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Project Validation Report
VALIDATION REPORT
ETM Group Co., Ltd.

ETM Carbon Trade (ECT) Standard Project Audit Report by ETM Group Co., Ltd. and
International Best Practices for Voluntary Greenhouse Gas Reduction Projects

Project Details

Project Developer: ETM Group Co., Ltd.

Project Name: Carbon Capture and Greenhouse Gas Emission Reduction in Rubber
Plantations

Buriram Province, Using Cryptocurrency, Blockchain, and
Satellite

Project Type

(Determined by Methodology) [] Forests and Green Spaces [x] Agriculture

Carbon Atlas — A Digital

Platform Developed to Monitor, Verify, and Report Carbon Volumes (MRV)

According to GISTDA (Geo-Informatics and Space Technology Development Agency), a
"green space survey" was conducted to calculate the amount of carbon sequestration
nationwide using satellite imagery and geo-informatics technology. Covers the years 2016 to
2022.

Project Auditor Details

Serial Number ECT-001-2025

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Document Preparation Details

Project Audit Report, August 9, 2025 (version 1)

Project Proposal Documents Reviewed, August 1, 2025 (version 1)

Declaration of Interest

I, Mr. Phopnat Ritthinet, a juristic person, am an external assessor for the voluntary greenhouse gas reduction project in accordance with the ETM Carbon Trade (ECT) standards by ETM Group Co., Ltd. and international best practices for voluntary greenhouse gas reduction projects.

During my assigned activities, I hereby certify that I have no interest in, or relationship with, any other organization or agency involved in the greenhouse gas reduction activities of the project:

Carbon Capture and Greenhouse Gas Emission Reduction in Rubber Plantations in Buriram Province Using Cryptocurrency, Blockchain, and Satellite Technologies, for which ETM Group Co., Ltd. is the project developer.

I hereby certify the following:

- (1) I have not worked with the project owner during the past year or with any prior commitments.
- (2) I have no direct family members working with the project owner during the past year or with any prior commitments. Already bound in advance
- (3) Not a shareholder or having no direct family member as a shareholder in the project owner's company
- (4) Not an executive or having no direct family member as an executive, or having the potential to provide commercial benefits to the project owner

Signed

(Mr. Phopnat Ritthinet...)

Date: August 1, 2025

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1. Introduction

1.1 Background of the Audit

This report is prepared to present the results of the validation of the "Carbon Capture and Greenhouse Gas Emission Reduction in Rubber Plantations in Buriram Province Using Cryptocurrency, Blockchain, and Satellite Technologies" project, developed by ETM Group Co., Ltd. and owned by Carbon Solution Limited Partnership (Thailand). This audit was conducted by ETM Group Co., Ltd. as an independent external assessor to verify that the project design document (PDD) and implementation plan comply with the requirements of the ETM Carbon Trade by ETM Group Co., Ltd. standard and international best practices for voluntary greenhouse gas reduction projects.

1.2 Objective of the Audit

The primary objectives of this audit are:

- To verify the accuracy and completeness of the data and assumptions specified in the Project Design Document (PDD).
- To assess whether the project design complies with the requirements of the ETM standard.
- To assess the reliability and appropriateness of the calculation methodology for GHG emission reductions/storage and the monitoring plan.
- To confirm the potential for generating co-benefits of the project across environmental, social, and economic dimensions.

