Validation Report of "Methodology for Improving and Reporting the Level of Sequestered Carbon in the Soil in the Agricultural Sector"

Document Prepared by Earthood Services Private Limited

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Earthood completed this report based on the review of information given in the CARBONSAFE Program Standards document, virtual meetings, physical site visit, direct observations, and finding clarifications and shall not be held liable for any miss re-presentation of the information whatsoever. Wherever possible, information gathered was cross-referenced with secondary sources.

Executive Summary

The present methodology, namely “Methodology for Improving And Reporting The Level Of Sequestered Carbon In The Soil In The Agricultural Sector” has been proposed by CARBONSAFE. The primary aim of CARBONSAFE is to introduce latest and advanced farming practices to the farmers in Bulgaria which they would not otherwise undertake in the absence of this programme. Introduction of these farming practices is expected to result in increased levels of sequestered carbon in the agricultural soil, which will be calculated by CARBONSAFE and resulting emission reductions will be certified as carbon credits after receiving a positive opinion from a Validating/ Verifying Body. The sale of carbon credits generate will help the farmers in generating revenues to fund the advanced agricultural practices.

CARBONSAFE has contracted Earthood Services Private Limited to conduct the validation assessment of the CARBONSAFE Program Standards and Methodology for Improving and Reporting the Level of Sequestered Carbon in the Soil in the Agricultural Sector. The proposed CARBONSAFE Program Standard serves as CARBONSAFE Standard and methodology; and would outline how to calculate the additional CO2 sequestration in the form of SOC (Soil Organic Carbon).

The proposed standard falls under UNFCCC’s sectoral scope 15- Agriculture.

The purpose of the validation was to conduct an independent assessment of the proposed CARBONSAFE Program Standard and Methodology for Improving and Reporting the Level of Sequestered Carbon in the Soil in the Agricultural Sector. The information given in the CARBONSAFE Standard document was found to be clear, and appropriate.

Validation was performed using a combination of document review, virtual meetings, physical site visit, and from review of the available literature.

11 findings and 2 FARs were raised throughout the validation process.The findings were closed and 2 FARs shall be assessed during the first verification assessment by the relevant assessment team.

This is the first version of the CARBONSAFE Program Standard and it will be further subjected to revisions as and when required, given there shall be no deviation from the requirements of fundamental principles and materiality set in the current version of the CARBONSAFE Program Standard.

The validation team can confirm that:

- the proposed methodology correctly identified the scope of the programme
- the document has all the required information of the programme
- the document has correctly included the method for the calculation of Soil Organic Carbon in the agriculture field
- uncertainties identified during the assessment of methodology were satisfactorily addressed
- all relevant information has been consistently applied within the applicable sections in the CARBONSAFE document.

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1. INTRODUCTION

1.1. Objective

CARBONSAFE has contracted Earthood Services Private Limited to conduct an independent assessment of the proposed standard & methodology “CARBONSAFE Program Standard”. Independent Third-Party Validation of Methodology against the requirements set out in the CARBONSAFE Standard document, CARBONSAFE Methodology Requirements, any other applicable requirements set out under the CARBONSAFE Program and applicable CARBONSAFE Standards / Procedures / Decisions / Guidance established. The purpose of the validation was to conduct an independent assessment of the proposed CARBONSAFE Methodology for Improving and Reporting the Level of Sequestered Carbon in the Soil in the Agricultural Sector. The information given in the CARBONSAFE Standard document was found to be clear, and appropriate.

1.2. Background

About CARBONSAFE:

CARBONSAFE Methodology for Improving and Reporting the Level of Sequestered Carbon in the Soil in the Agricultural Sector is being developed by CARBONSAFE. The CARBONSAFE methodology includes four appendices for the procedural work which are:

Appendix 01- Procedure for drawing up of agronomic prescriptions, recommendations and an individual strategy; Appendix 02- Procedure for registration and monitoring of projects in the CARBONSAFE program; Appendix 03- Procedure for automatic georeferenced soil sampling and Appendix 04- Maintenance of the documentation, Team, and resourcing. ISACO$_2$ (Integrated system for administration, control and accounting) is the main system of CARBONSAFE for data recording, registration and reporting of captured carbon from the plant species. The technique involves measuring the amount of “SEQUESTERED" carbon, which is stored in the soil.

About Earthood:

Earthood Services Private Limited is accredited by Executive Board (EB) of Clean Development Mechanism (CDM) as a Designated Operational Entity (DOE). The accreditation has been granted for 11 different sectoral scopes including sectoral scope 15 Agriculture. The information about Earthood Services Private Limited’s accreditation and sectoral scope is available at the following UNFCCC interface https://cdm.unfccc.int/DOE/list/DOE.html?entityCode=E-0066. The personnel involved in the methodology validation have sufficient knowledge and experience of working on projects in sectoral scope15 i.e., Agriculture /10/.

1.3. Standard assessment process and methodology assessment

The assessment was undertaken by a competent team at Earthood and involved the following activities:

- The desk review of documents and evidence submitted by the client in context of the reference of standard, methodology, and other evidence;
- Interactions with the methodology developer;
- Undertaking physical site visit, interview, and interactions with the representative of CARBONSAFE,

- Reporting assessment findings with respect to clarifications and non-conformities and the closure of the findings, as appropriate;
- Preparing a draft assessment opinion based on the raised findings and conclusions;
- Technical review of the draft assessment opinion along with other documents as appropriate by an independent competent technical review team;
- Finalization of the third-party assessment opinion (this report).

1.4. Scope and Criteria

The scope of this assignment is defined as an independent and objective review of the programme, methodology and supporting documents, which are reviewed by the assessment team against the relevant criteria, including but not limited to, publicly available literature and similar methodologies under various programmes. The assessment team has employed a risk-based approach, focusing on the identification of significant risks for programme implementation and the generation of carbon credits. The scope of this assignment is to:

- Validate in accordance with Earthood's own QMS that is based on ISO 14064 standard to determine if the programme meets all applicable requirements.
- Asses the accuracy, conservativeness, relevance, completeness, consistency and transparency of the information provided.
- Report the findings and conclusions in an objective manner and conduct all validation in accordance with VCS rules and procedures.
- Apply consistent validation criteria in providing expert judgments to the requirements of applicable approved methodologies, tools and also cross check the same.
- Adhere to the principles of independence, ethical conduct, fair presentation and due professional care in assessment process.

