT a third-party independent audit on the operations of Nepal's Projects and Programs Data Management System has not been required as of today. Please check the Program announcement for further Guidance.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. Based on the clarification provided by FMT, this finding is closed.
Item	36
Guideline on the application of the Methodological Framework Number 1 On the use of interpolation of data in relation to the Reference Period of an ER program	2. In the event that necessary activity data and emission factors are not available for the end-date and start-date of the Reference Period, ER Programs may estimate activity data or emission factors by interpolation of estimates made before and/or after the required start and end-date of the Reference Period assuming a linear progression of forest gain or loss (e.g. forest areas or forest carbon densities in 2012 may be derived as the mid-point between estimates for 2010 and 2014). For estimates made after the end-date of the Reference Period, it shall be ensured that these estimates occur before the Term of the ERPA.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD,	ERM

ERMR or Supporting Documents)	
Aster Global Findings (12 May 2024)	The VVB notes that there does not appear to be a description of any interpolation used by the ER Program within the ERMR. The VVB understands that the same Emissions factors are used for both the reference level and the reporting period, as a result it is unclear to the VVB if the ER Program is in compliance with this requirement. It is unclear to the VVB if the carbon density estimates have been made during the Reference Period and if not, if they were made prior to the signing of the ERPA.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings and update the ERMR, quantification documents, and provide supporting evidence as necessary.
Round 1 Response from Program (18 September 2024)	Carbon densities estimate. The carbon density estimates for forest and non-forest areas are calculated using data from the NFI biomass plots. The NFI gives two measurements of biomass: the first was taken between 2011 and 2013, and the second in 2022. It's important to note that the first measurement was made during the ER-Program Reference Period 2004-2014. The determination of average carbon densities for non-forest lands is based on fourteen NFI plots, which provided biomass estimates for grassland, other land, and unshaded cropland. These estimates were obtained during the NFI's initial measurement phase, which was measured between 2011 and 2013. The initial carbon density estimates for natural forests were based on the second measurement. However, these estimates were made before the signing of the ERPA in September 2021. Therefore, the carbon densities of natural forests were recalculated using only the first measurement (2011-2013) [1]. The carbon densities of intact, degraded, and very degraded natural forests were recalculated using the first measurement from NFI's 388 plots. Removal Factor Calculation. The calculation for the rate of regrowth removal in the forest is based on a sample of sixteen NFI plots set up in secondary forests. Three plots have biomass measurements for both 2022 and 2011-2014, five have measurements only for 2022, and eight have measurements only for 2011-2013. The removal rate was calculated using two methods: Opt1) Calculating the biomass increment between measurements taken in NFI plots located in secondary forest, and Opt2) Estimating the Mean Annual Increment (MAI) in biomass. To apply these calculation methods, the NFI plots were evaluated and categorized by their land use type, including non-forestland use, Permanent Forest, or Secondary Forests, along with the date the forest was regenerated. A total of 16 NFI plots were established in Secondary Forests. However, only 8 had biomass measurements after regeneration to calculate the MAI (Option 2), and only 3 plots had two measurements to obtain the biomass increment (Option 1). The worksheet "Natural Forest reg removal rate" in the Carbon Densities Tool contains the calculations to obtain the two estimates of the removal factor [1]. The MAI removal (9.69 tdm/ha/yr) was ultimately used for the removal calculation because it had a lower estimation error and was consistent with the peer review estimate made by Joshi et al. in 2021 [1]. Statistics Biomass increment Opt 1 tdm/ha/yr MAI Opt 2 tdm/ha/yr Average 7.27 9.69 Standard deviation 5.82 8.97

	n 3 8 CI 9.82 6.01 ERROR% 135% 62% [1] The updated version of Carbon densities tool (CarbonDensitiesToolV5.xlsx) can be accessed at the following link: https://docs.google.com/spreadsheets/d/1e3REqxl3Oa7KqpC2vfHEdgZMUELQQ52w/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true [2] Joshi, V. C., Negi, V. S., Bisht, D., Sundriyal, R., & Arya, D. (2021). Tree biomass and carbon stock assessment of subtropical and temperate forests in the Central Himalayas, India. Trees, Forests and People, 6, 100147. https://doi.org/10.1016/j.tfp.2021.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. After discussions with FMT, who provided clarification on this requirement, and a review of the updated Emission Factors estimation, the VVB is reasonably assured that the ER Program is in compliance with this requirement. This finding is closed.
Item	37
Guidelines on the application of the methodological framework Number 2 On technical corrections to GHG emissions and removals reported in the reference period Version 2 November 2020	2. Technical corrections shall not relate to any change to policy and design decisions affecting the Reference Level, including, carbon pools and gases, GHG sources, reference period, forest definition, REDD+ activities, Accounting Areas, identified forest types and definitions, definitions of REDD+ activities (deforestation, degradation). Any technical correction that is determined not to be consistent with this Guideline would be treated as described in paragraph 7 below.
Requirement Met (Y/N/Pending)	Y

Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ERMR
Aster Global Findings (12 May 2024)	The VVB reviewed Annex 4 of the ERMR and notes that there are 4 technical corrections applied; however, the VVB noted that there appear to be 5 technical corrections described throughout the text of the ERMR. Page 26 of the ERMR states "Technical corrections: The ERPD biomass removal factors were estimated using LiDAR data. Average removal factors were estimated based on areas reported as gain under the reference level submitted to the UNFCCC, which used LiDAR to estimate biomass and compared it with IPCC default values. To produce reference level estimates, a Monte Carlo analysis was applied to all biomass and Activity Data estimates, resulting in 10,000 randomized iterations." and it is why this technical correction is not described in Annex 4 as required by the template. The ERPD states "The ER Program Area is delineated jurisdictionally by 12 contiguous districts of the TAL, an area covering approximately 2.4 million hectares of Nepal's lowlands and some of the adjoining Chure Hills."; however, the Nepal_TAL_AD_tool_v2.xlsx appears to report a total ER Program area of approximately 2.6 million hectares. It is unclear to the VVB if the ER Program area has changed. The ERMR states " Changes in data sources, methods, and the re-estimation of Activity Data and Emission Factors have been made in calculating the FREL/FRL of Nepal ER-P. The changes made are detailed below." It is unclear to the VVB if the ER Program is referring to the current reference level (2004-2014) used for the FPCF Program or the FREL/FRL covering 2000-2010 and submitted to the UNFCCC. Additionally, the VVB notes that throughout the ERMR the terms "FREL", "FRL", "Reference Level" are used interchangeably and not consistently, which leads to significant confusion within the ERMR.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings and update the ERMR and provide supporting evidence as necessary.

**Round 1 Response from Program
(18 September 2024)**

The following technical corrections were initially listed in Annex 4: i. Reference Period, ii. Activity Data , iii. Forest carbon densities and iv. Forest degradation. However, the country omitted to include the technical correction of the Removal Factors. This technical correction will be included in Annex 4 as follows:

i. Removal Factor: The ERPD biomass removal factors were estimated using LiDAR data. Average removal factors were estimated based on areas reported as gain under the reference level submitted to the UNFCCC, which used LiDAR to estimate biomass and compared it with IPCC default values. To produce reference level estimates, a Monte Carlo analysis was applied to all biomass and Activity Data estimates, resulting in 10,000 randomized iterations.

For this monitoring report, NFI plots were evaluated and categorized based on their land use type, including non-forestland use, Permanent Forest, or Secondary Forests. This ensures consistency between the Emission Factors and land-use transition areas. To replicate CEO's data collection methods, the same time series analysis was used for NFI permanent plot locations.

The forest regrowth removal rate calculation is based on 16 NFI plots established in secondary forests. The removal rate was calculated using two methods: Opt1) Calculating the biomass increment between measurements taken in NFI plots located in secondary forest, and Opt2) Estimating the Mean Annual Increment (MAI) in biomass. To apply these calculation methods, the NFI plots were evaluated and categorized by their land use type, including non-forestland use, Permanent Forest, or Secondary Forests, along with the date the forest was regenerated.

A total of 16 NFI plots were established in Secondary Forests. However, only 8 had biomass measurements after regeneration to calculate the MAI (Option 2), and only 3 plots had two measurements to obtain the biomass increment (Option 1). The worksheet "Natural Forest reg removal rate" in the Carbon Densities Tool contains the calculations to obtain the two estimates of the removal factor [1]. The MAI removal (8.97 tdm/ha/yr) was ultimately used for the removal calculation because it had a lower estimation error and was consistent with the peer review estimate made by Joshi et al. in 2021 [1].

[1]The updated version of Carbon densities tool (CarbonDensitiesToolV5.xlsx) can be accessed at the following link:
https://docs.google.com/spreadsheets/d/1e3REqxl3Oa7KqpC2vfHEdgZMUELQQ52w/edit?usp=drive_link&ouid=100991295489415488908&rtfpof=true&sd=true

ii. Inconsistencies in reported Accounting Areas for the ER-Program. The ER program area has not been changed. The differences in the reported ER Program Boundary between the ERM, the ER-P boundary shapefile, and the pixel count used in the "Nepal_TAL_AD_tool_v2.xlsx" worksheet for estimating activity data are due to the fact that the strata areas in the Agreement map, which was projected in degrees (EPSG 4326-WGS 84), were calculated using pixel count areas assuming a 30m x 30m pixel size, which was incorrect. The Agreement map file was projected to the local projection EVEREST 1830_LCC_NEPAL to obtain the pixel size in meters [1]. Upon reprojecting this map, the obtained pixel size is 27.0814 m x 27.0814 m, and the pixel count values have also undergone slight changes (Refer to the table below). These changes in the pixel count values are attributable to the reprojection process. Regarding this issue, the Nepal_TAL_AD_tool has been updated, and activity data has been recalculated using the EVEREST 1830_LCC_NEPAL projected version map for strata area calculations. You can access the updated version of the Nepal_TAL_AD_tool_V5.xlsx at the following link:
https://docs.google.com/spreadsheets/d/1G3ToJYNA-n8kl12GfFBurQ-m9C1bcVyr/edit?usp=drive_link&ouid=100991295489415488908&rtfpof=true&sd=true

The area specified in the "Nepal_TAL_AD_tool_v5.xlsx" pertains to the Agreement Map (stratification map) utilized for estimating Activity Data. This area, measuring 2,287,325 hectares, represents the ER Program boundary area. It is noteworthy that this figure closely aligns with the shapefile ER-P boundary area, which measures



	2,286,509 hectares. Discrepancies in the measured area between the Agreement Map UTM projected and the ER Program boundary shapefile can be attributed to the respective file formats, one is in raster format, and the other in vector format. [1] FCPF_2004_2021_TAL_clipped_Agreement_Everest1830_LCC_NEPAL accessible at the following link https://drive.google.com/drive/folders/1ehLiof_pj4JpsXtRk-CioWi2cPEQOJgP?usp=sharing Agreement map pixel count area used to estimate activity data calculated with two different map projections. Map value Pixel count Area (ha) Strata EPSG:4326 - WGS 84 EVEREST 1830_LCC EPSG:4326 - WGS 84 EVEREST 1830_LCC 1 1,787,371 1,927,955 160,863 141,397 DEG 2 543,523 586,327 48,917 43,001 LOSS 3 2,068,731 2,230,870 186,186 163,613 GAIN 5 11,453,138 12,353,207 1,030,782 905,989 Forest 4 13,037,220 14,089,421 1,173,350 1,033,324 Nonforest Total 28,889,983 31,187,780 2,600,098 2,287,325 iii. Carbon Fund ER-Program technical corrections. The ERMR reference to "Changes in data sources, methods, and the re-estimation of Activity Data and Emission Factors have been made in calculating the FREL/FRL of Nepal ER-P. The changes made are detailed below." pertains to the current reference level (2004-2014) used for the FPCF Program.
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Aster Findings - Round 2 (17 November 2024)	1. The VVB notes that technical corrections have been revised in Annex 4 to address the first part of this finding. All five technical corrections are described. 2. The ER Program's responses states "ii. Inconsistencies in reported Accounting Areas for the ER-Program. The ER program area has not been changed. The differences in the reported ER Program Boundary between the ERM, the ER-P boundary shapefile, and the pixel count used in the "Nepal_TAL_AD_tool_v2.xlsx" worksheet for estimating activity data are due to the fact that the strata areas in the Agreement map, which was projected in degrees (EPSG 4326-WGS 84), were calculated using pixel count areas assuming a 30m x 30m pixel size, which was incorrect. The Agreement map file was projected to the local projection EVEREST 1830_LCC_NEPAL to obtain the pixel size in meters [1]. Upon reprojecting this map, the obtained pixel size is 27.0814 m x 27.0814 m, and the pixel count values have also undergone slight changes (Refer to the table below). These changes in the pixel count values are attributable to the reprojection process. Regarding this issue, the Nepal_TAL_AD_tool has been updated, and activity data has been recalculated using the EVEREST 1830_LCC_NEPAL projected version map for strata area calculations. You can access the updated version of the Nepal_TAL_AD_tool_V5.xlsx at the following link:" However, the updated ERM does not appear to contain this description of this technical correction. It is unclear to the VVB why the ER Program has not described this technical correction as required. 3. Thank you for the clarification. This item is addressed. 4. Annex 4 states "after the signing of the ERPA in September 2021"; however, Section 1.1 states "Subsequently, on February 24, 2021, the GoN and the World Bank entered into Emission Reductions Payment Agreement (ERPA)." These statements appear to state different dates on which the ERPA was signed.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with Finding 2 and update the ERM as necessary. MCAR: Please clarify in line with Finding 4 and complete a detailed review of the ERM to ensure that all information included in the ERM is accurate.
Round 2 Response from Program (25 February 2025)	2. Technical corrections in the ER-MR section 4 and Annex 8, section 7 have been updated, including the recalculation of the Accounting Area for estimating the activity data. 4. Nepal signed the ERPA on February 24, 2021 (available on the FCPF website https://www.forestcarbonpartnership.org/system/files/documents/FCPF%20Carbon%20Fund%20ERPA-Nepal%20Tranche%20A.pdf). As a result, the phrase "after the signing of the ERPA in September 2021" has been updated in the ER-MR.
Aster Findings - Round 3 (26 March 2025)	2. The VVB confirmed that the technical corrections have been described appropriately in the updated ER-MR. This item is closed. 4. The VVB confirmed that the correction is reflected in the updated ER-MR. This item is closed.
Item	38

Guidelines on the application of the methodological framework Number 2 On technical corrections to GHG emissions and removals reported in the reference period Version 2 November 2020	Description Acceptable technical corrections include: a. Replacement of emission or removal factors by others with improved accuracy based on a new National Forest Inventory or terrestrial inventory or new national/local allometric models. b. Replacement of emission or removal factors by others with higher precision and at least equal accuracy by either collecting data on additional sample plots, or applying an additional stratification or conducting a representative inventory that has higher precision.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ERMUR
Aster Global Findings (12 May 2024)	The ERMR states describes a change to the method in which forest carbon densities are estimated; however, it is does not provide information on the way that this technical correction is compliance with this requirement.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the finding and update the ERMR as necessary.
Round 1 Response from Program (18 September 2024)	The ERPD emission and removal factors do not align with the new strata considered in the updated sample-based estimate of activity data. Therefore, it was necessary to recalculate emission and removal factors according to the new stratification. Nepal has updated its method for estimating deforestation, forest gain, and degradation by using a new forest change map covering the period from 1983 to 2021. They have employed four mapping algorithms to identify areas where forest loss, degradation, and regrowth have occurred. The agreement map is utilized for the sample design, and reference data is collected through a time series analysis of 1,522 sampling plots in CEO. To differentiate between secondary and permanent forests and identify the age of forest gain cohorts, the sampling points are visually interpreted for the same period that the forest change map was created. This period is divided into four subperiods: 1984-2003, 2004-2014, 2015-2017, and 2018-2021. The canopy cover is visually evaluated in the permanent forest only for the years 2003/2004, 2014/2015, 2017/2018, and 2021. To ensure consistency between the Emission Factors and land-use transitions area, the NFI plots were evaluated and categorized according to their land use type, such as non-Forest land use, Permanent Forest, or Secondary Forests, for the current monitoring report. The same time series analysis and data collection methods used in CEO were replicated for the NFI permanent plot locations. Additionally, the canopy cover of Permanent Forest plots was evaluated to determine whether they were intact (7-9 points), degraded (4-6 points), or very degraded forest (1-3 points).
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification and the provision of the updated ERMR. The VVB notes that the ER Program's response and updates to the ERMR address the VVB's round 1 findings. However, this item is marked pending a final review of all technical corrections applied once all MCARs have been addressed.