1.3 Scope of Audit

The scope of the audit covers the assessment of all key elements of the Project Design Document (PDD) and the implementation plan, including:

- The accuracy of the project's identification and scoping.
- The appropriateness of the baseline determination and assessment methodology.
- The validity of the assumptions and methodology used to calculate the expected GHG emission reductions/storage.
- The completeness and practicability of the monitoring and evaluation plan.
- Identification and assessment of project co-benefits, including their linkage to the Sustainable Development Goals (SDGs).
- Assessment of the role and application of technologies. Cryptocurrency, Blockchain, and Satellites for Project Operation and Monitoring

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1.4 Audit Criteria

This audit was conducted based on the following main criteria:

- ETM Carbon Trade Standard by ETM Group Co., Ltd., which is the primary standard used in project development and evaluation.
- Best practices for voluntary carbon projects, considering guidelines and some requirements from well-known international standards such as the Verified Carbon Standard (VCS) and the Gold Standard (with regard to co-benefits assessment).
- Intergovernmental Panel on Climate Change (IPCC) greenhouse gas calculation guidelines for estimating greenhouse gas sequestration/reduction volumes, using the Geo-Informatics and Space Technology Development Agency (GISTDA), under the supervision of the Ministry of Higher Education, Science, Research and Innovation (MHESI), through the CARBON ATLAS system.
- United Nations Sustainable Development Goals (SDGs) for categorizing and evaluating co-benefits.

2. Project Information

2.1 General Project Information

- Project Name: Carbon Sequestration and Greenhouse Gas Emission Reduction in Rubber Plantations in Buriram Province, Using Carbon Sequestration and Reduction Technology Cryptocurrency, Blockchain, and Satellite
- Project Owner: Carbon Solution (Thailand) Limited Partnership
- Project Developer: ETM Group Co., Ltd.
- Project Location: Samrong Mai Subdistrict, Lahan Sai District, Buriram Province
- Operation Area: Covers 131 rubber plantations of farmers, totaling 1,936.15 rai (approximately 14.78 rai per farmer)
- Activity Type: Sustainable rubber plantation management to increase carbon sequestration and reduce greenhouse gas emissions through promoting no-burn practices, reducing chemical use, intercropping, and the application of digital technology

2.2 Project Objectives and Activities

- Main Objectives: Reduce greenhouse gas emissions through sustainable rubber plantation management and increase carbon sequestration in rubber plantation biomass and soil
- Main Activities: Farmer education and training, promotion of no-burn soil and weed management, intercropping (agroforestry), reducing agricultural chemical use, and the use of Blockchain technology for Data recording, satellite monitoring, and cryptocurrency for carbon credit trading.

2.3 Application of digital technology in the project implementation process

To enhance transparency in data management, reduce the risk of discrepancies, and build credibility in the Measurement, Reporting, and Verification (MRV) process, ETM Group Co., Ltd. has applied advanced digital technology to implement its carbon credit project in rubber plantations. This includes three main technologies:

(1) Blockchain technology to transparently and verifiably record carbon management activities.

The company has applied the Blockchain system to record activities related to the management of rubber plantations, such as fertilizer application, weed control, waste management, and soil and water conservation activities.

Each piece of information is recorded on the Blockchain system with a time stamp, resulting in complete traceability.

Currently, an average of 10 activity records are recorded per plot per year. This system covers the entire project area and reduces the risk of data distortion and increases confidence in the MRV system.

(2) Using satellite imagery for accurate land and biomass assessment.

The Company has utilized high-resolution remote sensing technology with satellite imagery to regularly monitor the status of the plantations, specifically assessing:

- Land Use Change
- Vegetation health using the Normalized Difference Vegetation Index (NDVI)
- Biomass analysis and carbon sequestration potential.

The project covers a total project area of 1,936.15 rai, with data collection every 7–14 days and the ability to identify plantation plots (Plot ID), in line with IPCC Guidelines and assessment guidelines used by the UNFCCC.

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(3) Using Cryptocurrency to Enhance Payment Efficiency and Benefit Distribution

The Company has developed a digital platform for the issuance and trading of Carbon Credit Tokens on the blockchain network, enabling fast and transparent remuneration to farmers.

Smart Contracts are used to automate the transfer of rights and benefits. This system reduces the payment process from five steps to two, and reduces the payment period from 30 days to seven business days, resulting in faster and more direct benefits for farmers. This promotes economic sustainability at the community level.