1.5. Level of Assurance

The approach used by VVB for validation of the project activity is built on a thorough understanding of the risk associated with reporting data on GHG emissions and the controls used to mitigate them. VVB conducted the validation by reviewing and substantiating all the evidence and other relevant information and explanations from sources to provide reasonable assurance that estimated GHG emissions reductions will be fairly calculated.

The validation is planned and performed by obtaining evidence and other information and explanations that validation team considers necessary to give reasonable level of assurance that GHG emission reductions will be fairly calculated. All documentary evidence were checked, and on-site audit was conducted with CARBONSAFE representatives, site personnel and consultants to arrive at a validation conclusion by the assessment team.

Validation is carried out in conformity of all above mentioned details and it is confirmed that information provided by project developer is appropriate and acceptable.

2. VALIDATION PROCESS

2.1. Assessment Team

Validation Team Members

#	Role	Last Name	First Name	Involvement in		
				Desk review	Site Visit	Findings
1.	Team Leader	Guleria	Shifali	YES	YES	YES
2.	Sectoral Scope Expert	Singh	Kaviraj	YES	YES	YES
3.	Trainee	-	Deepika	YES	NO	YES

Technical Reviewer and Approver

#	Role	Last Name	First Name
1.	Technical Reviewer (TR)	Garg	Shreya
2.	TA expert to TR	Srivastava	Parul
3.	Approval	Gautam	Ashok

2.2. Method and criteria

The proposed information given in standard & methodology document was checked taking reference of requirements of other carbon registries to form a validation opinion which is complete and correct. The validation assessment was conducted using Earthood's internal procedures. The methods and criteria have been given in this report in above section "standard assessment process and methodology".

The validation includes the following steps:

- contract with methodology developer for the scope and appointment of validation team and technical review team;
- Desk review of the programme documents;
- on-site inspection by validation team;
- follow up interviews with methodology developer;
- reporting and closure of findings and preparation of draft validation report;
- independent technical review of the draft validation report and final/revised documentation;
- issuance of the final validation report to the methodology developer .

2.3. Site Inspection

Site inspection was conducted from 02/03/2023 to 03/03/2023 in Bulgaria. During the on-site visit, interviews with the CARBONSAFE team were conducted to discuss and confirm standards, methodology details, baseline, additionality, monitoring and functionality of ISACO$_2$. The list of people interviewed is provided in the interview section of this report. The interactions included assessment of project development and design, implementation, and operation as per the methodology. The reviewed evidence along with other supporting documents provided to the validation team for assessment by the CARBONSAFE team are

listed in appendix II. The records of interview conducted have been maintained in the form of photographs taken at the site and an attendance sheet.

Site visit was conducted for:

• Understanding and evaluating the standard, methodology, baseline, additionality and calculation of Soil organic carbon and onsite verification of soil sampling techniques and laboratory analysis of soil samples.

• Interviews with CARBONSAFE employees to ensure that operations and data collection procedures are being implemented in accordance with the methodology.

• Meeting with management team, review of monitoring plan and its implementation practices

• Review of Standard and methodology and understanding the procedure of registration and monitoring of projects,

• Review of documents such as standard and methodology, several procedural documents and checklists, and other evidence submitted by CARBONSAFE for the assessment

No sampling was required during the methodology validation.

2.4. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Marinov	Chavdar	CARBONSAFE	02/03/2023 to 03/03/2023	Opening Meeting, Discussion on CARBONSAFE standard and methodology, process of project registration, soil sampling, baseline, additionality and ISACO$_2$ application	Shifali Guleria, Kaviraj Singh
2.	Semerdzhieva	Konstantina	CARBONSAFE	02/03/2023 to 03/03/2023	Opening Meeting, Discussion on CARBONSAFE standard and methodology, process of project registration, soil sampling, baseline, additionality, and ISACO$_2$ application	Shifali Guleria, Kaviraj Singh

3.	Nikolov	Hristo	CARBONSAFE	02/03/2023 to 03/03/2023	Discussion on agronomical recommendations, baseline, additionality, soil sampling, buffer credits, ISACO$_2$ application	Shifali Guleria, Kaviraj Singh
4.	Kirova	Denitsa	CARBONSAFE	02/03/2023 to 03/03/2023	Discussion on agronomical recommendations, baseline, additionality, soil sampling, buffer credits, ISACO$_2$ application	Shifali Guleria, Kaviraj Singh

2.5. Resolution of findings

The findings are raised when issues are identified that require further elaboration, research or expansion and modification in the document or if information is insufficient or not clear enough to form an opinion.

The findings may be of following types:

CAR – Corrective Action Request, it is raised when issues are identified that require further elaboration, research or expansion and modification in the document.

CL – Clarification Request, it is raised if information is insufficient or not clear enough to form an opinion

FAR – Forward Action Request is raised to identify issues that will be addressed and resolved in further revisions of the document. Since this is the validation of the methodology document and all the information were required to be validated completely, 2 FARs were raised.

During the present validation, 10 CL and 1 CAR were raised and successfully closed. The list of findings and their resolution are presented at Appendix IV of this report.

2 FARs were raised which shall be assessed during the first verification assessment by the relevant assessment team.

3. VALIDATION FINDINGS

3.1. Standard & methodology documents

The assessment of the proposed methodology has been completed through document review of programme documents provided by CARBONSAFE and independent literature review. Findings were raised during the assessment which were satisfactorily addressed by CARBONSAFE. FARs shall be assessed during the first verification assessment by the relevant assessment team. Please refer to appendix IV for details of the findings and their resolution.

