



Verification Report

Final Version 1.0

03 October 2023

Aster Global Environmental Solutions, Inc.



Forest Carbon Partnership Facility (FCPF)

Carbon Fund

Verification Report (VER)

ER Program Name and Country	<i>Emission Reduction Program in North Central Region, Vietnam</i>
Reporting Period Covered In this Report	<i>01-01-2018 to 31-12-2019</i>
Number of FCPF ERs	<i>16,217,520 tCO₂e</i>
Number of ERs allocated to the Uncertainty Buffer	<i>1,785,088 tCO₂e</i>
Number of ERs allocated to the Reversal Buffer	<i>3,284,561 tCO₂e</i>
Number of ERs allocated to the Pooled Reversal Buffer	<i>1,026,425 tCO₂e</i>
Name of the VVB	<i>Aster Global Environmental Solutions, Inc.</i>
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	<i>Final v1.0</i>
Date of the Verification Report	<i>03 October 2023</i>
Report Approved by	<i>Shawn McMahon</i>

1. VERIFICATION STATEMENT

The review and cross-check of explanations and justifications included in the Monitoring Report dated 05-09-2023 (Vietnam MMR1_Final 06.09.2023_VN updated 01.10.2023_Clean.pdf) and supporting documents have provided Aster Global Environmental Solutions, Inc.'s (herein referred to as Aster Global) with sufficient evidence to determine with a *reasonable* level of assurance the compliance of the Emission Reduction Program in North Central Coast, Vietnam (herein referred to as NCC ER Program) with the applicable verification criteria set out in the FCPF requirements.

The scope covered by the verification includes the ER Program's reporting period (01-01-2018 to 31-12-2019), the reference period (2005-2015), the accounting area (5,144,520¹ 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 enhancement – included Removals from reforestation – included Emissions and/or removals from conservation of carbon stock – excluded Emissions and/or removals from sustainable management of forests – excluded Carbon Pools Aboveground biomass in trees – included Belowground biomass in trees – included Dead wood – excluded Litter - excluded Soil organic carbon – excluded Harvested wood products – excluded GHGs CO ₂ – included CH ₄ – excluded N ₂ O – excluded
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During the verification process, the audit team issued findings as specified in the FCPF Validation and Verification Guidelines v2.4 Section 11. The VVB issued Major Corrective Actions (MCARs), Minor Corrective Actions (mCARs), and Observations (OBS).

A total of 25 MCARs, 1 mCAR and 0 Observations were raised as part of the verification process. A total of 25 MCARs were successfully addressed by the ER Program and closed by the VVB. The NCC ER Program opted not to respond to the mCAR. Per the FCPF Validation and Verification Guidelines, the ER Program has until the time of the next verification to close out the 1 mCAR issued. 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 NCC ER Program, quantified in accordance with the verification criteria, amount to 22,313,594 tonnes CO₂ equivalent (tCO₂e). Aster Global verified that the uncertainty buffer ERs amount to 1,785,088 tCO₂e and that the non-permanence (Reversal Buffer and Pooled Reversal Buffer) ERs amount to 4,310,986 tCO₂e. The amount of FCPF Units to be issued would be 16,217,520 tCO₂e. There are no uncertainties associated with the verification conclusion.

Statement Issuing Date: 03 October 2023

¹ Please note that due to discrepancies in the generated forest cover maps by the ER Program the forest cover maps have been adjusted to match the total reported area of the ER Program.

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

TEAM LEADER: Shawn McMahon

LEGAL REPRESENTATIVE: Janice McMahon

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 NCC ER Program's 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 audit 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)², the general objectives of the validation/verification of NCC ER Program included 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 /Reference Level 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 / Reference Level (or the revised Reference Level if technical corrections are applied) 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 Validation and Verification Guidelines (VVG) - (Section 8.2), the specific objectives of verification of the NCC ER Program include the following:

² Forest Carbon Partnership Facility, Validation and Verification Guidelines, Version 2.4, August 2021 (Section 8.2)

- “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;
- 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 all required objectives have been met during the course of the audit.

2.3 Criteria

The criteria included the following normative documents provided by the FCPF:

- FCPF Methodological Framework, Version 3, April 2020
- Buffer Guidelines, Version 2, April 2020
- 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, 2018
- Guidelines on the application of the Methodological Framework Number 4, Version 1, 2020
- FCPF Guidelines on Uncertainty Analysis_2020
- Process Guidelines, Version 5.2, August 2021
- FCPF Validation and Verification Guidelines, Version 2.4, August 2021
- FCPF – Glossary of Terms Version 2.1, August 2021
- FCPF Guidance Notes, as applicable
- 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 Secretariat via email

Criteria Indicators	Topic	Validation	Verification
6	Data availability	X	X
7, 8, 9.1	Identification and address sources of uncertainty	X	X
9.2, 9.3	Estimation of residual uncertainty		X
14.1	Consistency of monitoring estimates with Reference Level		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 project and program 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 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 REDD+ Program and Project's Data Management System.

2.5 Materiality

Materiality is a concept that the individual or aggregation of misstatements/misrepresentations, errors and omissions could affect the GHG assertion and the decisions of the intended users. Materiality was also used as part of the Verification and Sampling and Audit Plan designs, to determine the type of verification processes used by Aster Global to minimize the risk of not detecting a material misstatement. As specified in the Validation and Verification Guidelines (VVG) - (Section 8.5), the threshold for quantitative materiality is 1%.