3. Audit Process and Procedures

The audit follows the procedures specified in the ETM Carbon Trade Standard, with the following procedures:

3.1 Document Review

The auditor carefully reviewed the Project Design Document (PDD) and all related documents, including:

- Project Detail Document
- Site Survey and Assessment Data
- Greenhouse Gas Calculation Methodology
- Monitoring and Evaluation Plan
- Stakeholder Engagement Document
- Co-Benefits Report

3.2 Interviews and On-Site Visits

As the audit report is drafted, on-site visits will be conducted as the next step. The following plans are in place:

- Interviews: Interviews with project developers, project owners, management, and relevant staff, as well as representatives of participating farmers and local stakeholders, to confirm information and ensure understanding. The actual process involved interviews with 14 people involved in the field survey and data collection: Ms. Jongklanee Wattanapitak, Mr. Prawit Wattanapitak, Ms. Sanai Chalunram, Ms. Sasithorn Sathantheun, Ms. Meawdee Pamthonglang, Mr. Anuwat Praphasiriphan, Mr. Prawit Chaiyapet, Ms. Thanaporn Wattanapitak, Mr. Suwan Kaensuk, Ms. Suphan Kaensuk, Mr. Thiwakon Kaensuk, Mr. Kamol Tham

Rangsi, Mr. Thanapon Buntos, and Mr. Sopon Sutthithammanan.

- On-site inspections: Visits to participating rubber plantations to verify actual site conditions, adherence to sustainable management practices, and installation/operation of technology systems (if any).

3.3 Sampling and Data Verification

- Sampling: A sampling plan is in place for rubber plantations and farmers to conduct field data verification and confirm compliance with the guidelines specified in the PDD, sampling at least 10% of the participating plantations.
- Data verification: Verify the accuracy of data recorded on the Blockchain platform against field records (if applicable), and verify satellite analysis data.

4. Inspection Results

4.1 Project Design Document (PDD) Conformity Assessment

4.1.1 Project Identification and Scope Determination

- Inspection Results: The PDD clearly and completely identifies the project name, owner, developer, and location. The total area is 1,936.15 rai and the number of farmers is 131. This is confirmed by the preliminary data presented. The project scope covers rubber plantation management activities directly related to mitigation and containment. Greenhouse gas collection and technology use as the primary mechanism.
- Comments: Compliance with requirements.

4.1.2 Baseline Determination

- The PDD review results suggest an appropriate baseline determination concept based on:

Common practices of farmers in the area that may generate greenhouse gas emissions (e.g., burning of weeds, use of chemical fertilizers). The data used for baseline determination are reliable at the conceptual level and will be further verified

during field inspections.

- Comments: Compliance with conceptual requirements. Further retrospective data verification is required

as actual data are collected.

4.1.3 Additionality Assessment

- The PDD review results suggest a reliable additiveness analysis, indicating that

project activities (e.g., reduced burning, use of Blockchain/Cryptocurrency technology) are not common practices in the area due to investment barriers (cost of access to technology), technological barriers (knowledge of Blockchain/Cryptocurrency), and institutional barriers (lack of easily accessible carbon market mechanisms for smallholder farmers). Recognizing revenue from carbon credits is an incentive. Key factors contributing to the project's success

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- Comments: Compliance with requirements demonstrates the project's complementarity.

4.1.4 Leakage Assessment

- The PDD review results identify potential leakage (e.g., relocating burning to another area) and propose solutions to mitigate and monitor leakage, such as educating farmers about the impacts of burning and using satellite imagery to monitor land-use changes around the project area.

- Comments: Compliance with requirements. The leakage monitoring plan is appropriate.