Some of the characteristics of the proposed CARBONSAFE Program Standard are mentioned below:

- The CARBONSAFE documents are drafted with a concise and logical approach, bearing all the relevant sections applicable.
- Fundamental principles of baseline and additionality have been included in the proposed methodology.
- The steps of methodology involve appropriate means for agronomical recommendations and agrochemical soil analyses and recommendations on the crops' nutrition.
- Calculation of separated CO_2 from the equipment used for treatment of the areas and crops, scope of the project has been transparently described in the Checklist for calculation of separated CO_2 under the project excel sheet.
- All the steps in calculations have been correctly included and readers can trace the calculation through different checklists provided along with the standard.
- Carbon pools and GHG sources have been appropriately identified in the methodology.

Upon completion of the assessment of the CARBONSAFE document, Earthood concludes that:

- The CARBONSAFE document serves as both CARBONSAFE standard and Methodology for Improving and Reporting the Level of Sequestered Carbon in the Soil in the Agricultural Sector
- the scope and applicability are correctly identified,
- The terminologies used in the CARBONSAFE document are used consistently throughout the document,
- The criteria and procedures are drafted in an easy-to-understand manner and can be applied readily and consistently by readers.
- The structure of CARBONSAFE methodology document is well defined and includes all standard rules and requirements.

3.2. Scope and Structure of the Methodology

CARBONSAFE provides standard and methodological guidance for calculation of emission reductions by introducing to improved agricultural practices to the farms in Bulgaria. The sectoral scope aligns with UNFCCC sectoral scope 15. CARBONSAFE has produced a primary document that serves as both standard and methodology and is applicable for quantification of carbon credits within voluntary carbon market. The methodology is further supported by various procedural documents, guidance that will be used for implementation of the methodology. Besides, procedural forms that will help in recording and maintenance of the farm specific data. The list of procedural documents and forms has been detailed under the Appendix VI of this report.

The methodology works on quantitative approach to measure and report the change in SOC through advanced agronomic activities. It promotes regenerative agriculture - a systematic form of agriculture that works on several practices as mentioned below:

a. minimum tillage,
b. use of cover crops and active crop rotation,

c. use of organic fertilization,
d. health management of crop residues,
e. reduces use of fuel, and
f. encouraging the implementation of rotational grazing in places with developed livestock breeding is developed.

The methodology is based on conservative and scientific approach for estimation of SOC. Steps followed to determine the SOC in the methodology are described below:

- Identification of suitable farms for implementation of the project,
- Agronomic assessment of suitability of the agricultural farms,
- Special accredited protocol for georeferenced soil sampling with automatic probe at three depth levels (0-30, 30-60, 60-90), with laboratory analysis of physical and chemical indicators of the soil samples, by means of an accredited laboratory,
- Drawing up of an individual strategy for application of scientifically based and good agricultural practices.

The Standard document applies all the defined terms and definitions. Terms are correctly defined in the standard. The definitions were found to be consistently included in the methodology text, along with the reference. The definitions are concise and would aid in providing context of the standard and methodology and enhance the readability. It is concluded by assessment team that the scope and methodology structure described is clear and appropriate.

Control and reporting of results: Integrated System for Administration, Control and Reporting ($ISACO_2$) is the main system of CARBONSAFE for data recording, registration and reporting of captured carbon from the plant species. The technique involves measuring the amount of "SEQUESTERED" carbon in the soil. The soil samples collected from farms from three layers (0-30 cm; 30-60 cm and 60-90 cm,) are sent to accredited laboratory for chemical analysis. The sampling performed by an online platform and georeferenced through a mobile application. The database managed through computer software and hardware for collecting, storing, updating, processing, analysing and visualizing spatial (geographically referenced) information.
The CARBON CREDITS are provided through certificate, which is equivalent to 272.48 kg of sequestered carbon. 1000 kg of carbon dioxide or 1000 kg sequestered soil carbon is equivalent to 3.667 CARBON CREDITS.

CO_2 has one molecule of Carbon and 2 molecules of Oxygen. The atomic weight of Carbon is 12 atomic mass units /12 grams per mole and the weight of carbon dioxide is 44 atomic mass units /the molar mass is 44 grams per mole. The weight of CO_2 is determined by the ratio of CO_2 to C is 44/12=11/3 = 3.667. The calculation is validated from the IPCC Special Report on Carbon dioxide Capture and Storage /39/. The validation team found that the values calculated in the methodology are correct and consistent throughout the methodology documents.

CARBONSAFE Carbon Credit

272.48 Kg sequestered carbon = 1 Carbon Credit

Interaction of the Separate Modules of $ISACO_2$

The Interaction of the Separate Modules of ISACO$_2$ stores the information collected from the farm of a particular farmer.

A 20 steps diagrammatic representation of the interaction of the modules in ISACO$_2$ has been explained through a stepwise manner that provides reference to relevant module wherever necessary. All the steps are sufficiently explained under various sections from the registration of farmer to issuance of carbon credits.

The GS1 standard is used to identify certificates using a Global Trade Item Number (GTIN). Each certificate is issued with a unique barcode from the world's unique GS1 system.

The barcode contains information about country, company, and certificate code. The company states that it is a member of GS1-Bulgaria and holds a record of barcodes purchased there which is http://www.gs1bg.org/ /38/. Implementing a barcode system ensures traceability throughout the issuance and returns process. Certificates are issued on paper and/or electronic medium. The validation team validated the ISACO$_2$ module during onsite visit and found that the information are correct and consistent with the methodology document shared by the company.

3.3. Definitions

The methodology description provides a comprehensive list of terms/acronyms applicable to the proposed methodology for ease of use by project developers. The definitions are provided in addition to already defined terms under ISO14064 and IPCC. The terminologies used in the methodology are consistently used throughout the methodology and in the procedural documents, and the language chosen is precise.