Round 2 MCAR/mCAR/OBS (17 November 2024)	
Round 2 Response from Program (25 February 2025)	
Aster Findings - Round 3 (26 March 2025)	
Round 3 MCAR/mCAR/OBS (26 March 2025)	
Round 3 Response from Program (16 April 2025)	
Aster Findings - Round 4 (01 May 2025)	
Round 4 MCAR/mCAR/OBS (01 May 2025)	
Round 4 Response from Program (12 May 2025)	
Aster Findings - Round 5 (16 May 2025)	Pending item is addressed as all findings issued are now closed.
Item	39
Guidelines on the application of the methodological framework Number 2 On technical corrections to GHG emissions and removals reported in the reference period Version 2 November 2020	Description Acceptable technical corrections include: a. Improvements to the statistical design for estimation of activity data. This may be applied, for instance, when the precision of activity data is too low (e.g. >30% at 95% confidence level) to enable a precise estimation of Emission Reductions. These are: i. Increase the sampling intensity while maintaining the same sampling methodology as originally proposed; ii. Improve stratification, post-stratify, employ methods to reduce variance/improve precision of post-stratification estimates, or improve the accuracy of the stratification map through more accurate processing methods (e.g. using dense time series of satellite data, using satellite data with a higher spatial resolution, use more accurate classification algorithms, using multiple sensors); iii. Use more robust statistical estimator, including the replacement of map-based estimates by sample-based estimates using unbiased estimators, or replace sample based estimate
Requirement Met (Y/N/Pending)	Y

Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_Calc_SampleSize_SampleDistribution_TAL_2004_2021.xlsx ER-MR Annex 4 and ER-MR 2.2.2
Aster Global Findings (12 May 2024)	This Technical Correction describes the sample-based approach for monitoring activity data. However, with respect to improvement of activity data, it is not clear how this technical correction is related to the acceptable technical corrections listed in the Guideline on the application of the Methodological Framework Number 2.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the finding and update the ERM as necessary.
Round 1 Response from Program (18 September 2024)	A technical correction has been made to improve the stratification used for estimating activity data, which enhances the accuracy of the emissions and removals calculation. The original estimate of Activity Data (AD) did not differentiate between Permanent Forest Loss and Secondary Forest Loss and could not determine the age of the secondary forest. The deforestation estimate assumed that all forests are permanent, which has led to an overestimation of emissions from deforestation. This is because younger forests have less biomass than permanent forests. Additionally, due to the lack of information about the age of the forest, it was not possible to apply a zero growth rate to the secondary forest with more than 20 years, resulting in an overestimation of the removals. Therefore, Nepal has implemented a Land-use tracking and land-use data collection system to track land-use transitions and conversion dates (from forest to non-forest and vice versa). This allows for the differentiation between secondary and permanent forests within the forest lands category and helps in estimating the age of the forest. Knowing the age of the forest is crucial for accurately applying emission factors and estimating removals.
Aster Findings - Round 2 (17 November 2024)	Thank you for this explanation. The VVB understands now how the technical correction with regards to activity data meets the criteria for an acceptable technical correction, per this requirement
Item	71
Guidelines on the application of the methodological framework Number 2 On technical corrections to GHG emissions and removals reported in the reference period Version 2 November 2020	4. Technical corrections presented under paragraph 3, subparagraphs 1 and 2 a) shall be consistent with the MF and the IPCC guidance and guidelines and other good practice guidance (e.g. GFOI MGD) as assessed during Validation. The updated estimates and related estimation methods must be assessed by recognized independent technical experts (e.g. assessed by an independent panel of UNFCCC ROE experts or GFOI experts, authors of relevant IPCC chapters or relevant chapters of the GFOI MGD) prior to the provision of detailed summary to the FMT (c.f. para 7)
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	

Aster Global Findings (12 May 2024)	Pending findings related to technical corrections raised by assessment of paragraph 3
Round 1 MCAR/mCAR/OBS (12 May 2024)	
Round 1 Response from Program (18 September 2024)	
Aster Findings - Round 2 (17 November 2024)	The VVB notes that there are multiple Technical Corrections presented under paragraph 3. It is unclear to the VVB if the ER Program has had these updates assessed in line with this requirement.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with the finding and provide verifiable evidence to support the ER Programs response.
Round 2 Response from Program (25 February 2025)	It is crucial to note that technical corrections to the Emission Factors were implemented to ensure the Reference Level corresponds with Methodological Framework indicator 13.1 and accurately represents annual historical emissions. As a result, the emission factors were recalculated using National Forest Inventory (NFI) plot measurements gathered during the Reference Period of 2004-2014. The NFI carried out two biomass assessments: one from 2011 to 2013 and another in 2022. Notably, the first assessment occurred within the ER-Program Reference Period of 2004-2014, while the second happened after the ERPA's signing in February 2021. "MF Indicator 13.1: The Reference Level does not exceed the average annual historical emissions over the Reference Period, unless the ER Program meets the eligibility requirements in Indicator 13.2: If the available data from the National Forest Monitoring System used in the construction of the Reference Level shows a clear downward trend, this shall be taken into account in the construction of the Reference Level." Additionally, the Activity Data complies with Paragraph 3, subparagraph 2 of the Guidelines concerning the application of the methodological framework Number 2 since the recalculated activity data were derived from an enhanced stratification map, resulting in more accurate estimates of emission from deforestation and forest degradation and removals from secondary forest areas, plantation forests, and shaded tree crops, factoring in the average age of each cohort. Additional CLarification from the FMT: the FMT would like to confirm that the technical corrections applied to the reference level, including the updated estimates and related estimation methods, were assessed by the following experts that are part of the UNFCCC ROE: ● Naikoa Aguilar Amuchastegui ● Jose Maria Michel
Aster Findings - Round 3 (26 March 2025)	Thank you for the response. Upon review of additional explanation provided in response and clarification provided by the FMT (over email on 01/22/2025), the VVB determined this item is addressed. Item closed.
Item	40
Guideline on the application of the Methodological Framework Number 3 On the definition of reporting periods of Emission Reduction	1. REDD Countries are encouraged to propose Reporting Periods ¹ aligned to calendar years (January to December) and that are multiple of one year;

Programs Version 1 November 2018	
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ER-MR
Aster Global Findings (12 May 2024)	The cover page of the ERMR reports that the reporting period is 06 June 2018 - 31 December 2021 and the VVB notes that the ER Program has elected to not align it's reporting period with calendar years. The VVB noted that the ERMR inconsistently reports the reporting period.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please update the ERMR and ensure that the Reporting Period is reported consistently throughout.
Round 1 Response from Program (18 September 2024)	The country sought clarification from FMT regarding this finding and received the following explanation: “According to the guideline on the application of the Methodological Framework Number 3 on the definition of reporting periods of Emission Reduction Programs, in the case a REDD+ Country proposes a reporting period which is not multiple of one year: a. REDD countries will extend the estimation of GHG emissions and removals to a period (i.e. monitoring period) that fully includes the Reporting Period and that is multiple of one year. b. ERs will be estimated for the monitoring period following Criterion 22 of the MF and ERs attributed to the Reporting period will be allocated pro-rata to the number of months of the Reporting Period In this case, the monitoring period of Nepal starts in January 2018 to cover the full calendar year and a pro-rata has been applied as can be noted in section 4.3 of the Monitoring Report template. Therefore, Nepal is fully aligned with the FCPF Requirements.”
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB reviewed the updated ERMR and notes that the Reporting Period is now correctly reported throughout the ERMR.
Item	41
Guideline on the application of the Methodological Framework Number 3 On the definition of reporting periods of Emission Reduction Programs Version 1 November 2018	2. In the case a REDD Country is not able to align Reporting Periods to calendar years, the REDD country will provide technical reasons to justify this, e.g. availability of earth observation data due to cloud cover, alignment with technical specifications of the National Forest Monitoring System, etc.;

Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERP, ERM or Supporting Documents)	ER-MR
Aster Global Findings (12 May 2024)	It is unclear to the VVB where the ER Program has provided technical reasons for not aligning the Reporting Period with calendar years as encouraged.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please update the ERM to comply with this requirement.
Round 1 Response from Program (18 September 2024)	The country sought clarification from FMT regarding this finding and received the following explanation: “According to the guideline on the application of the Methodological Framework Number 3 on the definition of reporting periods of Emission Reduction Programs, in the case a REDD+ Country proposes a reporting period which is not multiple of one year: a. REDD countries will extend the estimation of GHG emissions and removals to a period (i.e. monitoring period) that fully includes the Reporting Period and that is multiple of one year. b. ERs will be estimated for the monitoring period following Criterion 22 of the MF and ERs attributed to the Reporting period will be allocated pro-rata to the number of months of the Reporting Period In this case, the monitoring period of Nepal starts in January 2018 to cover the full calendar year and a pro-rata has been applied as can be noted in section 4.3 of the Monitoring Report template. Therefore, Nepal is fully aligned with the FCPF Requirements.”
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. FMT has determined that the ER Program is in compliance with this requirement and thus this finding can be closed. However, the VVB disagrees as to the VVB does not understand what technical reason has been given to justify not aligning the reporting period to calendar years.
Item	42
Guideline on the application of the Methodological Framework Number 3 On the definition of reporting periods of Emission Reduction Programs Version 1 November 2018	a. REDD countries will extend the estimation of GHG emissions and removals to a period (i.e. monitoring period) that fully includes the Reporting Period and that is multiple of one year.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERP, ERM or Supporting Documents)	ER-MR

Aster Global Findings (12 May 2024)	As required the ER Program has extended the monitoring period to align with calendar years and the monitoring period fully encompasses the Reporting Period. However, throughout the ERM the terms "Reporting Period" and "Monitoring Period" are used interchangeably leading to confusion within the ERM.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please ensure that the terms "Reporting Period" and "Monitoring Period" are used appropriately and consistently in-line with the definitions of these terms within the ERM.
Round 1 Response from Program (18 September 2024)	The terms "Reporting Period" and "Monitoring Period" have specific meanings in the context of ERM. In the ERM, the term Reporting Period, as defined by the FCPF Glossary of terms, refers to each time period within the Crediting Period during which the Program Entity measures and reports on ERs generated under the ER Program in the form of ER Monitoring Reports. For the Nepal ER-Program ER-PA, the Reporting Periods are 1) June 22, 2018 - December 31, 2021, and 2) January 1, 2022 - December 31, 2024. On the other hand, the term Monitoring Period in the ERM refers to a time period during which activity data is estimated. For the Nepal ER-Program, the Monitoring Periods are categorized as follows: pre-reference period (t0) – 1983-2003, Reference Period (t1) – 2004-2014, first monitoring period (t2) – 2015-2017, second monitoring period (t3) – 2018-2021, and third monitoring period (t4) – 2022-2024. [1]https://www.forestcarbonpartnership.org/system/files/documents/fcpf_glossary_of_terms_2022_2.2.pdf
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB is reasonably assured that this requirement is satisfied. This finding is closed.
Item	43
Guideline on the application of the Methodological Framework Number 3 On the definition of reporting periods of Emission Reduction Programs Version 1 November 2018	b. ERs will be estimated for the monitoring period following Criterion 22 of the MF and ERs attributed to the Reporting period will be allocated pro-rata to the number of months of the Reporting Period.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ER-MR,Nepal_TAL_Integration_tool_V2
Aster Global Findings (12 May 2024)	It is unclear to the VVB if the ER Program complies with this requirement as the Reporting Period is not allocated pro-rata to the number of months rather it is allocated pro-rata to the number of days.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the finding, request clarification from the FCPF CF Secretariat and update the ERM and quantification documents as necessary.

Round 1 Response from Program (18 September 2024)	Reporting period allocation pro-rata has been corrected to the number of months. Please access the updated emission reduction calculation tool at the following link: https://docs.google.com/spreadsheets/d/100Gu__isysou0ekiv8c4xIaVLupQtWvH/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB notes that there appears to be a discrepancy in the FCPF CF Documentation with this requirement stating that "months" are the unit of interest for determine ERs on a pro-rata basis; however, the MR Template appears to indicate that "days" are the unit of interest to determines ERs on a pro-rata basis. Furthermore, FMT has clarified that the language within the ERM template (#days/#days) is the correct and that the language referenced in the tool is incorrect.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please update the quantification to calculate use the number of days as clarified by FMT.
Round 2 Response from Program (25 February 2025)	FMT clarification: the pro rata for this and all other ER Programs is estimated based on the number of days. This is clearly explained in the Monitoring Report template. According to above, the monitoring and reporting period lengths have been recalculated in days. The length of the monitoring period is 1,460 days, and the size of the reporting period is 1,288 days. You can access the updated Nepal_TAL_Integration_tool_V6.xlsx at the following link: https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true
Aster Findings - Round 3 (26 March 2025)	Thank you for the response. The VVB acknowledges the clarification provided by the FMT and noted that the reporting period is allocated pro-rata to the number of days. However, the VVB noted that the pro-rata factor of 0.89 is mentioned in several sections of the ER-MR, which appears to be inaccurate.
Round 3 MCAR/mCAR/OBS (26 March 2025)	MCAR: Please address the discrepancies noted in ER-MR.
Round 3 Response from Program (16 April 2025)	The correct pro-rata value is 0.88. The ERM has been updated accordingly.
Aster Findings - Round 4 (01 May 2025)	The VVB confirmed that the updates are made appropriately. This item is closed.
Item	44
Guidelines on the application of the Methodological Framework Number 4 On Uncertainty Analysis of Emission Reductions Version 1.0 November 2020	8. As part of the first step of the Uncertainty Analysis, REDD Country Participants shall identify and discuss in qualitative terms the main source(s) of uncertainty, systematic or random, and shall conclude whether the contribution of each individual source to total uncertainty of Emission Reductions ² is high or low ³ . Table 2 provides a list of the main source(s) of uncertainty that, at minimum, shall be evaluated qualitatively by REDD Country Participants, together with an indication on whether their contribution to overall uncertainty is typically high or low and whether they are systematic or random in nature ⁴ . If a REDD Country Participant decides to deviate from the indication, this shall be duly justified.
Requirement Met (Y/N/Pending)	Y

Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	Table 7 Nepal_ERMR_GHGaccounting_Nov202023_Final.pdf
Aster Global Findings (12 May 2024)	The VVB assessed Table 7 noting the following with regards to sources of uncertainty: -Measurement sources of uncertainty of activity data: It is unclear what "impossible transitions" means. - Representative sources of uncertainty of activity data: the risk level of random error is marked low however 'random' checkmark is marked with an X in contradiction. It is unclear how there is a random element of representativeness. - It is unclear how uncertainty due to sampling has no random element and why it has a systematic element. - Plot delineations has no checkboxes for systematic or random - It is unclear of sampling as a source of uncertainty for emission factors was determined as Low. - It is unclear how the program has demonstrated that biomass allometric model has been deemed to not be included in the quantification of uncertainty - Regarding "Other parameters", it is unclear what the other parameters are. The VVB notes the passage states "Other relevant parameters like root-to-shoot ratio and carbon fraction are taken from the 2006 IPCC guideline." This language, particularly, the use of the word "like" is vague. Last, the VVB checked whether the sources of uncertainty are appropriately denoted as residual uncertainty estimates. This included, among activity data, representativeness, and among emissions factors, sampling and other parameters. It is unclear why activity data representativeness was marked YES and why activity data sampling was marked NO. It is unclear why Other Parameters were marked YES as they do not appear in the below table in 12.2.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address the sub-findings with regards to Table 7 in the ERMR and ensure they meet the requirements of Table 1 in the Guidelines on the MF #4.
Round 1 Response from Program (18 September 2024)	i. Measurement sources of uncertainty of activity data: The term "impossible transitions" refers to changes that cannot occur within a short period of time. For example, it is unlikely for non-forest land to turn into intact forest in less than 5 years, or for intact forest to become secondary forest in such a short time frame, as it is improbable for secondary forest to be removed and regrown in less than 5 years. ii. Representative sources of uncertainty of activity data: In Table 7, the Random column has been updated to show the random contribution to the representativeness uncertainty. iii. Plot delineation: The plot delineation source of uncertainty now features checkmarks to indicate systematic and random contributions. iv. Sampling for emission factors: The level of uncertainty from this source has been updated to High. v. Biomass allometric model uncertainty: The country has not determined whether the uncertainty from this source is lower than the uncertainty from the sampling error. Since Nepal is unable to include this error source in the Monte Carlo simulation, due to the lack of a covariance table, the sampling uncertainty of carbon density in different land uses based in the NFI dataset has been increased by 10% at a 90% confidence level using the quadrature approach. The combined error was included in the Monte Carlo simulation. vii. Other Parameters. The language has been corrected accordingly.

	viii. Residual uncertainty estimates: Residual uncertainty estimates have been revised accordingly.
Aster Findings - Round 2 (17 November 2024)	The VVB assessed Table 7 noting the following with regards to sources of uncertainty: - Representative sources of uncertainty of activity data: the risk level of random error is marked low and the 'random' checkmark is marked with a checkmark. It is unclear how there is a random element of error due to representativeness. - It is unclear how uncertainty due to sampling has no random element and why it has a systematic element.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please address the sub-findings with regards to Table 7 in the ERMR and ensure they meet the requirements of Table 1 in the Guidelines on the MF #4.
Round 2 Response from Program (25 February 2025)	The participant has revised the representativeness as a error source for activity data and emission factors. Concerning activity data, the contribution from representativeness has been adjusted to “High” due to omission errors arising from the stratification map (Agreement map), and the random error component has been eliminated. Regarding emission factors, the impact of carbon densities, accounting for less than 1% of the total uncertainty, supports keeping their contribution to overall uncertainty as “Low” (refer to section 5.3 sensitivity analysis of ER-MR). In addition, the random element of error has been added to the Sampling as an error source.
Aster Findings - Round 3 (26 March 2025)	The VVB reviewed Table 7 in the ERMR (First Nepal ERMR-Revised-February 2025-clean version.docx) against Table 1 in the Guidelines on the MF #4. Source of Uncertainty: Activity Data: Representativeness- It is unclear why the 'Random' error box is checked. Sampling- It is unclear why the systematic box is checked and the random box is not checked. The response from the Program states that "representativeness" has been revised; but it is still unclear how it is justified to deviate from Table 1 and to state that random error is present in representativeness of activity data error. It is unclear from the response how it was justified to state that sampling error of activity data creates systematic error but not random error. This seems to be unaligned to the description for this source, which refers to the variance due to sampling (i.e., random error).