The verification process based on the desk review found that there are no quantitative or qualitative material discrepancies affecting the GHG assertion or leading to overestimations of the reported GHG emissions and removals.

3. METHODOLOGY AND PLANNING

3.1 Verification team

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
Shawn McMahon	Team Leader, Technical Expert, Lead Validator / Verifier, AFOLU Specialist / Desktop Review / Virtual Site Visit / Client Communications	X	X	X	X	
Mansfield Fisher	Lead Validator/Verifier, AFOLU Specialist / Desktop Review/ /Virtual Site Visit /Client communications	X	X	X	X	
Matthew Perkowski	Technical Expert, Forest Biometrician / Team Member/ Virtual Site Visit	X	X	X		
Taek Joo Kim	Technical Expert, Forest Biometrician / Team Member / Virtual Site Visit	X	X	X		
Sandesh Shrestha	Remote Sensing and GIS Specialist / Team Member / Virtual Site Visit	X	X	X		
Justin Ziegler	Forest Biometrician / Team Member / Virtual Site Visit	X				
Matthew Campbell	Field Forester / Team Member / Virtual Site Visit	X				

Ashley Laux	Project Forester / Team Member / Virtual Site Visit	X				
Caitlin Sellers	Independent Peer Reviewer (Technical Reviewer)					X
Trinh Thi My Dung	Translator / In-Country Site Visit		X			
Luu Hong Truong	Regional Forestry Expert / In-Country Site Visit		X			
Natalie Hammer	Executive Services Administrator / Resource Manager				X	

3.2 Verification schedule

Verification Activity/Milestone	Content (Explanation)	Delivery Date
Kick Off Call	Kick-off the validation and verification of the NCC ER Program	17 June 2021
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	28 June 2021
Sampling Plan v1 Submitted to NCC ER Program	Sampling Plan Submitted to NCC ER Program	30 July 2021
Signed Sampling Plan v1 submitted to Aster Global	NCC ER Program submitted signed Sampling Plan v1	17 August 2021
Audit Plan v1 Submitted to NCC ER Program	Audit Plan submitted to NCC ER Program	25 August 2021
FMT representatives return Draft Sampling Plan	Draft Sampling Plan with comments submitted to Aster Global	25 August 2021
Signed Audit Plan v1 submitted to Aster Global	NCC ER Program submitted signed Audit Plan v1	30 August 2021
Aster Global starts desktop review	VVB conducts desktop review and generates Findings as they proceed	30 August 2021
Logistics Meeting to discuss site visit	Logistics Meeting to discuss site visit	31 August 2021

Remote Sensing/Monitoring, Reporting and Verification Activity Data Meeting	The VVB met with members of the NCC ER Program to discuss aspects of the remote sensing analysis performed to collected activity data, remote sensing analysis as it relates to monitoring.	12 October 2021
Calculation walkthrough for Reference Level and Emission Factors Meeting	The VVB met with members of the NCC ER Program to discuss calculations related to the Reference Level which included but was not limited to activity data generation, sampling design, LULC classification, emission factor estimation.	26 October 2021
Logistics Meeting to discuss site visit	Logistics Meeting to discuss site visit	15 November 2021
In-Country site visit	Remeasurement of forest inventory plots, ground-truthing of various remote sensing analyses, selected interviews.	03-09 December 2021
Aster Global Issues Preliminary Round 1 Findings	Aster Global Issues Preliminary Round 1 Findings	15 December 2020
Aster Global Issues	Aster Global Issues Round 1 Findings	07 January 2022
Round 1 Findings Meeting (2)	Follow up meeting to original round 1 findings meeting	29 January 2021
NCC ER Program provide responses to Round 1 Findings and updated documents	Updated documentation, evidence and Findings responses provided to Aster Global	22 June 2022
Aster Global Issues Round 2 Findings	Aster Global Issues Round 2 Findings	23 August 2022
NCC ER Program provide responses to Round 2 Findings and updated documents	Updated documentation, evidence and Findings responses provided to Aster Global	20 December 2022
Aster Global Issues Round 3 Findings	Aster Global Issues Round 3 Findings	02 February 2023
NCC ER Program provide responses to Round 3 Findings and updated documents	Updated documentation, evidence and Findings responses provided to Aster Global	09 May 2023
Aster Global Issues Round 4 Findings	Aster Global Issues Round 4 Findings	31 July 2023
NCC ER Program provide responses to Round 4 Findings and updated documents	Updated documentation, evidence and Findings responses provided to Aster Global	06 September 2023
Aster Global drafts verification report and submits to Independent Peer Reviewer	Aster Global prepares draft verification report using FCPF templates	28 September 2023
Draft verification report is updated as needed and provided to the FMT and NCC ER Program representatives for review	Aster Global makes updates to report as needed after the Technical Reviewer is finished and then drafts are submitted to FMT and NCC ER Program representatives	29 September 2023

Aster Global issues final verification report and statement (opinion)	Review of ER Program is complete.	03 October 2023
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3.3 Methodology description

Desktop Review:

The desktop verification component included a full, risk-based review of all ER Program documentation/calculations received from the NCC ER Program against the requirements and criterion of FCPF. 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:

- Current conditions, for example the presence of deforestation and degradation, emissions factor adjustments, forest characteristics and reported biomass volume (above- and/or below-ground)
- Confirmed that operational, data collection procedures and monitoring methods were implemented in accordance with the SOPs as they are written
- 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

Remote Sensing:

NCC 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 NCC ER Program compliance against the FCPF Methodological Framework requirements and associated guidelines (as applicable) with respect to remote sensing.