3.4. Applicability conditions

The proposed methodology will be applicable to the project activities located in agricultural farms of Bulgaria, which involves introduction of advanced agricultural practices to increase the soil organic carbon. Sections III and IV of the methodology describe the applicability conditions of the methodology, which has been listed below:

a. Location: The projects/ plots shall be located in the territory of Republic of Bulgaria. The applied methodology has defined all parameters and values with respect to the local conditions of Bulgaria and is therefore limited in its application to the country. This condition is found to be necessary to ensure that the default methodology values and scenarios relevant to one nation (on which this methodology has been based) are not applied to other regions of the world.
b. Types of soil: Plots falling into wetlands, peatlands and riverbeds and also, plots located on the forest fund territory are inadmissible under this methodology. The criterion helps in ensuring the plots that are not considered as part of the National Land Use System and are protected by the government - are not allowed the projects to apply this methodology.

The methodology includes the appropriate applicability conditions to ensure adherence to IPCC and ISO 14064 requirements, and to address specific issues that may arise during the methodology application by the project developer. ‘Checklist for assessment of the suitability of the farm’/7/ clearly explains the applicability conditions.

3.5. Boundary

The project boundary as stated under section IV (3) of the methodology description includes the GHG sources to be considered for projects applying this methodology.

The main greenhouse gas observed with all project activities is CO_2, the amount of CO_2 emission avoided due to measures under project activity is the primary impact which is quantified as the Emission reductions achieved by the project activity. Other impacts are negligible in the project boundary and are therefore excluded.

The methodology addresses the establishment of spatial, temporal, and gaseous boundaries of the projects which will be implementing this methodology.

3.6. Baseline scenario

The baseline scenario in CARBONSAFE methodology is determined and documented directly by measuring soil carbon content from georeferenced basic soil sample through laboratory chemical analysis of OM (Organic Matter) and OC (Organic Carbon) for each plot before registration. Document PR0101 – Farm Suitability Assessment Checklist under section PR0101-CL, provides farmer data, crop details and existing practices traced back up to 5 years for determination of baseline for that plot. In this document, baseline is determined for each registered holding and on the basis of this data, the plot is qualified as either admissible or rejected under the methodology.

The identification of baseline scenario is well-defined and appropriate. The procedure of data collection and analysis depicted is also transparent.

3.7. Additionality

The projects/ plots to be registered under the CARBONSAFE methodology must demonstrate additionality component of additional sequestration or emission reduction through implementation of project activities. Some of the agricultural practices considered under CARBONSAFE methodology include:

- minimum tillage,
- use of cover crops and active crop rotation,
- use of appropriate predecessors,
- use of organic fertilization and
- healthy management of crop residues and reduced use of fuel.

The project activities under this methodology will contribute towards reduction and removal of CO_2 from atmosphere and also improve SOC and soil health improvement.

Farmers will pay an annual fee per hectare which will go towards sampling and laboratory analyses depending on the types of crops and the size of the fields to be surveyed. They will also pay an administrative fee for filling out documents. A financial incentive for farmers will be the certification and issuance of carbon credits that will compensate them for the adoption of the newer advanced technologies, which will help in storage of carbon in the soils, and also promote biodiversity and soil recovery (improving soil health).

The methodology is supported by specific forms (PR0101, PR0201, KL 0101-4) which will help determine the established and common agricultural practices prevalent in the baseline, with records of at least past 5 years. Thus, the project developers will ensure that the practices introduced are beyond the baseline practices and not common practice in baseline.

The methodology also defines the legal requirements and supra-legal conditions under which the plots will be qualified/ rejected for application of the applied methodology.

It is concluded that the concept of additionality proposed in the CARBONSAFE is appropriate and complete.

3.8. The calculation period

The calculation period is the period for which change in carbon reserve is calculated and documented. According to the methodology this period should not be less than 12 months - a period between basic soil sample and control soil sample collection and analysis. During the assessment of methodology, the duration referred to the " calculation period" is from the basic soil sample to the control soil sample. The control sampling should be conducted within the subsequent business year. The standard duration for the Calculation period is 12 months, but a timeframe ranging from 10 to 14 months is acceptable, taking into account factors such as crop rotation, crop development, and weather conditions. Here, "business year" denotes the timeframe from October 1 of the current year to September 30 of the following year. The minimum duration of any project is 5 business years for that area.

Earthood concludes that the calculation period defined by the CARBONSAFE is clear and appropriate.

3.9. Crediting Period

The crediting period is the period for which impact on general goals can be accounted and the period of observation, monitoring and issuance of certificates can be determined. The crediting period decided for the projects is 5 years, and after expiry of 5 years, it may be renewed for next 5 years. For renewal of the project after the completion of 5 years, the baseline will be reviewed and redefined as per the applicable scenario. The Earthood assessment team concludes that the crediting period and renewal process of crediting period is appropriate and clearly defined in the Standard and Methodology Document.

3.10. Uncertainty, Permanence and Buffer

The methodology introduces a system of chemical, physical and mathematical calculations from an accredited laboratory. Chemical analysis is performed in the laboratory for the georeferenced soil samples taken. The data is recorded in the CARBONSAFE ISACO_2 system, a software which records and maintains the soil sample and agricultural plot details and recommendations.

For permanence and sustainability of a project, the farmers are encouraged to implement agronomic recommendations that will lead to enhancement in the yield and to the optimization of farm income. It is concluded that the concept of Uncertainty, Permanence and Sustainability proposed by the CARBONSAFE is appropriate and complete.

The discounted removals of CO_2 by any project are defined as buffer. The CARBONSAFE methodology envisaged 5% buffer for projects. It also aims at the permanence and sustainability of the project. Buffer will cover all the possible risks and leakages. The methodology developers have identified the major plausible causes or risk of losing permanence as force majeure events and loss of land by farmers due to terminated legal rights and/or end of agreement with the landowner. However, the instances of such losses

have been computed by and the loss is expected to be less than 1%. As demonstrated in response to CL#04, past data shows that failed agricultural areas account for, on an average, 0.13% of usable agricultural area. Additionally, any failure to continue good agricultural practices would be verifiable through the regular monitoring required under the methodology and no certificate of carbon emission reductions will be issued to such farms.