Round 3 MCAR/mCAR/OBS (26 March 2025)	MCAR: Please address the findings with regards to Table 7 in the ERM, and ensure they meet the requirements of Table 1 in the Guidelines on the MF #4.
Round 3 Response from Program (16 April 2025)	The Random error box in the AD Representative line has been corrected in Table 7 of the ERM. It is now unchecked to align with the guidelines outlined in Table 1 of MF #4.
Aster Findings - Round 4 (01 May 2025)	The VVB reviewed Table 7 in the ERM (First Nepal ERM-Revised-April 2025-track-change version.docx) against Table 1 in the Guidelines on the MF #4. Source of Uncertainty: Activity Data: Sampling- It is unclear why the systematic box is checked and the random box is not checked. It is unclear from the response how it was justified to state that sampling error of activity data creates systematic error but not random error. This seems to be unaligned to the description for this source, which refers to the variance due to sampling (i.e., random error), not to statistical bias.
Round 4 MCAR/mCAR/OBS (01 May 2025)	MCAR: Please address the findings with regards to Table 7 in the ERM, and ensure they meet the requirements of Table 1 in the Guidelines on the MF #4.
Round 4 Response from Program (12 May 2025)	The table 7 in the ER-MR has been updated accordingly.
Aster Findings - Round 5 (16 May 2025)	The VVB confirmed the corrections made. Table 7 now adequately conforms to the requirements in Table 1 in the Guidelines on MF 4.
Item	45
Guidelines on the application of the Methodological Framework Number 4 On Uncertainty Analysis of Emission Reductions Version 1.0 November 2020	9. The qualitative analysis of the main source(s) of uncertainty the REDD Country Participant shall discuss the measures that have been implemented to manage and reduce these sources of uncertainty. Source(s) of uncertainty with a high contribution to the overall uncertainty shall always be managed and reduced by the REDD Country Participant. The strategy to reduce these sources varies depending on the type of error as explained below; Table 2 provides the proposed strategy to address the different sources of uncertainty.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERP, D, ERM or Supporting Documents)	ER-MR Section 5
Aster Global Findings (12 May 2024)	Section 5.3 of the ER-MR quantitatively states the uncertainty but it is unclear how the ER-MR qualitatively discusses the measures taken to reduce the uncertainty associated with these sources
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please state how the sources of uncertainty are managed and reduced in Section 5.3.

Round 1 Response from Program (18 September 2024)	It's important to note that the Sensitivity Analysis has been updated to reflect the revised activity data and the recalculation of carbon densities (refer to findings 6, 7, 9, 10, 26, and 36), among other changes. In section 5.3, the ERM (Emission Reduction Measurement and Reporting) quantifies the contribution of major factors to the total uncertainty. The updated Sensitivity analysis has identified four parameters that represent 64% of the total uncertainty in ER (Emission Reduction) estimation: i) Removal Factor of natural secondary forest gain (22.7%), ii) ratio R::S (16.5 %), iii) Degraded forest - Intact forest Area 2018-2021 (15.8%), and iv) Deforested area from Intact Forest to Other Land in 2018-2021 (8.5%). To reduce uncertainty in estimating emission reductions in subsequent crediting periods, the following actions will be considered: For Activity data 1. Improve the activity data interpretation by using high-resolution imagery. 2. Further improve the interpretation key 3. Train the interpreter for the CEO For carbon densities and removal factors 1. Updating allometry equation 2. Increase the sample plots according to different strata.
Aster Findings - Round 2 (17 November 2024)	The VVB confirmed the revisions made in 5.3 of the ER-MR. These revisions meet the requirement. However, this item is marked pending a final review by the VVB once all quantification findings are closed that could impact the sensitivity analysis.
Round 2 MCAR/mCAR/OBS (17 November 2024)	
Round 2 Response from Program (25 February 2025)	
Aster Findings - Round 3 (26 March 2025)	
Round 3 MCAR/mCAR/OBS (26 March 2025)	
Round 3 Response from Program (16 April 2025)	
Aster Findings - Round 4 (01 May 2025)	The VVB confirmed the revisions made in 5.3 of the ER-MR. These revisions meet the requirement. However, this item is marked pending a final review by the VVB once all quantification findings are closed that could impact the sensitivity analysis.
Round 4 MCAR/mCAR/OBS (01 May 2025)	
Round 4 Response from Program (12 May 2025)	

Aster Findings - Round 5 (16 May 2025)	The VVB confirmed the revisions made in 5.3 of the ER-MR. These revisions meet the requirement. However, this item is marked pending a final review by the VVB once all quantification findings are closed that could impact the sensitivity analysis.
Round 5 MCAR/mCAR/OBS (16 May 2025)	
Round 5 Response from Program (21 May 2025)	
Aster Findings - Round 6 (22 May 2025)	The VVB confirmed the corrections made. Table 7 now adequately conforms to the requirements in Table 1 in the Guidelines on MF 4.
Item	46
Guidelines on the application of the Methodological Framework Number 4 On Uncertainty Analysis of Emission Reductions Version 1.0 November 2020	12. ER Programs shall report transparently the parameters that are subject to the Monte Carlo simulation, the type of Probability Distribution Function (PDF) including its parameters, the source of assumptions made, as shown in the applicable table of the ER-MR template. The PDF shall be well justified and shall adhere to the guidance provided in Section 3.2.2.4 of Chapter 3, Volume 1 of the 2006 IPCC Guidelines (and its 2019 refinement). When the parameter is based on sample data, Bootstrap methods may be applied in substitution of the PDF definition. The following decision tree shall be used to define the PDF.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ER-MR Section 5
Aster Global Findings (12 May 2024)	Section 5.2.1 lists the parameters, and the type of PDFs but does not list the PDF parameters and instead references a worksheet. The table in 5.2.1 creates confusion as it appears that the Program has a different list of parameters in Section 5.3 whereas the parameters are grouped in Section 5.2.1 5.2.1 in the ER-MR does not state that root:shoot ratio or carbon fraction are parameters but these parameters are used in the Parameters and Models tab of The TAL_Integration_tool_MC workbook.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please ensure that the parameters are consistently referenced in all tables which list parameters.

Round 1 Response from Program (18 September 2024)	Consistency between tables in sections 5.3/12.2.3 and 5.2.1/12.2. The consistency between the tables in sections 5.3/12.2.3 and 5.2.1/12.2 has been ensured. The table below lists the variables used to calculate ER, the Monte Carlo simulation, and Sensitivity analysis, grouped by activity data type (deforestation, degradation, and forest gain), emission factors (deforestation and degradation), and removal factors. Parameter included in the model Parameter values Range or standard deviations Error sources quantified in the model (e.g. measurement error, model error, etc.) Probability distribution function Assumptions Range %Error ratio R::S 0.44 0.30 68% 90% Confidence Interval Normal Mean 0.44, SD 1.184 Only values > 0. ratio R::S Grassland 1.887 0.499 26% 90% Confidence Interval Normal Mean 1.887, SD 0.304 CF 0.47 0.020 4% 90% Confidence Interval Normal Mean 0.47, SE 0.0120 CD-natural intact forest 203.84 9.77 5% 90% Confidence Interval Bootstrapping Only values > 0. CD-natural degraded forest 102.77 37.79 37% 90% Confidence Interval Bootstrapping Only values > 0. CD-natural very degraded forest 19.28 11.97 62% 90% Confidence Interval Bootstrapping Only values > 0. CD-grassland 4.07 6.07 149% 90% Confidence Interval Bootstrapping Only values > 0. CD-other land 39.95 53.09 133% 90% Confidence Interval Bootstrapping Only values > 0. CD-settlements 4.07 6.07 149% 90% Confidence Interval Bootstrapping Only values > 0. CD-unshaded cropland 48.69 36.41 75% 90% Confidence Interval Bootstrapping Only values > 0. RF-natural secondary forest gain 16.69 9.41 56% 90% Confidence Interval Normal Mean 16.69, SD 8.97 Only values > 0. RF-plantation forest gain 13.79 9.41 68% 90% Confidence Interval Normal Mean 13.79, SD 8.97 Only values > 0. It is assumed the same SD as Nat Sec forest gain removal rate RF-shaded cropland gain 10.23 2.46 24% 90% Confidence Interval Normal Mean 391, SE 1.50 Only values > 0. AD-Defo_Intact Forest-Grasslands-2004-2014 391 639 163% 90% Confidence Interval Normal Mean 391, SE 389 Only values > 0. AD-Defo_Intact Forest-Other Land-2004-2014 1,564 1,261 81% 90% Confidence Interval Normal Mean 1564, SE 767 Only values > 0. AD-Defo_Intact Forest-Settlements-2004-2014 1,676 2,199 131% 90% Confidence Interval Normal Mean 1676, SE 1337 Only values > 0. AD-Defo_Intact Forest-Unshaded Cropland-2004-2014 4,818 3,983 83% 90% Confidence Interval Normal Mean 4818, SE 2422 Only values > 0. AD-Defo_Degraded Forest-Other Land-2004-2014 3,506 3,672 105% 90% Confidence Interval Normal Mean 3506, SE 2233 Only values > 0. AD-Defo_Degraded Forest-Settlements-2004-2014 2,017 2,748 136% 90% Confidence Interval Normal Mean 2017, SE 1670 Only values > 0. AD-Defo_Degraded Forest-Unshaded Cropland-2004-2014 3,897 3,726 96% 90% Confidence Interval Normal Mean 3897, SE 2265 Only values > 0. AD-Defo_Intact Forest-Other Land-2018-2021 1,627 2,674 164% 90% Confidence Interval Normal Mean 1627, SE 1626 Only values > 0. AD-Defo_Secondary natural forest 2007-other land-2015-2017 1,627 2,674 164% 90% Confidence Interval Normal Mean 1627, SE 1626 Only values > 0. AD-Deg_Intact forest-Degraded forest -2004-2014 5,991 4,120 69% 90%
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	Confidence Interval Normal Mean 5991, SE 2505 Only values > 0. AD-Deg_Inctact forest-Very degraded forest-2004-2014 391 639 163% 90% Confidence Interval Normal Mean 391, SE 389 Only values > 0. AD-Deg_Degraded forest -Very degraded forest-2004-2014 1,627 2,672 164% 90% Confidence Interval Normal Mean 1627, SE 1625 Only values > 0. AD-Deg_Degraded forest -Inctact forest-2004-2014 7,904 5,553 70% 90% Confidence Interval Normal Mean 7904, SE 3376 Only values > 0. AD-Deg_Very degraded forest-Degraded forest -2004-2014 3,254 3,780 116% 90% Confidence Interval Normal Mean 3254, SE 2298 Only values > 0. AD-Deg_Inctact forest-Degraded forest -2018-2021 391 639 163% 90% Confidence Interval Normal Mean 391, SE 389 Only values > 0. AD-Deg_Degraded forest -Very degraded forest-2018-2021 782 900 115% 90% Confidence Interval Normal Mean 782, SE 547 Only values > 0. AD-Deg_Degraded forest -Inctact forest-2018-2021 3,505 3,671 105% 90% Confidence Interval Normal Mean 3505, SE 2232 Only values > 0. AD-Deg_Very degraded forest-Degraded forest -2018-2021 1,627 2,672 164% 90% Confidence Interval Normal Mean 1627, SE 1625 Only values > 0. AD-ForestGain_Natural Forest_1983-2003 7,996 5,869 73% 90% Confidence Interval Normal Mean 7996, SE 3570 Only values > 0. AD-ForestGain_Natural Forest_2004-2014 17,136 8,467 49% 90% Confidence Interval Normal Mean 17136, SE 5150 Only values > 0. AD-ForestGain_Natural Forest_2015-2017 3,114 3,615 116% 90% Confidence Interval Normal Mean 3114, SE 2199 Only values > 0. AD-ForestGain_Natural Forest_2018-2021 19,156 8,888 46% 90% Confidence Interval Normal Mean 19156, SE 5406 Only values > 0. AD-ForestGain_Plantation Forest_1983-2003 1,627 2,674 164% 90% Confidence Interval Normal Mean 1627, SE 1627 Only values > 0. AD-ForestGain_Plantation Forest_2015-2017 1,627 2,674 164% 90% Confidence Interval Normal Mean 1627, SE 1627 Only values > 0. AD-ForestGain_Shaded cropland_2015-2017 391 639 163% 90% Confidence Interval Normal Mean 391, SE 389 Only values > 0. AD-ForestGain_Shaded cropland_2018-2021 1,627 2,674 164% 90% Confidence Interval Normal Mean 1627, SE 1627 Only values > 0.
Aster Findings - Round 2 (17 November 2024)	1) The R::S standard deviation is stated to be 1.184 in 5.2.1 of the ER-MR which does not match the SD of 0.184 in the 'Parameters and Models' tab of Nepal_TAL_Integration_tool_V5_MC.xlsx. 2) It is unclear why the EF tab uses 0.24 as the standard deviation for shaded cropland gain. According to IPCC TABLE 5.2 (UPDATED1) DEFAULT COEFFICIENTS FOR ABOVE- AND BELOW-GROUND BIOMASS IN AGROFORESTRY SYSTEMS CONTAINING PERENNIAL SPECIES², the error is 24% of 2.79. 3) The Nepal_TAL_Integration_tool_V5_MC uses bootstrapping for natural secondary forest and plantation gain removal factor uncertainty. However, this is described in the ER-MR as having used a normal distribution.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please ensure that the parameters used for PDFs are accurately reported in the ER-MR MCAR: Please clarify the standard deviation used for shaded cropland gain
Round 2 Response from Program (25 February 2025)	The PDF for the Removal Factors of natural secondary forest and plantation gains has been updated to the bootstrapping method. Regarding shaded cropland gain, we clarify that the value of applying the 24% sampling error of 2.79 was used in the Monte Carlo simulation. The table in Section 5.2.1 of the ER-MR has been updated accordingly.