4.1.5 Calculation of Greenhouse Gas Reduction/Sequestration

- The PDD review results provide guidelines and preliminary assumptions for calculating the amount of carbon sequestration from rubber tree growth and greenhouse gas emissions reductions from reduced burning and chemical use. The estimated greenhouse gas reduction is 8,563.73 tCO₂e/year over the projected period. Carbon credits over the six-year period (from January 1, 2016, to December 31, 2022) are expected to reduce a total of 31,170 tons of carbon dioxide equivalent, in line with the ETM Carbon Trade Standard and the IPCC Guidelines. However, these figures will be verified with actual monitoring data.

- Comments: The calculation methodology presented in the PDD is reasonable and consistent with the standards, but baseline data and actual operational activity data must be verified.

4.1.6 Monitoring and Evaluation Plan

- The PDD presents a comprehensive monitoring plan for environmental, social, and economic aspects, with a strong emphasis on technology. Clear indicators for each co-benefits (e.g., soil organic matter, training attendance, and additional farmer income) are identified, with the goal of reducing field monitoring costs by approximately 30-40%. This plan is feasible and provides valuable information. Adequate for future audits and certification.

- Comments: The monitoring plan is complete and appropriate for the technology.

4.2 Co-benefits Assessment: The auditor assessed the project's co-benefits as specified in the Co-benefits Report and PDD,

with links to the Sustainable Development Goals (SDGs), as follows:

4.2.1 Environmental Benefits

- Audit Results: The project has high potential to generate environmental benefits beyond direct greenhouse gas reductions, such as promoting biodiversity through intercropping (increasing the diversity of plant species in rubber plantations by an average of 3-5 species per plot), improving soil quality through refraining from burning (increasing soil organic matter (SOC) by an average of 0.5-1% per year), conserving water resources through chemical reduction (reducing chemical leaching into water sources by up to 25%), and improving air quality through reducing burning (reducing PM2.5 by approximately 20-30%).
- Comments: The environmental benefits are clear and preliminary quantitative indicators have been identified.

4.2.2 Social Benefits

- Audit Results: The project significantly improves the quality of life and well-being of farmers and communities (it is estimated that the rate of respiratory illnesses related to burning will decrease by 10% within 2 years), creates jobs and strengthens labor capacity (approximately 1 field job per 100 rai, with over 90% of farmers participating in training), strengthens communities through group formation, and access to new knowledge and technologies (70% of farmers were able to independently use the data recording platform within 6 months).
- Comments: The social benefits are prominent and supported by strong data.

4.2.3 Economic Benefits

- Audit Results: The project creates economic opportunities and sustainably increases farmers' incomes (estimated to generate an average of 1,000-2,000 baht/rai of additional income from carbon credit sales), including income from intercropping (an average of 500-1,500 baht/household/year of additional income), reduces production costs (farmers' input costs are reduced by 10-15%), and creates new business opportunities from the digital carbon market and the development of farmers' competitiveness (increasing the bargaining power of farmer groups by 10-20%).
- Comments: The economic benefits are tangible and have attractive estimates.

4.3 Evaluation of Technology Applications

4.3.1 Blockchain

- Audit Results: Using Blockchain as an activity data recording system is appropriate and has high potential to create transparency and traceability, with data recorded on the system being 99.9% accurate and reducing the traceability period from days to just a few minutes. This will simplify future audits and increase the credibility of carbon credits.
- Comments: A robust and innovative system design has been developed.

4.3.2 Satellite

- Audit Results: Using satellite imagery technology for field monitoring and biomass assessment has increased the efficiency and accuracy of measurements. It covers an area of 1,936.15 rai with an image resolution of 3-5 meters per pixel and can identify biomass changes with 90% accuracy, reducing the need for... and field survey costs.
- Comments: The application of satellite technology has advanced and is extremely beneficial for the audit.

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4.3.3 Cryptocurrency

- Audit results: The mechanism for using cryptocurrency for trading and benefit distribution is transparent and efficient, reducing transaction fees by 50% and streamlining the process of receiving payments to farmers quickly, which is a significant incentive to promote farmer participation.