Therefore, considering the nature of methodology (which allows actual emission reductions to be calculated rather than other methodologies in various GHG programmes which rely in estimates), and based on the justification provided under CL#04, applying 5% buffer credits is considered a reasonable and acceptable approach.

3.11. Double Reporting

To avoid double reporting, each project is registered with a unique registration code ID and sign a declaration for double reporting on the "Application for registration in a CARBONSAFE programme" provided in the Appendix 02 "Procedure for registration and monitoring of projects in the CARBONSAFE programme"/3/. If any project found double reporting of the project it shall be registered under "Bad faith projects", which is a part of Application 02 "Procedure for registration and monitoring of projects in the CARBONSAFE programme"/3/.

In Earthood's Opinion, sufficient procedures have been provided in the CARBONSAFE methodology and related documents for the identification of double reporting. CARBONSAFE ascertained that the projects are not doubly counted and if anyone does so then the relevant authority will be informed about the fraud.

3.12. Process of CARBONSAFE certification

In Earthood's opinion, the process of CARBONSAFE's certification is well-defined and appropriate. The procedure explained is also transparent and non-complex. Further, illustrative and stepwise flow chart has been provided in methodology (Fig1. Process of CARBONSAFE certification) to help readers and project owners understand process of certification easily and correctly.

3.13. Quantification of GHG emission mitigations

The methodology uses several formulae for the calculation of Actual quantity of generated carbon credits under the project. Several parameters are used to calculate the soil quantity, these parameters are mentioned in section 3.14 with detailed assessment. The formula used in the methodology are mentioned below:

Soil quantity (ton) = Area * 1000 * 0.3 * Bulk density

Area = Length * Width

Where,

0.3m = Depth (m), soil samples were collected from three layers of soil 0-30 cm, 30-60cm and 60-90 cm.

1000 = Conversion factor of Area from decare to meter square

The bulk density is examined once, during the first control year, and is used for calculation until the end of the monitoring period.

The assessment team found the calculation of soil quantity appropriate and validated from the literature review by our team.

Organic Carbon (OC) %	=	Measured Organic Carbon (OC) % in control year	-	Measured Organic Carbon (OC) % in base year
Calculated quantity of sequestered carbon for the period (ton)	=	Soil quantity (ton)	*	Organic Carbon (OC) %

Total quantity of sequestered soil Carbon (ton)	=	Sum of all Calculated quantity of sequestered carbon for the period (ton)

Separated CO_2 from the equipment used for processing of the areas and crops within the project scope (project emissions) which is calculated in the checklist for separated CO_2 under the project PR0106. Total consumption of fuel in litres for the plot, the value is calculated by multiplying average consumption of fuel in litres for the plot litres/hectare with area (ha). The parameter is explained in detail in section 3.14 monitoring of this report.

Separated CO_2 from the equipment used for processing of the areas and crops, within the project scope	=	Total consumption of fuel in litres for the plot	*	Equivalent CO_2 (3.42)

Total quantity of CAPTURED C under the project (tons) is calculated by using bellowed mentioned formula:

Total quantity of CAPTURED C under the project (tons)	=	**Total quantity of sequestered soil Carbon (ton)**	-	**Separated CO_2 from the equipment used for processing of the areas and crops, within the project scope**

Total quantity of CAPTURED Carbon dioxide CO_2 under the project (tones) is calculated by using formula-

Total quantity of CAPTURED Carbon dioxide CO_2 under the project (tones)	**=**	**Total quantity of CAPTURED C under the project (tons)**	**+**	**Conversion factor (3.667)**

The value of conversion factor is 3.667.

CO2 has one molecule of Carbon and 2 molecules of Oxygen. The atomic weight of Carbon is 12 atomic mass units /12 grams per mole and the weight of carbon dioxide is 44 atomic mass units /the molar mass is 44 grams per mole. The weight of CO2 is determined by the ratio of CO2 to C is 44/12=11/3 = 3.667. The calculation is validated from the IPCC Special Report on Carbon dioxide Capture and Storage /39/. The validation team found that the values calculated in the methodology are correct and consistent throughout the methodology documents.

The Total quantity of generated carbon credits under the project	**=**	**Total quantity of CAPTURED Carbon dioxide CO_2 under the project (tones)**

Total Number of certified units under the programme

1 Certified unit = 1 Carbon Credit= 1 tone CO_2

The assessment team found all the calculations done to calculate The Total quantity of generated carbon credits under the project is appropriate and validate from the literature review done by our team from different online available sources.

Leakages: Due to the nature of the methodology, where SOC is being calculated directly from soil analysis and least number of assumptions, no leakages are admitted. However, for any unfavourable situation with any possibility of leakages, the methodology accounts for 5% buffer which will cover all possible leakages in it. The methodology defines that leakages occur when either CO_2 removal is increased, or absorption of CO_2 is decreased in any place, but methodology defines that this is not the case in CARBONSAFE.

Earthood concludes that the leakage defined by the CARBONSAFE are clear and appropriate.

Actual quantity of generated carbon credits under the project

Actual quantity of generated carbon credits under the project	**=**	**The Total quantity of generated carbon credits under the project**	**-**	**Leakage (5% buffer credits)**

Actual quantity of generated carbon credits under the project are the credits which are obtained after reducing leakage from the total quantity of generated carbon credits under the project. These Actual quantity of generated carbon credits are tradable, which are claimed by the project owner. Earthood concludes that the Actual quantity of generated carbon credits defined by the CARBONSAFE are clear and appropriately defined in the methodology.

3.14. Monitoring

The monitoring of the project area will be based on – an on-site inspection and performance review in accordance with the principles and requirements set in PR01. CARBONSAFE maintains the document evidence of a project for 2 years after the completion of project's crediting period. It is verified from other GHG programs that the documents and records are kept in a secure and retrievable manner for at least two years after the end of crediting period of any project. In the Earthood's opinion the monitoring is clearly defined in the CARBONSAFE methodology and related documents.