Aster Findings - Round 3 (26 March 2025)	The R::S standard deviation is stated to be 1.184 in 5.2.1 of the ER-MR, which does not match the SD of 0.184 in the 'Parameters and Models' tab of Nepal_TAL_Integration_tool_V5_MC.xlsx.
Round 3 MCAR/mCAR/OBS (26 March 2025)	MCAR: Please explain the discrepant values for R::S standard deviations
Round 3 Response from Program (16 April 2025)	The R::S standard deviation in 5.2.1 of the ER-MR has been corrected to match the SD of 0.184 in the 'Parameters and Models' tab of Nepal_TAL_Integration_tool_V6_MC.xlsx
Aster Findings - Round 4 (01 May 2025)	The VVB notes this correction was made in 5.2.1 but not in 12.2.1
Round 4 MCAR/mCAR/OBS (01 May 2025)	MCAR: Please ensure root:shoot ratio is correctly reported in the ERM.
Round 4 Response from Program (12 May 2025)	The following table with AGB, BGB, and total biomass values was included in Section 3 of ERM and Section 8 of Annex 4, indicating the root:shoot values used to calculate BGB. Land Cover; AGB (tCO₂e/ha); BGB (tCO₂e/ha); Total Biomass (AGB+BGB) - Intact Forest; 348.26; 153.23; 501.49; - Degraded Forest; 175.65; 77.29; 252.94 - Very Deg Forest; 31.86; 14.02; 45.88 - grassland; 36.10; 68.12; 104.22 - other land; 47.17; 89.01; 136.18 - unshaded cropland; 99.16; 187.11; 286.27 Below-ground biomass for forest lands was estimated using a root-to-shoot ratio of 0.44 (2019 refinement to the 2006 IPCC guidelines for national GHG inventory, Table 4.4 -Subtropical dry Asia, . B > 125 tons/ha). BGB for non-forest lands was estimated using R::S 1.887 (Mokany et al., 2006; Table 2).
Aster Findings - Round 5 (16 May 2025)	The VVB acknowledges the corrections made in the ERM. However, the specific issue raised by the VVB was not addressed. Note that the table in 5.2.1 states that the probability distribution function for ratio R:S is "Normal Mean 0.44, SD 0.184". Meanwhile, the table in 12.1 states that the probability distribution function for ratio R:S is "Normal Mean 0.44, SD 1.184". These two statements conflict.
Round 5 MCAR/mCAR/OBS (16 May 2025)	MCAR: Please ensure root:shoot ratio is correctly reported in the ERM.
Round 5 Response from Program (21 May 2025)	The ratio SD for R:S in Table 12.1 has been corrected to SD 0.184.

Aster Findings - Round 6 (22 May 2025)	The VVB confirms that the SD of root:shoot as reported in the ERM in both 5.2.1 and 12.1 match the values used in the Integration Tool workbook.
Item	47
Guidelines on the application of the Methodological Framework Number 4 On Uncertainty Analysis of Emission Reductions Version 1.0 November 2020	Figure 1 Decision tree for the definition of PDF.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	CarbonDensitiesTool workbook
Aster Global Findings (12 May 2024)	Following the flowchart of Figure 1 it appears that Parameter estimates are representative and raw data are available in the CarbonDensitiesTool workbook. It is unclear where the goodness of fit tests have been applied to determine that the truncated normal distributions are appropriate
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with finding.

**Round 1 Response from Program
(18 September 2024)**

The table below displays the results of the normality test conducted on carbon densities and removal rate estimations for various land uses in Nepal's ER-Program. The test was based on NFI biomass plots and utilized the Shapiro-Wilk Test calculated with the Real Statistics Resource Pack [1]. All parameters demonstrate a normal distribution, with the exception of Intact Forest and Grasslands. It's worth noting that four out of the seven parameters are calculated using less than eight data points, which makes it challenging to fit a probability density function (PDF) distribution to these parameters. As a result, following the FCPF Guidance note on estimating the uncertainty of Emission Reductions (ERs) using Monte Carlo simulation, the country has opted to use the bootstrapping approach instead of a specific non-normal distribution to sample the values of Carbon Densities for use in the simulation. According to the FCPF guidance, sampling from a dataset has the advantage that no assumptions are needed about the nature of the distribution. If the distribution is not normal, then bootstrapping would be more accurate, unless the data are not representative.

The Monte Carlo simulation has been updated [2] and now includes the bootstrapping sampling method for all carbon density parameters except for the Natural Forest Removal Rate. Since the removal rate follows a normal distribution, we used a normal probability density function (PDF) in the Monte Carlo simulation. The bootstrapping sampling was done using Infostat software with the Resampling method (Randomly with replacement). The resampling results for the different carbon density parameters can be found in [4], [5], [6], [7], [8], and [9].

Parameter

n Shapiro-Wilk Normality test results

W-stat p-value alpha Normal

Natural Forest Removal rate 8 0.836001505 0.068507908 0.05 Yes

Intact Forest Carbon Density [4] 367 0.955291461 4.04244E-09 0.05 No

Degraded Forest Carbon Density [5] 14 0.932294362 0.32850226 0.05 Yes

Very Degraded Forest Carbon Density [6] 7 0.929524584 0.546863453 0.05 Yes

Grassland Carbon Density [7] 5 0.758082482 0.03530002 0.05 No

Other Land Carbon Density [8] 4 0.825633656 0.156699544 0.05 Yes

Unshaded Crops Carbon Density [9] 5 0.945215767 0.703007608 0.05 Yes

[1] Real Statistics Resource Pack is available at the following link: <https://real-statistics.com/free-download/>

[2] The updated Monte Carlo simulation tool can be accessed at the following link: <https://docs.google.com/spreadsheets/d/11mM9bnqVLZ6hiFvupfaviTksvHlfpF3u/ed it?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true>

[3] Infostat software is available at the following link: <https://www.infostat.com.ar/>

[4] Intact Forest bootstrapping

<https://docs.google.com/spreadsheets/d/1tD49N6OB-5qAPEleH8y4oPeTRwTQQ0nD/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true>

[5] Degraded Forest bootstrapping

https://docs.google.com/spreadsheets/d/1IWhWH_KQsWlrh3qz_-X-Ur5AH3Olin5e/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true

[6] Very Degraded Forest bootstrapping

https://docs.google.com/spreadsheets/d/14rMgDO_PZeYlwBO9PXBIWjt_98NtUo1a/edit?usp=drive_link

[7] Grassland bootstrapping

<https://docs.google.com/spreadsheets/d/1AaSR6NDF86Xqn3G67axs2xAAWtfjBhiX/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true>

[8] Other Land bootstrapping https://docs.google.com/spreadsheets/d/1zNyRyyK-vNAZGeQ5GFJwvFwQYePdVDq/edit?usp=drive_link

[9] Unshaded Crops bootstrapping <https://docs.google.com/spreadsheets/d/192L->

	jqRohxAZiX3R_KLWvPoks4TbGYCJ/edit?usp=sharing&oid=100991295489415488908&rtpof=true&sd=true
Aster Findings - Round 2 (17 November 2024)	The Program has responded with diagnostic tests of normality to demonstrate fit. This item may be closed. The ER-MR transparently reports parameters subject to MC simulation.
Item	48
FCPF Buffer Guidelines Version 4.1, February 2024	6.4 The portion of Total ERs allocated as Buffer ERs to the Uncertainty Buffer shall be equal to the sum of the two amounts calculated in Clauses 6.2 and 6.3 of the Buffer Guidelines.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	Nepal_TAL_Integration_tool_V2 Table in Section 8 of ER-MR
Aster Global Findings (12 May 2024)	The VVB reviewed the Nepal_TAL_Integration_tool_V2.xlsx and the ERMR. The Nepal_TAL_Integration_tool_V2.xlsx shows the reversal risk set aside percentage as 18%; however, the ERMR states that the this percentage is 16%. It is unclear to the VVB why this discrepancy exists.

Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the finding and update the quantification of and ERMR as necessary.
Round 1 Response from Program (18 September 2024)	The Nepal TAL integration tool has been updated with the correct 16% Reversal Risk set-aside percentage. The updated integration tool can be accessed at the following link: https://docs.google.com/spreadsheets/d/100Gu__isysou0ekiv8c4xlaVLupQtWvH/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB reviewed the updated ERMR and confirmed this error has been corrected. This finding is closed.
Item	49
FCPF Buffer Guidelines Version 4.1, February 2024	13.1 If an ER Program wishes to supply "CORSIA Eligible Emissions Units" (as defined under CORSIA), the ER Program shall have in place a robust Reversal Management Mechanism that addresses the risk of Reversals beyond the Term of the CF ERPA and is equivalent to the ER Program CF Buffer. A Reversal Management Mechanism is considered to be equivalent to the ER Program CF Buffer if:
Requirement Met (Y/N/Pending)	NA
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ERMR
Aster Global Findings (12 May 2024)	The VVB reviewed the ERMR and noted the following: 1. The ER Program is currently undergoing an extended validation and per the FCPF Validation and Verification guidelines "ER Programs wishing to generate CORSIA17 eligible Emissions Units" (as defined under CORSIA) shall be subject to a Validation with extended objectives, i.e. covering objectives specified in paragraph 32 and 33. Objectives in paragraph 33 shall not apply to Validation of all other ER programs." therefore the VVB assumes that the ER Program wishes to generate CORSIA eligible emission units; however, this is not specified within the ERMR. 2. Additionally, the ERMR provides no information to demonstrate compliance with the requirements in Section 13 of the FCPF Buffer Guidelines Version 4.1, February.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings and provide supporting evidence and supporting documentation to demonstrate compliance with the relevant criteria as necessary.
Round 1 Response from Program (18 September 2024)	The country sought clarification from FMT regarding this finding and received the following explanation: "As can be noted in the ER Monitoring Report template, and FCPF Process Guidelines, ER Programs are not required to specify in the MR their intentions to generate CORSIA-eligible units. The FMT has clarified to all VVBs that a validation with extended scope is only applicable to ER Programs interested in generating CORSIA-eligible units. As such, all ER Programs that successfully complete the validation with extended scope can be considered CORSIA eligible. The country's intention to go through a validation with extended scope is communicated by the country to the FMT, and the FMT defines this in the TORs for hiring the VVB. Any additional description in the MR is considered redundant and unnecessary. Therefore, the FMT kindly requests the VVB to remove this finding."

Aster Findings - Round 2 (17 November 2024)	NA - Based on guidance provided by FMT this is outside the scope of the VVB's review.
Item	50
FCPF Buffer Guidelines Version 4.1, February 2024	13.2 The Reversal Management Mechanism shall be continually managed and operated by the ER Program Entity and allows the World Bank, in its capacity as trustee of funds made available from the FCPF for this purpose, to (i) carry out a desk review of the publicly available monitoring and verification reports of the ER Program for Reversals and (ii) inform CORSIA of any Reversals and compensation (through replacement of the CORSIA Eligible Emissions Units) under the ER Program's Reversal Management Mechanism, from the end of the Crediting Period through 31 December 2037.
Requirement Met (Y/N/Pending)	NA
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	ERM
Aster Global Findings (12 May 2024)	1. The VVB is unable to locate within the ER-MR, a definition and description of the Reversal Management Mechanism established by the ER Program. 2. Additionally, it is unclear how the ER Program has demonstrated compliance with subpoints (i) and (ii).
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings and provide supporting evidence and supporting documentation to demonstrate compliance with the relevant criteria as necessary.
Round 1 Response from Program (18 September 2024)	The country sought clarification from FMT regarding this finding and received the following explanation: "As of today, as per Criterion 19 of the FCPF MF all FCPF ER Programs use the FCPF Reversal Management Mechanism which is managed by the FMT following the Buffer Guidelines. According to the Buffer Guidelines, the Program Entity has until one year before the end date of the ERPA to have in place a post-ERPA Reversal Management Mechanism, but this does not need to be assessed by the VVB as it is not within the scope of its Validation with Extended Scope. As such the FMT would like to require the VVB to close this finding as it's not relevant for the period being reported."
Aster Findings - Round 2 (17 November 2024)	NA - Based on guidance provided by FMT this is outside the scope of the VVB's review.
Item	51

FCPF Glossary of Terms V2.2 - May, 2022 - Definition/Criteria	Crediting Period Start Date: Is the date that complies with the following conditions: 1. It is not earlier than the date the first ER Program Measure(s) (including any Sub-Project(s)) begins generating ERs, i.e. first implementation². 2. It is justified with objective evidence by the ER Program Entity and it is independently assessed by a Validation Verification Body during Validation. 3. It is not earlier than January 1st 2016³. 4. It does not fall within the Reference period. 5. It is demonstrated that the ER Program complies with requirements since the start date on safeguards⁴, carbon accounting and double-counting as specified in the MF. 2 a) measures shall be described in the Final ERPD; b) activities may be on-the-ground interventions (e.g. planting) or enabling environment interventions (e.g. establishment of laws, policies or regulations) provided these target drivers of deforestation and forest degradation or enhance carbon stocks; c) the start date shall be justified with objective evidence on earliest date of implementation of measures. For on-the-ground interventions, evidence of implementation of activities includes invoices/receipts of purchase of machinery/tools for the preparation of the land and/or for the establishment of trees or agriculture intensification, labor contracts already executed that can clearly be associated with the implementation of the activities. For enabling environment, evidence of actual implementation of actions (e.g. approvals of a law, policy or regulation by itself is not acceptable, but the approval of regulations that cause the change) and with a clear link to addressing the driver of deforestation and forest degradation and promoting enhancement of carbon stocks 3 All ER-PINs were approved prior to this date. This ensures that crediting periods cannot exceed 10 years and the reference level is valid during this period. 4 that the ER Program Measures generating the (retroactive) ERs were implemented in a manner consistent with the approved ESMF.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	ERMR, Resolution CFM/18/2018/3
Aster Global Findings (12 May 2024)	The VVB reviewed the ERMR and the Start Date of the Crediting Period is listed as June 28, 2018, additionally the VVB noted the following: 1. The ERMR does not address all the requirements within the FCPF Glossary of Terms v2.2 for the Crediting Period Start Date. 2. The ERMR states "It is no earlier than June 22, 2018, the date of inclusion of the program in the portfolio of the Carbon Fund (Resolution CFM/18/2018/3)." It is unclear to the VVB what Crediting Period Start Date requirement this statement is meant to address. 3. The ERMR does contain justifications with objective evidence for all the requirements for the Crediting Period Start date. 4. The VVB has not been provided objective evidence in line with the requirements for the justification of the Crediting Period Start Date.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the findings, revise the ERMR, and provide objective evidence to support the statements in the revised ERMR in line with the requirements.

Round 1 Response from Program (18 September 2024)	The country sought clarification from FMT regarding this finding and received the following explanation: 1. Requirements within the FCPF Glossary of Terms v2.2 for the Crediting Period Start Date: 1. It is not earlier than the date the first ER Program Measure(s) (including any SubProject(s)) begins generating ERs, i.e. first implementation. - As per the ER-MR, Table 2, the activities started to be implemented from July 2018. 2. It is justified with objective evidence by the ER Program Entity and it is independently assessed by a Validation Verification Body during Validation. - It is currently being reviewed by the VVB. 3. It is not earlier than January 1, 2016. - The credit start period is from June 22, 2018. 4. It does not fall within the Reference period. The reference period is from 2004 to 2014. 5. It is demonstrated that the ER Program complies with requirements since the start date on safeguards⁴, carbon accounting and double-counting as specified in the MF. The FMT would like to confirm that in terms of compliance with safeguards, Nepal had to demonstrate that the ER Program measures met the WB safeguards requirements from the start date (June 22, 2018). To do so, Nepal submitted environmental and safeguards consistency and gap assessment report. This report was cleared by the WB on June 15th, 2022. The clearance covers the retroactive period as well (June 22, 2018 to June 25th, 2022). 2. Clarification on statement "It is no earlier than June 22, 2018, the date of inclusion of the program in the portfolio of the Carbon Fund (Resolution CFM/18/2018/3)." and Crediting Period Start Date requirement. It is not earlier than January 1, 2016. The credit start period is from June 22, 2018. This has been updated in the ER-MR. 3. Justifications with objective evidence for all the requirements for the Crediting Period Start date The justifications have been provided in the update ER-MR.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB reviewed the ERM and noted the following: 1. The crediting period start date is stated as June 28, 2018 and the ERM states "The ER Program measures, and the activities have been implemented since July 2018." thus it is unclear to the VVB how the ER Program complies with the requirement that states "it is not earlier than the date the first ER Program Measure(s) (including any SubProject(s)) begins generating ERs, i.e. first implementation." 1a. The ERM does not provide the date of first implementation for all interventions described in Table 2. 1b. The ERM does not provide "objective evidence" to justify the start date, specifically the date in which the ER Program Interventions started. The VVB notes that the FCPF Glossary of Terms states "c) the start date shall be justified with objective evidence on earliest date of implementation of measures. For on-the-ground interventions, evidence of implementation of activities includes invoices/receipts of purchase of machinery/tools for the preparation of the land and/or for the establishment of trees or agriculture intensification, labor contracts already executed that can clearly be associated with the implementation of the activities. For enabling environment, evidence of actual implementation of actions (e.g. approvals of a law, policy or regulation by itself is not acceptable, but the approval of regulations that cause the change) and with a clear link to addressing the driver of deforestation and forest degradation and promoting enhancement of carbon stocks."

Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with finding 1 and update the ERM and all downstream quantification as necessary. MCAR: Please clearly state the date of first implementation for each intervention described in Table 2 of the ERM and provide verifiable evidence that demonstrates that the date listed in the ERM is accurate.
Round 2 Response from Program (25 February 2025)	FMT clarification: Regarding compliance with the definition of the crediting period start date, the FMT confirmed that Nepal demonstrated compliance with the World Bank requirements on safeguards since the start date (June 28th, 2018). To demonstrate such compliance, Nepal submitted an environmental and safeguards consistency and gap assessment report. This report was cleared by the WB on June 15th, 2022. The clearance covers the retroactive period as well (June 28th, 2018 to June 25th, 2022). Moreover, the FMT clarified that compliance against carbon accounting and double counting should be assessed and confirmed by the VVB for the entire reporting period, i.e. since the start of the crediting period.
Aster Findings - Round 3 (26 March 2025)	The response from the FMT indicates the start date is 28 June 2018. However, the cover page and Table 1 of the ERM still state 22 June 2018 as the start of the reporting period. The paragraph under Table 1 still has June 22. The VVB is in receipt of the Emissions Reductions Payment Agreement, which has 22 June 2018 as the start date on page 8, so the usage of 28 June 2018 in the response appears to be an inadvertent error. Also, Table 2 under Section 1.1.1 notes start date of interventions, and the earliest noted was 10 July 2018. The VVB has received the clarification email from FMT on 18 September 2024 providing confirmation " that Nepal demonstrated compliance with the World Bank requirements on safeguards since the start date (June 28th, 2018). This sub-item is addressed.
Round 3 MCAR/mCAR/OBS (26 March 2025)	mCAR: Please clarify the different usage of the start date of 28 or 22 June 2018.
Round 3 Response from Program (16 April 2025)	FMT Clarification: The start date should be June 22, 2018.
Aster Findings - Round 4 (01 May 2025)	Start date has been clarified as 22 June 2018. This item is addressed.
Item	52
FCPF Monitoring Report Template v2.5, 2022	Version
Requirement Met (Y/N/Pending)	N
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_ERM_GHG accounting_Nov 2023_Final

Aster Global Findings (12 May 2024)	The VVB reviewed the ER-MR and noted that the ER Program uses version 2.4 of the MR. The ER-MR was updated in 2022 to Version 2.5, and in February 2024, FCPF released a new version, Version 3. It is unclear to the VVB if the ER Program is using the correct version. The VVB notes that the ER-MR Templates have no effective dates and thus the ER Program should consult with FMT to determine the appropriate version to be used.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please clarify in line with the finding and update the ER-MR to use the correct version as necessary .
Round 1 Response from Program (18 September 2024)	The country consulted the FMT about the ER-MR template version. The FMT recommended using the current version available on the FCPF website. The country made the necessary edits to the ER-MR report according to the current version.
Aster Findings - Round 2 (17 November 2024)	The VVB consulted FMT, and FMT stated "With regards to the template, the applicable version is 3.1. Once the majority of the findings are closed, the Task Team will help Nepal in transitioning to the latest version and such version will have to be reviewed by you. However, the new template has no major impact on Nepal. " The VVB notes that the current version of the template being applied is v2.4. Based on the guidance provided by FMT, it appears that FMT will require the ER Program to use the latest version of the ERM template; however, FMT has indicated this can be at the end of the Val/Ver Process. This item is marked pending.
Round 2 MCAR/mCAR/OBS (17 November 2024)	
Round 2 Response from Program (25 February 2025)	
Aster Findings - Round 3 (26 March 2025)	
Round 3 MCAR/mCAR/OBS (26 March 2025)	
Round 3 Response from Program (16 April 2025)	
Aster Findings - Round 4 (01 May 2025)	
Round 4 MCAR/mCAR/OBS (01 May 2025)	
Round 4 Response from Program (12 May 2025)	
Aster Findings - Round 5 (16 May 2025)	The VVB notes that the current version of the template being applied is v2.4. Based on the guidance provided by FMT, the ER Program is required to transition to the latest version of the ER-MR template. The latest version of ER-MR template available is v3.1.2

	(https://www.forestcarbonpartnership.org/sites/default/files/documents/fcpf-emission_reductions_monitoring_report_hfld_v3.1.2.docx).
Round 5 MCAR/mCAR/OBS (16 May 2025)	MCAR: Please update the ER-MR to the correct version as necessary.
Round 5 Response from Program (21 May 2025)	<i>FMT was consulted regarding the possibility of making changes only to the relevant sections of the document in order to update it according to the ER-MR template v3.1.2, rather than moving everything to the new template. FMT recommended comparing the two ER-MR versions in Word to identify, using track changes, the areas that need updating. Template version v2.4 and version v3.1.2 were compared using the command in Word tools/track changes/compare. Relevant sections of the Nepal ER-MR document were then updated according to the changes included in the ER-MR template v3.1.2..</i> <i>It is also important to highlight that ERs were recalculated on an annual basis according to the table in Section 8 of the ER-MR template v3.1.2. As a result of this recalculation, the total FCPF slightly changed due to the application of pro-rata only for the 2018 ER. The new calculation of FCPF ERs is in worksheet Table_8_ERMR of the Nepal TAL Integration Tool.</i> <i>[1] Nepal TAL Integration tool can be accessed at the following link: https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZIY/edit?usp=sharing&ouid=100991295489415488908&rtpof=true&sd=true</i>
Aster Findings - Round 6 (22 May 2025)	The VVB acknowledges the consultation provided by FMT to ER Program regarding the approach for transitioning to the updated ER-MR template version v3.1.2. The VVB reviewed the updated ER-MR and noted relevant sections have been added according to the ER-MR template v3.1.2. The VVB reviewed updated calculation in “Table-8-ERMR” tab and noted values are reportedly correctly in Table in Section 8 in line with the ER-MR template v3.1.2. However, VVB noted values in several sections are reported in a space as a separator (e.g., 311 406 in section 8) instead of commas.
Round 6 MCAR/mCAR/OBS (22 May 2025)	OBS: The VVB is issuing an OBS and should be corrected in the next verification by using commas as thousand separators for better clarity and consistency throughout the ER-MR.
Round 6 Response from Program (27 May 2025)	
Aster Findings - Round 7 (29 May 2025)	The VVB notes that no response was included in 23057.50_Tarai Arc Landscape Nepal_FCPF Carbon Fund_ExtValVer_Round 6 Findings_20250522.docx or 23057.50_Tarai Arc Landscape Nepal_FCPF Carbon Fund_ExtValVer_Round 6 Findings_20250522-Response.xlsx and that the change was not made. As this is an OBS, satisfactory resolution of the finding is not required. Closed.
Item	53

FCPF Monitoring Report Template v2.5, 2022	Provide a short description of the implementation of the ER Program, including: • Progress on the actions and interventions under the ER Program (including key dates and milestones); • Update on the strategy to mitigate and/or minimize potential Displacement. • Effectiveness of the organizational arrangements and involvement of partner agencies • Updates on the assumptions in the financial plan and any changes in circumstances that positively or negatively affect the financial plan and the implementation of the ER Program. Highlight any key changes or deviations in the ER Program's design and key assumptions compared to the description of the ER Program in the ER-PD. Refer to criterion 17.3 and 27 of the Methodological Framework
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Section 1.1); Nepal ERPD 24May2018final_CLEAN_0
Aster Global Findings (12 May 2024)	The VVB reviewed section 1.1, and associated subsections, for conformance with ER-MR Template v2.5 instructions. 1) The VVB noted the ER-MR provides a summary of progress on the implementation status of the ER Program with milestones and dates. However, the VVB noted ER-MR section 1.1.1 is inconsistent in reporting progress through the end of the reporting period (22 June 2018 through 31 December 2021) for the seven (7) interventions identified by the ER-PD. The VVB noted the intervention summaries do not provide key dates for many actions, and in some cases refer to results through 2020 or through June 2021, rather than through December 2021. Supporting documentation was not readily available for the VVB to use to confirm the correctness of the presented information. 2) The VVB noted ER-MR section 1.1.2 provides an update for the strategies developed to mitigate and/or minimize potential displacement. The VVB noted a strategy update is provided for each of the drivers of deforestation and degradation identified by the ER-PD. 3) The VVB noted ER-MR section 1.1.3 provides a summary of the effectiveness of the organizational arrangements and involvement of partner agencies, and identifies key milestones to be achieved for more effective institutionalization of the REDD+ Program. 4) The VVB noted ER-MR section 1.1.4 states "INTENTIONALLY LEFT BLANK". ER-MR template instructions indicate that if sections of the ER-MR are not applicable, explicitly state that the section is "Intentionally left blank" and provide an explanation why this section is not applicable. The ER-MR does not provide explanation on why this section is not applicable. 5) The VVB noted ER-MR section 1.1, including associated subsections, does not identify key changes or deviations in the ER Program's design and key assumptions for the reporting period compared to the description of the ER Program in the ERPD.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address items 1, 4, and 5 and update the ER-MR accordingly.

Round 1 Response from Program (18 September 2024)	1. Section 1.1.1: Inconsistency in reporting progress through the end of the reporting period (22 June 2018 through 31 December 2021). The inconsistency in terms of reporting dates have been addressed in the ERMR. The interventions have been carried out by the Division Forest Offices of the 13 ER districts during the 2018-2021 period and specific dates of interventions can be availed from the DFOs. The REDD IC will provide the relevant supporting documents of the interventions to the VVB to confirm the correctness of the presented information. 4. Section 1.1.4 "INTENTIONALLY LEFT BLANK". The Section 1.1.4 has been intentionally left black because the Benefit Sharing Plan (BSP), which will inform the financial plan and implementation of the ER program, is in the approval process. 5. Section 1.1 and sub-sections: key changes or deviations in the ER Program's design compared to the ERPD. There has not been any key change or deviation in the ER program's design and key assumptions for the reporting period and the ER program continues to implement the seven interventions identified in the ERPD.
Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification. The VVB is not aware of what documentation has been provided to support these dates. 4. Thank you for the clarification. The VVB reviewed the updated ERMR and confirmed clarification has been added to this section. This finding is closed. 5. Thank you for the clarification. The VVB reviewed the updated ERMR and confirmed clarification has been added to this section. This finding is closed.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please provide specific and referenced supporting documentation/verifiable evidence to allow the VVB to assess that the information provided in Section 1.1.1 is accurate.
Round 2 Response from Program (25 February 2025)	1. Specific date of ER Program's interventions List of Interventions and start date Table 2: Intervention Targets (2018-2028) and progress as of 2021 [Aster Global NOTE: see "Nepal Round 2 Findings - working file.docx" for Table provided as part of Round 2 Response, formatting issues prevent inclusion of table here] [1] Progress data drawn from two sources: a) REDD IC (2021, March). Implementation Status of Emission Reduction Program Intervention in Terai Landscape Nepal (From June 2018 to July 2020); and b) REDD IC (2022, May). Nepal Emissions Reduction Program: Environmental and Social Safeguards Consistency and Gap Assessment Report of Program Interventions for Retroactive GHG Emissions Reduction Crediting.
Aster Findings - Round 3 (26 March 2025)	The revised ERMR Section 1.1.1 includes key dates and milestones in the written sections and also Table 2.2. The Program has provided links to the supporting documents in the Google Drive folders. This item is addressed.
Item	54

FCPF Monitoring Report Template v2.5, 2022	Describe the Forest Monitoring System including: • Organizational structure, responsibilities and competencies, linking these to the diagram shown in the next section; • The selection and management of GHG related data and information; • Processes for collecting, processing, consolidating and reporting GHG data and information; • Systems and processes that ensure the accuracy of the data and information; • Design and maintenance of the Forest Monitoring System; • Systems and processes that support the Forest Monitoring System, including Standard Operating Procedures and QA/QC procedures; • Role of communities in the forest monitoring system; • Use of and consistency with standard technical procedures in the country and the National Forest Monitoring System. Highlight any changes compared to the description that was provided in the ER-PD. Refer to criterion 15 and 16 of the Methodological Framework
Requirement Met (Y/N/Pending)	N
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Section 2.1); Nepal ERPD 24May2018final_CLEAN_0
Aster Global Findings (12 May 2024)	The VVB reviewed section 2.1, and associated subsections, for conformance with ER-MR Template v2.5 instructions. 1) The VVB noted ER-MR section 2.1 presents the organizational structure, responsibilities and competencies. The ER-MR is not clear on how the Soil Section is linked to the measuring, monitoring, and reporting approach. 2) The VVB noted ER-MR section 2.1.1 describes the selection of GHG related data and information, but does not identify how this data and information are managed. 3) The VVB noted ER-MR section 2.1.2 references the Forest Resource Assessment Field Manual (2022) and the Manual on Data Analysis and Results Generation (2021) as detailing the processes for collecting, processing, consolidating, and reporting GHG data and information. 4) The VVB noted ER-MR section 2.1.3 describes the systems and processes for ensuring the accuracy of the data and information. 5) The VVB noted ER-MR section 2.1, including associated subsections, does not provide a clear description of the design and maintenance of the Forest Monitoring System. 6) The VVB noted ER-MR section 2.1.3 describes the systems and processes that support the Forest Monitoring System, including SOPs and QA/QC procedures. The VVB noted the supporting information is identified in links provided in footnotes. The VVB noted not the link for footnote 16 does not work, and no file is available at the URL provided. 7) The VVB noted ER-MR section 2.1.3 provides a description for the role of communities in the forest monitoring system. 8) The VVB noted ER-MR section 2.1.4 provides a description of the use of and consistency with standard technical procedures in Nepal and the National Forest Monitoring System. 9) The VVB noted ER-MR section 2.1, and associated subsections, does not specifically highlight any changes compared to the description provided in the ER-PD.

Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address items 1, 2, 5, 6, and 9 and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	1. Linkage between Soil Section and measuring, monitoring, and reporting approach. Though the ER-MR does not report emission from soil carbon pool, soil monitoring is part of National Forest Inventory (NFI). 2. Section 2.1.1: Management of GHG related data and information. The FRTC will operationalize the National Forest Monitoring Portal which will store and manage GHG related data and information. 5. Design and maintenance of the Forest Monitoring System. The FRTC will operationalize the National Forest Monitoring Portal which will incorporate design and maintenance of the Forest Monitoring System. 6. Link for footnote 16 of Section 2.1.3. The footnote link has been fixed. The link to the National Land Cover Monitoring System under Google Earth Engine (GEE) platform is below: https://frtc.gov.np/uploads/files/Study%20Report%20Inner-NLCM.pdf 9. Section 2.1 and changes compared to the ERPD. This section is mostly focused on the high-level monitoring system, therefore the ERMR does not include specific method related to development of activity data and emission data. Change of methodology to estimate activity data is presented in Annex 4: Carbon Accounting : addendum to the ERPD.
Aster Findings - Round 2 (17 November 2024)	1. Thank you for the clarification. The VVB reviewed the updated ERMR and confirmed clarification has been added to this section. This finding is closed. 2. Section 2.1.1 does not address all the relevant GHG data and information used by the ER Program. 5. The VVB notes that the ER Program states "The FRTC will operationalize the National Forest Monitoring Portal which will incorporate design and maintenance of the Forest Monitoring System." It is unclear to the VVB if the National Forest Monitoring Portal is currently functioning or if this system is still currently being designed. 6. The VVB notes that the link in footnote 16 (now footnote 18) works. This finding is closed. 9. Thank you for the clarification. It is unclear to the VVB if the ER Program is asserting that there are no "high-level" changes to the monitoring system. The template requires that the ER Program to "highlight any changes compared to the description provided in the ER-PD."
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with findings 2, 5, and 9 and updated the ERMR as necessary.

Round 2 Response from Program (25 February 2025)	2. Address all the relevant GHG data and information used by the ER Program. The Forest Research and Training Centre (FRTC) and the REDD Implementation Center are responsible for generating data for the Land Use, Land-Use Change, and Forestry (LULUCF) component of the national greenhouse gas (GHG) inventory. In the context of the Emission Reductions Monitoring Report (ERMR), only carbon dioxide (CO₂) is considered as the relevant GHG. To address this, FRTC has operationalized the National Land Cover Monitoring System (NLCMS), which provides annual updates on land cover changes across the country. Additionally, the five-year National Forest Inventory (NFI) feeds plot-level carbon density data into the system, which is used to calculate emission factors for different strata, including deforestation, forest degradation, and gain/loss areas. The focus on CO₂ in the ERMR is aligned with the REDD+ framework, which prioritizes CO₂ emissions and removals from forests due to their significant role in climate change mitigation. While other GHGs, such as methane (CH₄) and nitrous oxide (N₂O), are not explicitly addressed in the ERMR, this approach ensures robust and consistent reporting on forest-related carbon fluxes, which are the primary contributors under the LULUCF sector. 5. Operationalization of National Forest Monitoring Portal The portal is currently being updated considering the requirements for MRV reporting and thus, it is not functional yet. The Portal will become operational from March 2025. 9. Changes to the monitoring system compared to the ER-PD There are no high-level changes to the monitoring system compared to the description provided in the ER-PD.
Aster Findings - Round 3 (26 March 2025)	2. The description provided in response to this finding provides additional information relevant to the GHG data and information used by the ER Program. It is unclear why this was not also added to the ERMR. 2a. Additionally, the VVB noted several errors in ER-MR. Following are some examples: - In section 3.1/Page 46, “±90% CI” value for transition from “Very degraded forest to degraded forest” is missing. - Link to carbon density tool in section 3.1/page 33 has not been updated. 5. The clarification provided sufficiently addresses this sub-item. Item addressed. 9. The ER Program has clarified there are no high-level changes. The VVB believes the technical correction for number of years in the Reference Period and possibly other technical corrections should have been mentioned here. However, as they are described in the referenced annex, this item can be considered addressed.
Round 3 MCAR/mCAR/OBS (26 March 2025)	2. mCAR: Please clarify why the provided description in the response to the finding was not also added to the Program documents. 2a. MCAR: Please make sure that values in ER-MR are reported correctly reflecting the updated values. Please ensure that all links are updated to the latest versions of the workbooks/docs.