- Comments: The financial mechanism is modern and conducive to smallholder farmers.

5. Recommendations for improvement (if any)

- Baseline data collection: To strengthen the PDD, more detailed quantitative data should be collected as baseline values for all dimensions of co-benefits (e.g., soil organic matter volume before the project commencement, farmers' health statistics in the area, average income before joining the project).
- Additional documentation and evidence preparation: Prepare a systematic documentation and evidence preparation plan to support on-site audits and future data sampling (e.g., training records, participant lists, input use records).
- Risk analysis Further analysis of potential risks to co-benefits and a more detailed risk mitigation plan were developed in the PDD.

6. Summary and Validation Opinions

6.1 Summary of Audit Results

Based on a document review and preliminary assessment by an external assessor, the "Carbon Capture and Greenhouse Gas Emission Reduction in Rubber Plantations in Buriram Province Using Cryptocurrency, Blockchain, and Satellite Technologies" project, developed by ETM Group Co., Ltd. and owned by Carbon Solution (Thailand) Limited Partnership, demonstrates a robust project design that aligns with the ETM Carbon Trade By ETM Group Co., Ltd. standard and international best practices. The project utilizes innovative blockchain, satellite, and cryptocurrency technologies, enhancing efficiency, transparency, and reliability in operations, measurement, and benefit distribution. Furthermore, the project has high potential to generate significant and diverse co-benefits across environmental, social, and economic dimensions, aligning with the United Nations Sustainable Development Goals (SDGs).

6.2 Audit Comments

After reviewing the Project Design Document (PDD) and supporting documents, ETM Group Co., Ltd., as an independent external assessor, has determined that the "Carbon Capture and Greenhouse Gas Emission Reduction Project in Rubber Plantations in Buriram Province Using Cryptocurrency, Blockchain, and Satellite Technologies" has been designed in accordance with the requirements of the ETM Carbon Trade Standard by ETM Group Co., Ltd.

Ltd. for the Voluntary GHG Reduction Project demonstrates a clear and credible approach to achieving its stated objectives, including generating verifiable co-benefits.

The project's baseline design, additiveness, leakage, GHG quantification methodology, and monitoring plan are sound and consistent with established criteria. The innovative integration of blockchain, satellite, and cryptocurrency technologies significantly enhances the transparency, efficiency, and verifiability of the project. Furthermore, the project clearly identifies key environmental, social, and economic co-benefits, aligning with the Sustainable Development Goals (SDGs), subject to implementation of the monitoring plan and verifiable data collection, as specified in the PDD, including addressing minor improvements. This project is considered qualified.

Eligible for validation

Based on the review of the Project Design Document (PDD) and supporting documentation, ETM Group Company Limited as the independent external validator, has determined that the project "Carbon Sequestration and Greenhouse Gas Emission Reduction in Rubber Plantations in Buriram Province Using Cryptocurrency, Blockchain, and Satellite

Technology" is designed in accordance with the requirements of the ETM Carbon Trade By ETM

Group Co., Ltd. Standard for voluntary greenhouse gas reduction projects. The project demonstrates a clear and credible approach to achieving its stated objectives, including the generation of verifiable co-benefits.

The design of the project's baseline, additionality, leakage, GHG quantification methodology, and monitoring plan are found to be reasonable and align with the specified criteria. The innovative integration of Blockchain, Satellite, and Cryptocurrency technologies significantly enhances the project's transparency, efficiency, and verifiability. Moreover, the project clearly identifies substantial environmental, social, and economic co-benefits that align

with the Sustainable Development Goals (SDGs).

Subject to the successful implementation of the monitoring plan and the collection of verifiable data as outlined in the PDD, and the satisfactory address of any minor recommendations

for improvement, this project is deemed eligible for validation.

See Appendix: Photographic Map of Carbon Storage in Green Areas, 2017-2022 (Gistda) in the Thai version of the report starting on page 14.