The fixed and monitored parameters defined in the several procedural documents of methodology are mentioned in the below table:

Fixed parameters

Parameter	Value	Means of Assessment
Area	Fixed for the basic soil sample	The methodology used the georeferenced data and cross verified the data from the legal land records. Georeferencing is used to avoid the double counting of any field.
Depth	0-30 cm, 30-60cm and 60-90 cm	The depth for soil sample selected in the methodology is standard and it is validated from literature review from journal, Soil Science Society of America Journal Volume 85, Issue 1, entitled Soil organic carbon sequestration calculated from depth distribution https://acsess.onlinelibrary.wiley.com/doi/full/10.1002/saj2.20176
Conversion factor of Area from dca to meter square	1000	The value is cross checked from the online literature review, the value is correct and appropriate.
Bulk Density	Fixed for the entire monitoring period	The accredited laboratory will test the bulk density of the soil samples.
Measured Organic Carbon (OC) % for basic soil sample	-	The accredited laboratory will test the bulk density of the soil samples.
Soil quantity (ton)	-	The soil quality is calculated by using bulk density, area, and depth.
Conversion factor	3.667	The value is validated from the IPCC Special Report on Carbon dioxide Capture and Storage /39/. The value is correctly mentioned in the methodology.
Average consumption of fuel in litres for the plot	Different values for different crops.	The values given for the parameter are verified from the M3m methodology for determining the individual annual quotas in connection with the implementation of the state aid scheme "Aid in the form of a discount on the value of the excise duty on gas oil used in primary agricultural production".

litres/hectare	Values given in PR0106	https://www.mzh.government.bg/bg/politiki-i-programi/programi-za-finansirane/darzhavni-pomoshti/otstapka-akciz-gaziol/ The assessment team found all the values appropriate and correct for the parameter.
Equivalent CO_2	1l=3.42 kg CO_2 (Values given in PR0106)	For the calculation of equivalent CO_2, it is taken into account that 1l of diesel is equal to 36 MJ which is validated from Ordinance No. H-18 of August 8, 2016 /41/. 1MJ is equivalent to 95,1 g CO_2 which is validated from Methodology for determining the intensity of greenhouse gas emissions from the entire life cycle of fuels and energy of non-biological origin in transport /43/.

Monitored Parameter

Parameter	Value	Means of Assessment
Area	Fixed for the basic soil sample	The methodology used the georeferenced data and cross verified the data from the legal land records. Georeferencing is used to avoid the double counting of any field.
Measured Organic Carbon (OC) % for basic soil sample	-	The accredited laboratory will test the Measured Organic Carbon (OC) %of the basic soil samples.
Soil quantity (ton)	-	The soil quality is calculated by using bulk density, area, and depth.
Total consumption of fuel in litres for the plot	-	The value is calculated by multiplying Average consumption of fuel in litres for the plot litres/hectare with area (ha).
Measured Organic Carbon (OC) % in control year	-	The accredited laboratory will test the Measured Organic Carbon (OC)% of the control soil samples.
Total consumption of fuel in litres for the plot	-	The value is calculated by multiplying Average consumption of fuel in litres for the plot litres/hectare with area (ha).

3.15. Risk assessment and mitigation

A "third party" has verified the CARBONSAFE methodology and its related work procedures, projects, and CARBONSAFE certificates. For risk assessment and mitigation purpose, CARBONSAFE has set some criteria for the auditing body which will validate and verify the project. The criteria are as follow:

- They have the relevant competencies of an auditing body;
- They provide for a publicly available system of requirements that includes at least all the relevant requirements contained in the CARBONSAFE methodology and the work procedures for it, and make it available for use by third parties;
- They stipulate that a third party carries out appropriate inspections, including on-site visits, at regular intervals, but at least once every 12 months, to verify compliance with the rules in the CARBONSAFE methodology and the work procedures for it;

- They include methods verified by a third party to track the methods and controls provided for in the CARBONSAFE methodology and the work procedures for it;
- They include third-party audits to ensure that there are no gaps and deviations in the certification chain, compared to the established and written standards in the CARBONSAFE methodology and its work procedures.

The Earthood assessment team opines that the risk assessment and mitigation section is valid and appropriate. This section assures that the certificates provided by CARBONSAFE are verified from an authentic, valid and reliable third party, which have competency to perform that function.

4. Assessment conclusion

Earthood Services Private Limited (Earthood) has performed a validation of the proposed CARBONSAFE Program Standard document /1/. The document serves as CARBONSAFE Program Standard as well as Methodology document for the Assessment of Soil organic carbon and carbon capture. The methodology works on quantitative approach to measure and report the change in SOC through advanced agronomic activities. The validation was performed based on ESPL's internal procedures and fundamental requirements set for any standard of carbon registry. Principles such as baseline, additionality, non-permanence, and monitoring parameters were assessed to review the methodology given in the CARBONSAFE program Standard and methodology document. Supporting documents such as Procedure for agronomic assessment document; Procedure for registration and monitoring of projects document; Procedure for automated georeferenced soil sampling; and maintenance of the documentation and team document; and CARBONSAFE team order form etc., CARBONSAFE Certificate and other documents as listed in appendix II were checked to form an opinion on the correctness and consistency of the information .

The methodology is falling within Sectoral Scope 15 Agriculture. This is the first version of CARBONSAFE Program Standard, and it will be subjected to further revisions as and when required with a caveat that there shall be no deviation from the requirements of fundamental principles and materiality set in the current version of CARBONSAFE Program Standard.

Earthood Services Private Limited has informed the CARBONSAFE of the validation findings and outcome through a draft validation report and final validation report. The final validation report contains the information regarding the fulfilment of the requirements for validation, as appropriate.