Round 3 Response from Program (16 April 2025)	2.The description provided in the response to the finding has been added to the ER-MR. 2a.Below is the table in section 3.1 on Page 46, which details the various degradation levels. Please note that the "±90% CI" value for the transition from "Very degraded forest to degraded forest" is included and not missing. The link to the carbon density tool has been updated in the ERMR..
Aster Findings - Round 4 (01 May 2025)	2. The VVB reviewed the updated ERMR and confirmed the information provided in the finding response has been added to Section 2.1.1 of the ERMR. This item is addressed. 2a. The VVB confirmed the link to the carbon density tool has been corrected. However, the "±90% CI value for the transition from "Very degraded forest to degraded forest" for 2004-2014 on page 46 of the ERMR still appears to be missing.
Round 4 MCAR/mCAR/OBS (01 May 2025)	2a. MCAR: Please make sure that values in ER-MR are reported correctly reflecting the updated values. Additionally, please ensure that all values in the ER-MR are updated to the latest and accurate version.
Round 4 Response from Program (12 May 2025)	The "±90% CI value for the transition from 'Very degraded forest' to 'degraded forest' for 2004-2014 on page 46 of the ERMR has been included.
Aster Findings - Round 5 (16 May 2025)	The VVB confirmed "±90% CI value for the transition from 'Very degraded forest' to 'degraded forest' for 2004-2014 has been reported accurately in the updated ER-MR. Additionally, the VVB notes total hectares are reported accurately for the reporting period (2018-2021) and reference period (2004-2014). However, values are not reported in hectare per year as required by the MR template (section 3.1 and 3.2) and in Annex 4 section 9.1 (Parameters to be monitored). Additionally the VVB noted following: - Values for crediting year 2025 are missing in table in Section 8.4 of Annex 4. - The link to the workbook refers to V5 of Nepal_TAL_Integration_tool and not V6 in section 5 of the ERMR.
Round 5 MCAR/mCAR/OBS (16 May 2025)	MCAR: Please make sure to report hectare per year values in ER-MR. Please add values for the crediting period year 2025. Please ensure all links to workbooks reflect the most up-to-date, finalized versions.
Round 5 Response from Program (21 May 2025)	Hectare per year values for the reporting period (2018-2021) and the reference period (2004-2014) are included in Sections 3.1 and 3.2 of the ER-MR. Additionally, values for the crediting period in 2025 have been provided in the table in Section 8.4 of Annex 4.
Aster Findings - Round 6 (22 May 2025)	The VVB confirms hectare per year values are reported in the revised ER-MR. However, it does not appear that hyperlink in footnote 63 in section 5 of ER-MR has been corrected. It still refers to V5 of Nepal_TAL_Integration_tool instead of the V6. Additionally, hyperlink in footnote 70 is also not working.

	VVB also notes information added in revised ER-MR does not appear to have met following requirement: "Font of the body text shall be Calibri 10 black font.". For example, in section 6.2.
Round 6 MCAR/mCAR/OBS (22 May 2025)	MCAR: Please ensure all links are updated to the latest version and function correctly. Please ensure all requirements in ER-MR template are being followed appropriately.
Round 6 Response from Program (27 May 2025)	The hyperlinks in footnotes 63 and 70 have been updated. The font of the texts in Section 6.2 has been updated.
Aster Findings – Round 7 (29 May 2025)	Hyperlinks in footnotes 63 and 70 have been updated appropriately. Font of texts in Section 6.2 of ER-MR has been updated. However, the VVB has identified similar issues (e.g., the hyperlink for Footnote 66 (https://drive.google.com/file/d/1EFpJXYa7GZRiGfPOWJIWwu-zljs9C65v/view?usp=drive_link) is a broken link. Additionally, the VVB noted following: - Parameter "Forest gain" is incorrectly denoted as A(j,i)MP in section 3.1 and 3.2. - Stable forest areas are also reported under "Degradation" in section 3.1 and 3.2. Based on the ER-MR template requirement, it is not required to be reported. - On page 71, it is stated that 123,055 CER units issued in the CDM projects has been calculated for deduction. However, based on pro-rata allocation for 2018 (Length of the Reporting period / Length of the Monitoring Period is 0.53), the updated deduction applied is 108,516. Please make sure to report the correct value. - Please clarify why pro-rata allocation is not reported for year 2018 in Sections 4.1 and 4.2, and adjust as necessary.
Round 7 MCAR/mCAR/OBS (29 May 2025)	MCAR: Please ensure ALL hyperlinks are functioning and refer to the most up to date versions of documents. Please make sure necessary corrections are made in ER-MR to address additional findings noted.
Round 7 Response from Program (03 June 2025)	- The hyperlink for footnote 66 has been fixed. - Parameter "Forest gain" has been corrected and denoted as A(i,j)MP in section 3.1 and 3.2. - Stable forest areas are reported under "Degradation" in sections 3.1 and 3.2 for reference, ensuring all possible transitions have been considered in the activity data estimate. A clarification note has been added in sections 3.1 and 3.2 under the Degradation table. - The deduction of 108,516 tCO₂e for CER units has been clarified on page 71. - Instructions in sections 4.1 and 4.2 of the ER-MR template 3.1.2 do not indicate that pro-rata allocation should be reported. Pro-rata allocation is only required in section 4.3.
Aster Findings – Round 8 (03 June 2025)	The VVB reviewed the following documents: "First Nepal ERM-R-Revised-June 3_2025-clean version.docx" and "First Nepal ERM-R-Revised-June 3_2025-track change version.docx" and noted following:

	- The hyperlink in footnote 66 is still not working. Additionally, the VVB noted the following: Broken links: Footnote 35: https://drive.google.com/file/d/1yD2AuvJjAtptFTzorisLafJWAEzY0W-D/view?usp=drive_link Footnote 36: https://drive.google.com/file/d/1EFpJXYa7GZRIgFp0WJIWwu-zljs9C65v/view?usp=drive_link Equation 8- pages 30, 116: [2]Joshi, V. C., Negi, V. S., Bisht, D., Sundriyal, R., & Arya, D. (2021). Tree biomass and carbon stock assessment of subtropical and temperate forests in the Central Himalayas, India. <i>Trees, Forests and People</i>, 6, 100147. https://doi.org/10.1016/j.tfp.2021 Footnote 65: https://drive.google.com/file/d/1EFpJXYa7GZRIgFp0WJIWwu-zljs9C65v/view?usp=drive_link Footnote 79: Dhungana, S.; Paudel, M.; Bhandari, T.S., 2018. REDD+ in Nepal: Experiences from the REDD Readiness Phase. Kathmandu: REDD IC. Available at, https://www.wocan.org/sites/default/files/REDD%2BinNepalRedinessPhase.pdf Annex 4/Section 8.2: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://frtc.gov.np/uploads/files/Study%20Report%20Inner-final.pdf Correct format is https://frtc.gov.np/uploads/files/Study%20Report%20Inner-final.pdf Footnote 92: https://drive.google.com/file/d/1EFpJXYa7GZRIgFp0WJIWwu-zljs9C65v/view?usp=drive_link Page 146/Sampling: https://frtc.gov.np/downloadfile/state%20%20forest%20of%20Nepal_1579793749_1579844506.pdf Outdated links: Footnote 40: Outdated link of 14 NFI plots https://docs.google.com/spreadsheets/d/1FMv1JAN7wekSt7cASCiloyVpPpgmCbRx/edit?usp=sharing&oid=101304895378504185754&rtpof=true&sd=true Footnote 41: Outdated link to CarbonDensitiesToolV5 https://docs.google.com/spreadsheets/d/1e3REqxI3Oa7KqpC2vfHEdgZMUELQQ52w/edit?gid=967026738#gid=967026738&range=A1 3.1 Fixed Data and Parameters/Page 39, 128: Outdated link to Nepal_TAL_Integration_tool_V5_MC [2] The updated Monte Carlo simulation tool can be accessed at the following link: https://docs.google.com/spreadsheets/d/11mM9bnqVLZ6hiFvupfaviTksvHlfpF3u/edit?usp=sharing&oid=100991295489415488908&rtpof=true&sd=true Footnote 63: Link is for Nepal_TAL_Integration_tool_V6 instead of MC workbook (Note: Footnote 71 appears to include correct link) https://docs.google.com/spreadsheets/d/1yV0gmmYaYZj8O4Eg7loG_DmbZ9ulyZlY/edit?gid=1389608781#gid=1389608781 Footnote 93: Outdated link to CarbonDensitiesToolV2 https://docs.google.com/spreadsheets/d/1ibHCmjnV16J4UD9GT7eqTx8Yr2k0_z4-/edit?usp=drive_link&oid=101304895378504185754&rtpof=true&sd=true
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	- It does not appear that the correction has been applied. Please see the following in ER-MR (pages: 44, 48, 117, 141) "Parameter: Activity Data: A(j,i) MP Equation 4; A(a,b)MP Equation 7; A(j,i)MP Equation 8." - No clarification note was noted under Degradation table. - No clarification noted on page 71. - Section 4.1 states "If Guidelines on the application of the MF Number 3 on reporting periods is applied, the years should reflect the years of the Monitoring Period," which implies the monitoring period. However, based on instructions particularly in section 4.2 of ER-MR template v3.1.2, it states "Regarding the reporting period, (step-by-step description of the calculation) should clearly describe the steps through which the pro-rata allocation has occurred and how the ERs for the Reporting Period have been calculated." Please address.
Round 8 MCAR/mCAR/OBS (Revised 04 June 2025)	mCAR: Please ensure all hyperlinks are functioning and refer to the most up-to-date versions of documents. Please make sure necessary corrections are made in the ER-MR to address additional findings noted.
Round 8 Response from Program (DD MM YYYY)	
Item	55
FCPF Monitoring Report Template v2.5, 2022	Provide a systematic and step-by-step description of the measurement and monitoring approach applied for establishment of the Reference Level and estimating Emissions and Emissions reductions during the Monitoring / Reporting Period for estimating the emissions and removals from the Sources/Sinks, Carbon Pools and greenhouse gases selected in the ER-PD. Provide line diagrams showing all relevant monitoring points, parameters that are monitored and the integration of data until reporting in a schematic way. Include equations that show the calculation steps of GHG emissions and removals and that show the parameters that will be listed in Section 3 following the example below. These equations shall show all steps from the input of measured and default parameters to the aggregation into final reported values. Discuss the choice and the source of all the equations used. Highlight any changes compared to the description that was provided in the ER-PD. Refer to criterion 5, 6, 7, 8, 9, 14 and 16 of the Methodological Framework
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Section 2.2)

Aster Global Findings (12 May 2024)	The VVB reviewed ER-MR section 2.2, and associated subsections, for conformance with ERMR Template v2.5 instructions. 1) The VVB noted ER-MR section 2.2 presents a systematic and step-by-step description of the measurement and monitoring approach applied for establishment of the Reference Level and estimating Emissions and Emissions reductions during the Monitoring / Reporting Period for estimating the emissions and removals from the Sources/Sinks, Carbon Pools and greenhouse gases selected in the ER-PD. 2) The VVB noted ER-MR section 2.2.1 presents a line diagram showing relevant monitoring points, parameters that are monitored and the integration of data until reporting in a schematic way. 3) The VVB noted ER-MR section 2.2.2 includes equations that show the calculation steps of GHG emissions and removals and that show the parameters that will be listed in Section 3. These equations appear to show all steps from the input of measured and default parameters to the aggregation into final reported values. ER-MR section 2.2.2 provides information on the choice and the source of all the equations used. 4) The VVB noted ER-MR section 2.2, and associated subsections, does not specifically highlight any changes compared to the description provided in the ER-PD. Closure of this item is also pending quantification review and confirmation of conformance with associated criteria.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address item 4 and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	Section 2.2.2 Calculation already includes technical corrections. Please refer to the technical corrections indication in the Reference level and the Annual change in total biomass carbon stocks for forest land converted to another land use.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. This finding is closed as the ER Program has not completed validation and is only relevant as subsequent verifications.
Item	56
FCPF Monitoring Report Template v2.5, 2022	Quantify the emissions by sources and removals by sinks from the ER Program during the Monitoring / Reporting Period following the formulae shown in Section 2.2.2 and linked to the parameters in Section 3. Provide sample calculations using the actual values from section 3 above with sufficient information to allow others to reproduce the calculation. Attach electronic spreadsheets, spatial information, maps and/or synthesized data as an appendix or separate file. At the end of the description, summarize the results in the table below. Regarding the reporting period, (step-by-step description of the calculation) should clearly describe the steps through which the pro-rata allocation has occurred and how the ERs for the Reporting Period have been calculated. Refer to criterion 5, 6, 7, 8, 9, 14 and 16 of the Methodological Framework
Requirement Met (Y/N/Pending)	Y

Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Section 4.2)
Aster Global Findings (12 May 2024)	The VVB reviewed ER-MR section 4.2 for conformance with ER-MR Template v2.5 instructions. 1) The VVB noted ER-MR section 4.2 quantifies the emissions by sources and removals by sinks from the ER Program during the Monitoring / Reporting Period. 2) The VVB noted ER-MR section 4.2 provides a link to the Emissions Reductions calculation tool, which is described as also providing sample calculations using the actual values from Section 3. 3) The VVB noted ER-MR section 4.2 does not clearly describe the steps through which the pro-rata allocation has occurred and how the ERs for the Reporting Period have been calculated. Closure of this item is also pending quantification review and confirmation of conformance with associated criteria.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address item 3 and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	Section 4.3, Calculation of emission reductions, has added a description of the pro-rata allocation.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB confirms that the ERMR now presents this requirement information. This finding is closed.
Item	57
FCPF Monitoring Report Template v2.5, 2022	Quantify the Emission Reductions for the Monitoring / Reporting Period and summarize the result using the table below. Negative values represent removals while positive values represent emissions. The first table may be used in the case the Reporting Period coincides with the Monitoring Period. The second table may be use when the Reporting Period is shorter than the Monitoring Period and a pro-rata allocation is needed by multiplying the net ERs during the Monitoring Period by the ratio of the Length of the Reporting Period and the Length of the Monitoring Period. The two last sets of tables may be only used if cumulative quantity of Total ERs estimated for prior reporting periods is negative, and the cumulative considering the current reporting period is positive. In this case, this negative performance or reversals shall be compensated with the Total Emission Reductions of the current period. Refer to criterion 22 of the Methodological Framework
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Section 4.3)

Aster Global Findings (12 May 2024)	The VVB reviewed ER-MR section 4.3 for conformance with ER-MR Template v2.5 instructions. The VVB noted ER-MR section 4.3 quantifies total Emission Reductions for the Monitoring / Reporting Period but does not provide quantifications for deforestation and forest degradation separately. Closure of this item is also pending quantification review and confirmation of conformance with associated criterion.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	The table in section 4.3 has been updated accordingly.
Aster Findings - Round 2 (17 November 2024)	The VVB notes that the ERMER has been updated; however, the ERMER Template states that "* Please list below which of the ER Program measures other than A/R that are being considered to generate enhanced removals:" and it is unclear why the ER Program has not identified these ER Program measures.
Round 2 MCAR/mCAR/OBS (17 November 2024)	MCAR: Please clarify in line with the finding and update the ERMER.
Round 2 Response from Program (25 February 2025)	Section 4.3 of ERMER now includes ER Program measures, other than A/R, that are being considered to generate enhanced removals.
Aster Findings - Round 3 (26 March 2025)	The VVB confirmed that the ER-MR section 4.3 has been updated which now includes ER Program measures, other than A/R, that are being considered to generate enhanced removals. This item is closed.
Item	58
FCPF Monitoring Report Template v2.5, 2022	Complete table on template page 14-15
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMER or Supporting Documents)	Nepal_ERMER_GHG accounting_Nov 2023_Final.pdf (Sections 1.1 and 4.3)
Aster Global Findings (12 May 2024)	The VVB noted ER-MR section 4.3 uses a table to report on the pro-rata allocation needed to adjust for the Reporting Period being shorter than the Monitoring Period. However, the table from the ER-MR Template v2.5 is not used.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	The table in section 4.3 has been updated accordingly.

Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB confirms that the ERMV now presents this requirement information. This finding is closed.
Item	59
FCPF Monitoring Report Template v2.5, 2022	Please describe the design and implementation by the host country of an appropriate arrangement to ensure that any ERs from REDD+ activities under the ER Program are not generated more than once; and that any ERs from REDD+ activities under the ER Program sold and transferred to the Carbon Fund are not used again by any entity for sale, public relations, compliance or any other purpose. Discuss the design and provide evidence of the implementation and operation of an ER transaction registry in accordance with the requirements of the Methodological Framework. If applicable, highlight any changes compared to what was anticipated in the ER-PD and explain why these changes were made. Beyond the use and operation of the WB Emission Reduction Transaction Registry (CATS – Carbon Assets Tracking System) to issue and transfer the ER units generated under the current Program, discuss, if that's the case, the design and provide evidence of the implementation and operation of a national ER transaction registry Refer to criterion 38 of the Methodological Framework
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMV or Supporting Documents)	Nepal_ERMV_GHG accounting_Nov 2023_Final.pdf (Section 6.3)
Aster Global Findings (12 May 2024)	The VVB reviewed ER-MR section 6.3 for conformance with ER-MR Template v2.5 instructions. 1) The VVB noted ER-MR section 6.3 describes the decision by Nepal's REDD+ entity to use the World Bank ER transaction agency as a third party on its behalf. 2) The VVB noted ER-MR section 6.3 indicates the design and implementation and operation of a national ER transaction registry is still in progress. The VVB noted ER-MR section 6.3 does not provide evidence of the of the implementation and operation of a national ER transaction registry.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address item 2 and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	2. Evidence of the implementation and operation of a national ER transaction registry. The design of a national ER transaction registry is still in progress, and it has not been implemented and operationalized yet.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB confirms that additional information has been added to the ERMV to address the finding issued by the VVB. This finding is closed.
Item	60

FCPF Monitoring Report Template v2.5, 2022	Please identify the major events or changes in ER Program circumstances during the Reporting Period that might have led to a Reversal or impact the risk of Reversals. Indicate if these events have previously been reported to the Trustee. Highlight any non-human induced Force Majeure event, impacting at least 25% of the ER Program Accounting Area. Please confirm if any Reversals from ERs that have been previously transferred to the Carbon Fund have occurred during the Reporting Period. Refer to indicator 21.1 of the Methodological Framework
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Section 7.1)
Aster Global Findings (12 May 2024)	The VVB reviewed ER-MR section 7.1 for conformance with ER-MR Template v2.5 instructions. The VVB noted ER-MR section 7.1 states "INTENTIONALLY LEFT BLANK". ER-MR template instructions indicate that if sections of the ER-MR are not applicable, explicitly state that the section is "Intentionally left blank" and provide an explanation why this section is not applicable. The ER-MR does not provide explanation on why this section is not applicable.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	Section 7.1 states "INTENTIONALLY LEFT BLANK". The section has been left blank because there have been no major events or changes in ER program circumstances that might have led to the Reversals during the Reporting Period compared to the previous Reporting Period(s).
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB confirms that additional information has been added to the ERM to address the finding issued by the VVB. This finding is closed.
Item	61
FCPF Monitoring Report Template v2.5, 2022	Using the table below, please confirm and quantify any Reversals of ERs that have been previously transferred to the Carbon Fund, that might have occurred during the Reporting Period. Refer to indicator 19.1 of the Methodological Framework and the FCPF ER Program Buffer Guidelines
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Section 7.2)

Aster Global Findings (12 May 2024)	The VVB reviewed ER-MR section 7.2 for conformance with ER-MR Template v2.5 instructions. The VVB noted ER-MR section 7.1 uses "INTENTIONALLY LEFT BLANK" statements for each item of the table. ER-MR template instructions indicate that if sections of the ER-MR are not applicable, explicitly state that the section is "Intentionally left blank" and provide an explanation why this section is not applicable. The ER-MR does not provide explanation on why this section is not applicable.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	Section 7.1 uses "INTENTIONALLY LEFT BLANK" statements for each item of the table. This ER-MR has used ER-MR version 2.4 template which was the latest version available while preparing and finalizing this ER-MR. The section has been left blank because there has been no major event or change in ER program circumstances that might have led to the Reversals during the Reporting Period compared to the previous Reporting Period(s).
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB confirms that additional information has been added to the ERM to address the finding issued by the VVB. This finding is closed.
Item	62
FCPF Monitoring Report Template v2.5, 2022	Provide a summary of the technical corrections applied clearly indicating where parameters have changed compared to the original Reference Level. Please indicate the changes applied and whether these are included in paragraph 3 of Guideline on the application of the Methodological Framework Number 2 – Technical corrections
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_ERM_GHG accounting_Nov 2023_Final.pdf (Annex 4, Technical corrections section)
Aster Global Findings (12 May 2024)	The VVB reviewed the summary provided in ER-MR Annex 4 for conformance with ER-MR Template v2.5 instructions. 1) The VVB noted the Technical corrections summary provided in ER-MR Annex 4 provides a summary of the technical corrections applied clearly indicating where parameters have changed compared to the original Reference Level. 2) The VVB noted the Technical corrections summary provided in ER-MR Annex 4 indicates the changes applied, but does not indicate whether these are included in paragraph 3 of Guideline on the application of the Methodological Framework Number 2 – Technical corrections.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address item 2 and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	Technical corrections description in Annex 4 has been updated accordingly.
Aster Findings - Round 2 (17 November 2024)	This item is pending findings already issued and a final review of the ERM once all quantification findings have been closed.

Aster Findings - Round 5 (16 May 2025)	This is adequately described in the ERMR. Item closed.
Item	63
FCPF Monitoring Report Template v2.5, 2022	Description of method used for calculating the average annual historical emissions over the Reference Period Provide a transparent, complete, consistent and accurate description of the approaches, methods, and assumptions used for calculating the average annual historical emissions over the Reference Period, including, an explanation how the most recent Intergovernmental Panel on Climate Change (IPCC) guidance and guidelines, have been applied as a basis for estimating forest-related greenhouse gas emissions by sources and removals by sinks. Refer to criterion 5,6 and 13 of the Methodological Framework
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Annex 4, Section 8.3.1)
Aster Global Findings (12 May 2024)	The VVB reviewed ER-MR Annex 4 section 8.3.1 for conformance with ER-MR Template v2.5 instructions. 1) The VVB noted ER-MR Annex 4 section 8.3.1 provides a description of method used for calculating the average annual historical emissions over the Reference Period. 2) The VVB noted ER-MR Annex 4 section 8.3.1 describes using the 2006 Intergovernmental Panel on Climate Change (IPCC) guidelines. The VVB noted there has been a 2019 Refinement to the 2006 IPCC Guidelines. Closure of this item is also pending assessment of associated Criteria.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address item 2 and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	The Nepal ERMR has used an earlier version of ERMR Template (version 2.4) that was available during the preparation of the report.
Aster Findings - Round 2 (17 November 2024)	The VVB consulted FMT, and FMT stated "With regards to the template, the applicable version is 3.1. Once the majority of the findings are closed, the Task Team will help Nepal in transitioning to the latest version and such version will have to be reviewed by you. However, the new template has no major impact on Nepal. " The VVB notes that the current version of the template being applied is v2.4. Based on the guidance provided by FMT, it appears that FMT will require the ER Program to use the latest version of the ERMR template; however, FMT has indicated this can be at the end of the Val/Ver Process. This item is marked pending.
Aster Findings - Round 5 (16 May 2025)	Pending final data checks once all quant findings are closed

Item	64
FCPF Monitoring Report Template v2.5, 2022	Explanation and justification of proposed upward or downward adjustment to the average annual historical emissions over the Reference Period If applicable, please provide a transparent and complete explanation and justification of any proposed upward or downward adjustment to the average annual historical emissions over the Reference Period. This should include an executive summary of assumptions, methods and results of any underlying studies that have been used to determine the adjustment. If an upward adjustment above the average annual historical emissions is proposed, please describe: a) How the ER Program meets the eligibility requirements for these type of adjustments as described in the FCPF Carbon Fund Methodological Framework; b) Provide a credible justification for the upward adjustment on the basis of expected emissions that would result from documented changes in ER Program circumstances, evident before the end-date of the Reference Period, but the effects of which were not fully reflected in the average annual historical emissions during the Reference Period. Please attach or provide reference to the documentation that supports the justification. If the available data from the National Forest Monitoring System used in the construction of the Reference Level shows a clear downward trend, this should be taken into account in the construction of the Reference Level. Refer to criterion 13 of the Methodological Framework.
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Annex 4, Section 8.5)
Aster Global Findings (12 May 2024)	The VVB reviewed the summary for "Explanation and justification of proposed upward or downward adjustment to the average annual historical emissions over the Reference Period" provided in ER-MR Annex 4 section 8.5 for conformance with ER-MR Template v2.5 instructions. The VVB noted this part of ER-MR Annex 4 section 8.5 states "<i>Intentionally left blank</i>". ER-MR template instructions indicate that if sections of the ER-MR are not applicable, explicitly state that the section is "Intentionally left blank" and provide an explanation why this section is not applicable. The ER-MR does not provide explanation on why this section is not applicable.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	ER-MR Annex 4 section 8.3.1 describes using the 2006 IPCC Guidelines. See 2006 IPCC GL Annex 2, Summary of equations accessible at the following link: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_14_An2_SumEqua.pdf
Aster Findings - Round 2 (17 November 2024)	This item is pending findings already issued.

Aster Findings - Round 5 (16 May 2025)	This is currently correctly transposed from the Results tab of Nepal_TAL_Integration_tool_V6 to the ERMR but pending final check.
Aster Findings - Round 6 (22 May 2025)	Following closure of all findings related to the reference level and a final quantitative check in the Integration workbook, the VVB is reasonably assured this requirement is met.
Item	65
FCPF Monitoring Report Template v2.5, 2022	Quantification of the proposed upward or downward adjustment to the average annual historical emissions over the Reference Period If applicable, please provide a transparent and complete calculation for the quantification of the proposed upward or downward adjustment to the average annual historical emissions over the Reference Period. Provide a step-by-step estimation of the expected emissions that would result from documented changes in ER Program circumstances. Attach any documents or spreadsheets used in the calculation. Refer to criterion 13 of the Methodological Framework
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Annex 4, Section 8.5)
Aster Global Findings (12 May 2024)	The VVB reviewed the summary for "Quantification of the proposed upward or downward adjustment to the average annual historical emissions over the Reference Period" provided in ER-MR Annex 4 section 8.5 for conformance with ER-MR Template v2.5 instructions. The VVB noted this part of ER-MR Annex 4 section 8.5 states "<i>Intentionally left blank</i>". ER-MR template instructions indicate that if sections of the ER-MR are not applicable, explicitly state that the section is "Intentionally left blank" and provide an explanation why this section is not applicable. The ER-MR does not provide explanation on why this section is not applicable.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	ER-MR Annex 4 - Section 8.5 "Intentionally left blank". This ER-MR has used ER-MR version 2.4 template which was the latest version available while preparing and finalizing this ER-MR. The section has been left blank because there has not been upward or downward adjustment to the average annual historical emission over the Reference Period.
Aster Findings - Round 2 (17 November 2024)	This item is pending findings already issued.

Aster Findings - Round 5 (16 May 2025)	This is currently correctly transposed from the Results tab of Nepal_TAL_Integration_tool_V6 to the ERMR but pending final check.
Aster Findings - Round 6 (22 May 2025)	Following closure of all findings related to the reference level and a final quantitative check in the Integration workbook, the VVB is reasonably assured this requirement is met.
Item	66
FCPF Monitoring Report Template v2.5, 2022	Please explain how the development of the Reference Level can inform or is informed by the development of a national FREL/FRL, and explains the relationship between the Reference Level and any intended submission of a FREL/FRL to the UNFCCC. In addition, please explain what steps are intended for the Reference Level to achieve consistency with the country's existing or emerging greenhouse gas inventory. Refer to criterion 10, indicators 10.2 and 10.3 of the Methodological Framework
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERMR or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Annex 4, Section 8.6)
Aster Global Findings (12 May 2024)	The VVB reviewed ER-MR Annex 4 section 8.6 for conformance with ER-MR Template v2.5 instructions. 1) The VVB noted ER-MR Annex 4 section 8.6 explains how the current greenhouse gas inventory during the preparation of the ER-MR follows a similar process as was used in the development of national FRL. 2) The VVB noted ER-MR Annex 4 section 8.6 does not specifically explain the relationship between the Reference Level and any intended submission of a FREL/FRL to the UNFCCC. 3) The VVB noted ER-MR Annex 4 section 8.6 does not explain what steps are intended for the Reference Level to achieve consistency with the country's existing or emerging greenhouse gas inventory Closure of this item is pending assessment of the indicators for the associated Criterion.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address items 2 and 3 and update the ER-MR accordingly.

Round 1 Response from Program (18 September 2024)	The Nepal ERMR has used an earlier version of ERMR Template (version 2.4) that was available during the preparation of the report. 2. The Reference level of the ERPA has employed significantly better methodology compared to the FREL. More specifically, the Reference Level has adopted a robust method and QA/QC protocols for the AD preparation. In addition, the limitations of the FREL and the learnings informed the ER program's Reference Level. In particular, the advancement in the technology and methodology and the availability of data improved the ER program's Reference Level. The Government of Nepal (GoN) is considering submitting the updated FREL to the UNFCCC. 3. National greenhouse gas (GHG) inventories necessitate information at the national scale. However, given the varying scales of subnational projects—such as the current REDD+ program—emission factors and forest degradation monitoring need a more robust approach. These efforts would serve as valuable references for national GHG inventory and reporting, especially in meeting requirements like the Biennial Transparency Report.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB confirms that additional information has been added to the ERMR to address the finding issued by the VVB. This finding is closed.
Item	67
FCPF Monitoring Report Template v2.5, 2022	Please explain how the development of the Reference Level can inform or is informed by the development of a national FREL/FRL, and explains the relationship between the Reference Level and any intended submission of a FREL/FRL to the UNFCCC. In addition, please explain what steps are intended for the Reference Level to achieve consistency with the country's existing or emerging greenhouse gas inventory. Refer to criterion 10, indicators 10.2 and 10.3 of the Methodological Framework
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Annex 4, Section 8.6)
Aster Global Findings (12 May 2024)	The VVB reviewed ER-MR Annex 4 section 8.6 for conformance with ER-MR Template v2.5 instructions. 1) The VVB noted ER-MR Annex 4 section 8.6 explains how the current greenhouse gas inventory during the preparation of the ER-MR follows a similar process as was used in the development of national FRL. 2) The VVB noted ER-MR Annex 4 section 8.6 does not specifically explain the relationship between the Reference Level and any intended submission of a FREL/FRL to the UNFCCC. 3) The VVB noted ER-MR Annex 4 section 8.6 does not explain what steps are intended for the Reference Level to achieve consistency with the country's existing or emerging greenhouse gas inventory Closure of this item is pending assessment of the indicators for the associated Criterion.

Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address items 2 and 3 and update the ER-MR accordingly.
Round 1 Response from Program (18 September 2024)	The Nepal ERM has used an earlier version of ERM Template (version 2.4) that was available during the preparation of the report. 2. The Reference level of the ERPA has employed significantly better methodology compared to the FREL. More specifically, the Reference Level has adopted a robust method and QA/QC protocols for the AD preparation. In addition, the limitations of the FREL and the learnings informed the ER program's Reference Level. In particular, the advancement in the technology and methodology and the availability of data improved the ER program's Reference Level. The Government of Nepal (GoN) is considering submitting the updated FREL to the UNFCCC. 3. National greenhouse gas (GHG) inventories necessitate information at the national scale. However, given the varying scales of subnational projects—such as the current REDD+ program—emission factors and forest degradation monitoring need a more robust approach. These efforts would serve as valuable references for national GHG inventory and reporting, especially in meeting requirements like the Biennial Transparency Report.
Aster Findings - Round 2 (17 November 2024)	Thank you for the clarification. The VVB confirms that additional information has been added to the ERM to address the finding issued by the VVB. This finding is closed.
Item	68

FCPF Monitoring Report Template v2.5, 2022	Provide a systematic and step-by-step description of the measurement and monitoring approach applied for establishment of the Reference Level and estimating Emissions and Emissions reductions during the Monitoring / Reporting Period for estimating the emissions and removals from the Sources/Sinks, Carbon Pools and greenhouse gases selected in the ER-PD. Provide line diagrams showing all relevant monitoring points, parameters that are monitored and the integration of data until reporting in a schematic way. Include equations that show the calculation steps of GHG emissions and removals and that show the parameters that will be listed below and Section 8.3 following the example below. These equations shall show all steps from the input of measured and default parameters to the aggregation into final reported values. Discuss the choice and the source of all the equations used. Highlight any changes compared to the description that was provided in the ER-PD. As part of the description, provide an explanation how the proposed measurement, monitoring and reporting approach is consistent with the most recent Intergovernmental Panel on Climate Change guidance and guidelines. Where appropriate, describe in the “Source of data or measurement/ calculation methods” the role of communities in monitoring and reporting of the parameter. Describe how the proposed measurement, monitoring and reporting approach is consistent with the method for establishing the Reference Level as described in section 8. Please provide an overview of all data and parameters that are monitored during the Crediting Period and their values for this Monitoring/Reporting Period. Use the table provided and copy table for each parameter, not for each value (multiple values may be reported per parameter, for instance A(j,i) may include the estimates of the different forest types obtained with a same survey). Include all the relevant information within the boxes, not outside. Where relevant, attach any spreadsheets, spatial information, maps and/or synthesized data used to derive the parameter. These parameters should link to the equations that are referred to below. Refer to criterion 5, 6, 7, 8, 9, 14 and 16 of the Methodological Framework
Requirement Met (Y/N/Pending)	Y
Evidence Used to Assess (Location in ERPD, ERM or Supporting Documents)	Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf (Annex 4, Section 9.1)

Aster Global Findings (12 May 2024)	The VVB reviewed ER-MR Annex 4 section 9.1 for conformance with ER-MR Template v2.5 instructions. 1) The VVB noted ER-MR Annex 4 section 9.1 presents a systematic and step-by-step description of the measurement and monitoring approach applied for establishment of the Reference Level and estimating Emissions and Emissions reductions during the Monitoring / Reporting Period for estimating the emissions and removals from the Sources/Sinks, Carbon Pools and greenhouse gases selected in the ER-PD. 2) The VVB noted ER-MR Annex 4 section 9.1 presents a line diagram showing relevant monitoring points, parameters that are monitored and the integration of data until reporting in a schematic way. 3) The VVB noted ER-MR Annex 4 section 9.1 includes equations that show the calculation steps of GHG emissions and removals and that show the parameters that will be listed in Section 3. These equations appear to show all steps from the input of measured and default parameters to the aggregation into final reported values. ER-MR Annex 4 section 9.1 provides information on the choice and the source of all the equations used. 4) The VVB noted ER-MR Annex 4 section 9.1 does not specifically highlight any changes compared to the description provided in the ER-PD. 5) The VVB noted ER-MR Annex 4 section 9.1 states the same IPCC methods and equations described in Annex 4 Section 8.3 were used over the monitoring period. The VVB notes separate finding was issued for Annex 4 section 8.3 regarding the IPCC version which will not be repeated here. 6) The VVB noted ER-MR Annex 4 section 9.1 provides an overview of all data and parameters that are monitored during the Crediting Period, but does not provide their values for this Monitoring/Reporting Period. ER-MR template instructions for Annex 4 section 9.1 are to provide an overview of all data and parameters that are monitored during the Crediting Period and their values for this Monitoring/Reporting Period. Closure of this item is also pending quantification review and confirmation of conformance with associated criteria.
Round 1 MCAR/mCAR/OBS (12 May 2024)	MCAR: Please address items 5 and 6 and update the ER-MR accordingly.

Round 1 Response from Program (18 September 2024)	Relationship between Reference Level and UNFCCC FREL submission. The Reference level of the ERPA has employed a significantly better methodology compared to the FREL. More specifically, the Reference Level has adopted a robust method and QA/QC protocols for the AD preparation. In addition, the limitations of the FREL and the learnings informed the ER program's Reference Level. In particular, the advancements in technology and methodology and the availability of data have improved the ER program's reference level. The Government of Nepal (GoN) is considering submitting the updated FREL to the UNFCCC. Reference Level's consistency with the country's existing or emerging greenhouse gas inventory. National greenhouse gas (GHG) inventories necessitate information at the national scale. However, given the varying scales of subnational projects—such as the current REDD+ program—emission factors and forest degradation monitoring need a more robust approach. These efforts would serve as valuable references for the national GHG inventory and reporting, especially in meeting requirements like the Biennial Transparency Report (BTR). For example, in the ongoing BTR preparation task for Nepal, the base datasets and other information used for the Forest Reference Level (FRL) will be used as a reference at the national scale. Specifically, emissions from the forest sector will be based on the input time series of forest cover maps and emission rates. Institutionally, the Forest Research and Training Centre (FRTC), the agency undertaking the MRV part of REDD+, will be the key agency contributing inputs to the GHG emission estimates from the forest sector. Once an operational MRV system for multi-sectoral GHG is established, we expect that the interlinkage between the FRL and the national GHG inventory will be strengthened. In this regard, the Ministry of Forests and Environment is initiating the GEF-funded Capacity Building Initiative for Transparency (CBIT), which aims to strengthen institutional capacity and establish an operational national MRV and GHG reporting system.
Aster Findings - Round 2 (17 November 2024)	This item remains pending a final review by the VVB once all quantification findings have been closed.
Aster Findings - Round 5 (16 May 2025)	This item remains pending a final review by the VVB once all quantification findings have been closed.
Aster Findings - Round 6 (22 May 2025)	Following closure of all findings related to the reference level, and the period under verification, and a final quantitative check in the Integration workbook, the VVB is reasonably assured this requirement is met.

APPENDIX 2: DOCUMENTS RECEIVED AND REVIEWED FROM PROGRAM

File Name	Date Received
Nepal_ERMR_GHG accounting_Nov 2023_Final.pdf	11/20/2023
Document_MRV-20231205T032551Z-001.zip	12/4/2023
FCPF_Final_Data-20231205T032634Z-001.zip	12/4/2023
20064_mozambique_fcpf_validation_report_v3.0_final (1).pdf	12/4/2023
Annex 5_Outside_ZILMP ER Monitoring Report - 2018 v.29_10_20_final.pdf	12/4/2023
Brief_Info_on_FCPF_Readiness_Project.pdf	12/4/2023
FCPF ER Program Buffer Guidelines_0.pdf	12/4/2023
FCPF Glossary of Terms_2020_Final_Posted.pdf	12/4/2023
fcpf_carbon_fund_methodological_framework_revised_2020_final_posted (1).pdf	12/4/2023
FRA Field Manual 2022.pdf	12/4/2023
FRA Inventory Design 2011.pdf	12/4/2023
FRA QAQC_manual.pdf	12/4/2023
FRA_data_analysis_manual_2021.pdf	12/4/2023
Kleinn_1994_Forest resources inventories in Nepal main.pdf	12/4/2023
MRV-Series-15-web.pdf	12/4/2023
NCB_REDD_CL_Role.pdf	12/4/2023
Nepal-R_PP_TAP_Review_Synthesis(1).pdf	12/4/2023
Nepal-R_PP_TAP_Review_Synthesis.pdf	12/4/2023
NLCMS Nepal report.pdf	12/4/2023
QAQC_Report MRV 2022.pdf	12/4/2023
Sharma and Pukala_1.pdf	12/4/2023
State of Nepals Forests (DFRS)_1457599484.pdf	12/4/2023
Terai Forests of Nepal (DFRS).pdf	12/4/2023
ZILMP ER Monitoring Report - 2018 v.3.1_complete_final.pdf	12/4/2023
CarbonDensitiesToolV2.xlsx	12/4/2023
FCPF_ActivityData_CEO_Survey.docx	12/4/2023
FCPF_CompiledData_CEO_GEE.csv	12/4/2023
FCPF_NFI_CEO_Survey.docx	12/4/2023
FCPF-Activity_script_v4.R	12/4/2023
Forest_plots_591.xlsx	12/4/2023
Interpretation_Key_25april2023.docx	12/4/2023
Monte_carlo_2018_21_with_birigazzi.xlsx	12/4/2023
Nepal Forest Degradation Interpretation Key.docx	12/4/2023
Nepal_Calc_SampleSize_SampleDistribution_TAL_2004_2021.xlsx	12/4/2023

Nepal_TAL_AD_tool_v2.xlsx	12/4/2023
Nepal_TAL_Integration_tool_MC.xlsx	12/4/2023
Nepal_TAL_Integration_tool_MC_V2.xlsx	12/4/2023
Nepal_TAL_Integration_tool_SensitivityAnalysis_V2.xlsx	12/4/2023
Nepal_TAL_Integration_tool_V2.xlsx	12/4/2023
Nepal_TAL_Integration_tool_V3.xlsx	12/4/2023
NFI.csv	12/4/2023
Non_forest_plots_14.xlsx	12/4/2023
Readme.docx	12/4/2023
Secondary_forest_plots_16.xlsx	12/4/2023
SOP_QAQC_FCPF_Nepal.docx	12/4/2023
USE_FOR_ANALYSIS_Nepal_TAL_2004_2021_agreement_agreement_cover_type_drive (2).xlsx	12/4/2023
USE_FOR_ANALYSIS_Nepal_TAL_2004_2021_agreement_agreement_cover_type_drive.xlsx	12/4/2023
4. Reference level data Nepal_ERPD_24May2018final_CLEAN_0.pdf	1/23/2024
CarbonDensitiesToolV3.xlsx	1/23/2024
Draft -Start Date of ER Program.docx	1/23/2024
evidence supporting the start date of creding period CPF Carbon Fund ERPA-Nepal Tranche A.pdf	1/23/2024
List of files necessary for the validation.docx	1/23/2024
Notification of a Removal Factor calculation error.docx	1/23/2024
Collect_Earth_Sample_Location.cpg	1/23/2024
Collect_Earth_Sample_Location.dbf	1/23/2024
Collect_Earth_Sample_Location.prj	1/23/2024
Collect_Earth_Sample_Location.sbn	1/23/2024
Collect_Earth_Sample_Location.sbx	1/23/2024
Collect_Earth_Sample_Location.shp	1/23/2024
Collect_Earth_Sample_Location.shx	1/23/2024
ERPD_Program_Boundary.cpg	1/23/2024
ERPD_Program_Boundary.dbf	1/23/2024
ERPD_Program_Boundary.prj	1/23/2024
ERPD_Program_Boundary.sbn	1/23/2024
ERPD_Program_Boundary.sbx	1/23/2024
ERPD_Program_Boundary.shp	1/23/2024
ERPD_Program_Boundary.shp.xml	1/23/2024
ERPD_Program_Boundary.shx	1/23/2024
Forest_Inventory_Plot_Location.cpg	1/23/2024

Forest_Inventory_Plot_Location.dbf	1/23/2024
Forest_Inventory_Plot_Location.prj	1/23/2024
Forest_Inventory_Plot_Location.sbn	1/23/2024
Forest_Inventory_Plot_Location.sbx	1/23/2024
Forest_Inventory_Plot_Location.shp	1/23/2024
Forest_Inventory_Plot_Location.shx	1/23/2024
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Nepal_District_Boundary.dbf	1/23/2024
Nepal_District_Boundary.prj	1/23/2024
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Nepal_Province_Boundary.shx	1/23/2024
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FCPF_2004_2021_TAL_clipped_CCDCSMA.tif	1/23/2024
FCPF_2004_2021_TAL_clipped_CODED.tif	1/23/2024
FCPF_2004_2021_TAL_clipped_LandTrendr.tif	1/23/2024
FCPF_2004_2021_TAL_clipped_MTDD.tif	1/23/2024
MRV_tree_data_with_V_ratio.csv	1/23/2024
Reference_period_Tree_data.xlsx	1/23/2024
4. Reference level data Nepal_ERPD_24May2018final_CLEAN_0.pdf	2/27/2024
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Nepal_TAL_Integration_tool_SensitivityAnalysis_V2.xlsx	2/27/2024
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Nepal_TAL_Integration_tool_V3.xlsx	2/27/2024
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USE_FOR_ANALYSIS_Nepal_TAL_2004_2021_agreement_agreement_cover_type_drive (2).xlsx	2/27/2024
USE_FOR_ANALYSIS_Nepal_TAL_2004_2021_agreement_agreement_cover_type_drive.xlsx	2/27/2024
H63LCO-state forest of Nepal_1579793749_1579844506.pdf	2/27/2024
SOC_gurung2015.pdf	2/27/2024
Collect_Earth_Sample_Location.cpg	2/27/2024
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FCPF_2004_2021_TAL_clipped_CODED.tif	2/27/2024
FCPF_2004_2021_TAL_clipped_LandTrendr.tif	2/27/2024
FCPF_2004_2021_TAL_clipped_MTDD.tif	2/27/2024
MRV_tree_data_with_V_ratio.csv	2/27/2024
Reference_period_Tree_data.xlsx	2/27/2024
meeting_discussion_notes.docx	3/4/2024
DAY1-Review_of_current_activity_data_method_Nepal_FCPF_amul.pptx	3/7/2024
FCPF ER Program in Nepal – desktop meetings_Activity.docx	3/7/2024
remotesensing-13-02666.pdf	3/7/2024
site_visit_itinary.docx	3/15/2024
Verification_plot.kml	3/15/2024
Interpretation Logic - Nepal.pptx	5/3/2024
Interpretation Logic - Nepal.pdf	5/6/2024
linktorevisedER-MR.url	9/18/2024
Response-Round 1 Findings_20240614_V2.1-Sep13.xlsx	9/18/2024
Revised First Nepal ERM-Round 1 Findings-June 2024-clean version-Sep13.docx	9/18/2024
Revised First Nepal ERM-Round 1 Findings-June 2024-trackchangesversion-Sep13.docx	9/18/2024
23057.50_Tarai Arc Landscape Nepal_FCPF Carbon Fund_ExtValVer_Round 1 Findings_20240512.xlsx	9/24/2024
23057.50_Tarai Arc Landscape Nepal_FCPF Carbon Fund_ExtValVer_Round 1 Findings_20240614_V2.1.xlsx	9/24/2024
Detailed Response to Selected Items.docx	9/24/2024
Nepal Round 1 Findings - German - working file.docx	9/24/2024
nepal_ermr_ghg_accounting_nov_2023_final.pdf	9/24/2024
WF-23057.50_Tarai Arc Landscape Nepal_FCPF Carbon Fund_ExtValVer_Round 1 Findings_20240614_V2.1.xlsx	9/24/2024
Copy of CompiledData_CEO_GEE-ART-TREES-FCPF_Aug1_2024.csv	9/24/2024
Final FRA plots v4 with DIS_Local_level.xlsx	9/24/2024
Day1-FCPF-TREES_CapacityBuilding.pptx	9/24/2024
Day2-FCPF-TREES_CapacityBuilding.pptx	9/24/2024
Day3-FCPF-TREES_CapacityBuilding.pptx	9/24/2024
CarbonDensitiesToolV4.xlsx	9/24/2024
CarbonDensitiesToolV5.xlsx	9/24/2024
CompiledData_CEO_GEE-ART-TREES-FCPF_Aug1_2024.csv	9/24/2024

DegradedForest_Bootstrap.XLSX	9/24/2024
Grassland_Bootstrap.XLSX	9/24/2024
IntactForest_Bootstrap.XLSX	9/24/2024
NatForestRegRate_Bootstrap.XLSX	9/24/2024
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Document information

Version	Date	Description
1.4	August 2024	Page 1, section 2.2 and section 5.6 were updated to reflect the changes incorporated in the most recent version of the Buffer Guidelines (V4.2). This adjustment includes the removal of the reversal buffer. Now, only the pooled reversal buffer should be accounted for. Section 4.2.2 Forest Monitoring Approach has been included to allow the VVB report the assessment of any updates made to the monitoring plan (if any, and if applicable). Page 1 and section 5.6 were updated to allow for the separate reporting/labelling of removals coming from afforestation and reforestation.
1.3	May 2022	Page 1 and sections 5.4.1 and 5.6 have been adjusted to reflect the definition of Total ERs
1.2	September 2020	Minor adjustments have been made to show consistency with the last version of the Validation and Verification guidelines.
1.1	November 2020	Reference to the guidelines on uncertainty analysis of emission reductions was included.
1.0	August 2020	Initial version adopted.