Earthood Services Private Limited applied the following validation process for CARBONSAFE standard and methodology using a competent validation team;

- The desk review of documents and evidences submitted by CARBONSAFE,
- Follow-up virtual interview, whenever required,
- Undertaking physical site visit, interview, or interactions with the representative of the CARBONSAFE,
- Reporting audit findings with respect to clarifications and non-conformities,
- closure of the findings as appropriate,
- Preparing a draft validation opinion based on the auditing findings and conclusions,
- Technical review of the draft validation opinion along with other documents as,
- Appropriate by an independent competent technical review team, and

- Finalization of the validation opinion (this report).

The review of the CARBONSAFE Program Standard, supporting documentation and subsequent follow-up actions (physical audit and virtual interactions) have provided Earthood Services Private Limited with sufficient evidence to determine the fulfilment of stated criteria.

5. Internal Quality Control

The validation report prepared by the assessment team was reviewed by an independent technical review team to confirm if the internal procedures established and implemented by Earthood were duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable rules/requirements. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope that relates the project activity. All team members of the technical review team were independent of the validation team.

The technical review process may accept or reject the validation opinion or raise additional findings in which case these must be resolved before submitting the final report. The technical review process is recorded in the internal documents of Earthood, and the additional findings gets included in the report.

The final report approved by the technical reviewer is authorized by the Managing Director and issued to CARBONSAFE.

6. Validation Opinion

Earthood was contracted by CARBONSAFE for validation assessment of CARBONSAFE Standard. The scope of the assessment included an independent assessment of the proposed CARBONSAFE Program Standard and Methodology for Improving and Reporting the Level of Sequestered Carbon in the Soil in the Agricultural Sector. The information given in the CARBONSAFE Program Standard document was found to be clear, and appropriate.

The validation conclusion was made based on the review of documents submitted by CARBONSAFE and through independent desk review. The methodology is falling within Sectoral Scope 15 Agriculture. Earthood Services Private Limited has informed the CARBONSAFE of the validation outcome through the draft validation report and final validation report. The final validation report contains the information regarding the fulfilment of the requirements for validation, as appropriate.

In Earthood Services Private Limited opinion, the proposed document consisting of CARBONSAFE Program Standard and Methodology for Improving and Reporting the Level of Sequestered Carbon in the Soil in the Agricultural Sector provides clear and complete information of calculation of soil organic carbon and carbon sequestration. The calculation method for achieving carbon credits is fairly described. Therefore, the proposed “CARBONSAFE Program Standard” document is being recommended for the use of calculation of SOC and carbon sequestration and claiming for carbon credits.

Dr. Kaviraj Singh

Managing Director — Date: 20/06/2023

Earthood Services Private Limited — Place: Gurgaon, Haryana

Appendix I: List of abbreviations

AC	Active Carbon
ATV	All-Terrain Vehicle
CDM	Clean Development Mechanism
CO2	Carbon dioxide
DOE	Designated Operational Entity
EB	Executive Board
ESPL	Earthood Services Private Limited
GCC	Global Carbon Council
GHG	Greenhouse Gases
GS1	Gold Standard 1
GTIN	Global Trade Item Number
ISACO$_2$	Integrated system for administration, control and accounting
KML	Keyhole Markup Language
PR	Procedure
SOC	Soil Organic Carbon
OC	Organic Carbon
UNFCCC	United Nations Framework Convention on Climate Change
UTV	Utility Terrain Vehicles
VCS	Verified Carbon Standard

Appendix II: List of documents referred

#	Title	Reference of the document	Source
1.	Standard and Methodology	Version 1.0 Dated 31/05/2023	CARBONSAFE
2.	Procedure for AGRONOMIC ASSESSMENT	Version 1.0	CARBONSAFE
3.	Procedure for registration and monitoring of projects in the CARBONSAFE program	Version 1.0	CARBONSAFE
4.	Procedure for automatic georeferenced soil sampling	Version 1.0	CARBONSAFE
5.	Maintenance of the documentation, Team, and resourcing	Version 1.0	CARBONSAFE
6.	ISACO$_2$ (Integrated system for administration, control and accounting	Version 1.0	CARBONSAFE
7.	Checklist for assessment of the farm suitability	Version 1.0	CARBONSAFE
8.	Prescription for bringing into suitability	Version 1.0	CARBONSAFE
9.	Individual strategy for management o used areas in the farm	Version 1.0	CARBONSAFE
10.	Technological map for crop growing by the carbon farming method	Version 1.0	CARBONSAFE
11.	Agronomical recommendation.docx	Version 1.0	CARBONSAFE
12.	Checklist for calculation of separated CO2 under the project	Version 1.0	CARBONSAFE
13.	Monitoring report from on-the-spot inspection	Version 1.0	CARBONSAFE
14.	A P P L I C A T I O N For registration in a programme CARBON FARMING	Version 1.0	CARBONSAFE
15.	Register of projectscontracts SOC	Version 1.0	CARBONSAFE
16.	Register Unfaithful projects	Version 1.0	CARBONSAFE
17.	Calculation checklist for sequestered soil carbon (SOC)	Version 1.0	CARBONSAFE
18.	Preamble of Methodology for Improving and Reporting the Level of Sequestered Carbon in the Soil in the Agricultural Sector	27/03/2023 Version 01	CARBONSAFE
19.	Calculation checklist of the total amount of carbon under the project	Version 1.0	CARBONSAFE
20.	Calculation sheet for the total quantity of generated carbon credits on the project	Version 1.0	CARBONSAFE
21.	CARBONSAFE Certificate	Version 1.0	CARBONSAFE
22.	Register of issued certificates	Version 1.0	CARBONSAFE
23.	Annual Periodic Report	Version 1.0	CARBONSAFE

24.	Contract between the Customer and Contractor	Version 1.0	CARBONSAFE
25.	Register of Technological Equipment	Version 1.0	CARBONSAFE
26.	Equipment Problem Log	Version 1.0	CARBONSAFE
27.	Protocols from performed repairs	Version 1.0	CARBONSAFE
28.	Protocol of soil sampling	Version 1.0	CARBONSAFE
29.	REGISTER OF DOCUMENTS AND RECORDS	Version 1.0	CARBONSAFE
30.	Protocol from team meeting held	Version 1.0	CARBONSAFE
31.	Order CARBONSAFE team	Version 1.0	CARBONSAFE
32.	List of controlled copies of documents distributed allocated	Version 1.0	CARBONSAFE
33.	List of external documents (statutory instruments, standards)	Version 1.0	CARBONSAFE
34.	Register of Orders in Certification System	Version 1.0	CARBONSAFE
35.	Team, team qualification and Documents from qualification and Training	Version 1.0	CARBONSAFE
36.	Protocol from team meeting held	Version 1.0	CARBONSAFE
37.	UNFCCC CDM Validation and Verification Body Standard for project activities https://cdm.unfccc.int/Reference/Standards/index.html	Version 3.0	UNFCCC website
38.	GS1-Bulgaria http://www.gs1bg.org/	-	Others
39.	IPCC Special Report on Carbon dioxide Capture and Storage, page 12, table AI.6 *https://www.ipcc.ch/site/assets/uploads/2018/03/srccs_annex1-1.pdf*	-	Others
40.	Draft EC regulation on a voluntary framework for certification *https://www.europarl.europ.eu/RegData/docs_autres_institutions/commission_europeenne/com/2022/0672/COM_COM(2022)0672_EN.pdf*	-	Others
41.	Ministry of Agriculture, Aid in the form of a discount on the value of the excise duty on gas oil used in primary agricultural production https://www.mzh.government.bg/bg/politiki-i-programi/programi-za-finansirane/darzhavni-pomoshti/otstapka-akciz-gaziol/	-	Others
42.	Ordinance No H-18 of 8 August 2016 file://10.255.91.252/Regulatory_Documents/Related%20to%20the%20findings/Ordinance%20No%20H-18%20of%208%20August%202016.pdf	-	Others
43.	Methodology for determining the intensity of greenhouse gas emissions from the entire life cycle of fuels and energy of non-biological origin in transport https://www.moew.government.bg/static/media/ups/tiny/2017/07/Metodika_final.pdf	-	Others

Appendix III: Competence of team members and technical reviewers

Competence Statement			
Name	Shifali Guleria		
Education	M.Sc. (Environmental Studies and Resource Management), TERI University		
Experience	3+ year		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	YES (AMS-I.A., AMS-II.G., AMS-II.E., AMS-III.A.V., AMS-I.D, ACM0002)		
Local expert	YES		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (1.2, 3.1)		
Reviewed by	Deepika Mahala	**Date**	16/02/2022
Approved by	Ashok Gautam	**Date**	18/02/2022

Competence Statement			
Name	Kaviraj Singh		
Education	Ph.D. (Environmental Engineering), IIT Delhi Masters (Energy & Environmental), DAVV Indore		
Experience	15 Years +		
Field	Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-II.D., ACM0006, AMS-I.A., AMS-I.C., AMS-II.B., AMS-III.H, ACM0002, ACM0001, AM0080, ACM0018, AM0056, AM0073 VM0042, AMS-III.G, AMS-III.AF., VM0032, VM0018, ACM0010, ACM0022, AMS-III.D, AMS-III.F and AMS-III.A.Q		
Local expert	YES (India)		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert (X.X)	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1, TA 13.2, TA 15.1)		
Reviewed by	Shifali Guleria (Quality Manager)	**Date**	02/02/2023
Approved by	Deepika Mahala (Technical Manager)	**Date**	02/02/2023

Competence Statement			
Name	Deepika		
Education	M.Sc. (Forestry) B.Sc. (Hons.) Forestry		
Experience	-		
Field	-		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	Yes		
Reviewed by	Shifali Guleria (Quality Manager)	**Date**	03/10/2022
Approved by	Deepika Mahala (Technical Manager)	**Date**	03/10/2022

Competence Statement			
Name	Shreya Garg		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	9 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., AMS.III.BL, ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1)		
Reviewed by	Shifali Guleria	**Date**	21/12/2022
Approved by	Deepika Mahala	**Date**	21/12/2022

Competence Statement	
Name	Parul Srivastava
Education	PhD Forest Ecology and Environment M.Sc. Botany B.Sc. Botany and Chemistry

Experience	20 years		
Field	Forestry		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	YES (AFOLU)		
Reviewed by	Shifali Guleria (Quality Manager)	**Date**	13/04/2023
Approved by	Deepika Mahala (Technical Manager)	**Date**	13/04/2023

Appendix IV: Validation findings

Table 1. CL from this validation

CL ID	01	Section no.	*section II of methodology*	Date : 04/02/2023
Description ofCL				
***Baseline Determination and Additionality**: In document '08_11_METHODOLOGY CARBONSAFE.docx' on page no. 3 section II 'Scope And Structure Of The Methodology' third paragraph- "The baseline of each individual project is determined and documented, through direct measurement of the carbon content in the soil", the information provided related to baseline seems incomplete. Please clarify the following points in the baseline section-* *a. It is not clearly described how baseline scenario will be determined before developing a project, in terms of predominant agricultural practices and existing laws and regulations related to the sector. It is not clear if data for past years will be collected to confirm the baseline agricultural practices and for how many years.* *b. In case of any adverse condition (flood, drought) or application of manure in the previous year) in baseline period which can impact the soil carbon condition adversely, more information will be needed to be recorded for the baseline. Any environmental calamity occurring in the past year can affect the SOC content in the soil. The methodology does not describe measures for recording this information and data.* *c. Kindly elaborate on the baseline scenario determination process before onboarding a farmer or a plot to the CARBONSAFE programme.*				
Finding Response				**Date :** 30/03/2023

a. *"PR0201-Application for registration in the CARBON FARMING program" provides for the collection of information about the previous economic year - previous crops and soil treatments by farmers, etc. practices. In connection with the additionality of our Programme, we will introduce the collection of historical data for 5 years. back to the practices applied by the farmers. The declared information will compare the practices used to the practices newly introduced by us, and the comparison will be made in document "PR0101 - Checklist for assessment of suitability of the farm", where an additionality assessment will be made - PR0101КЛ-4_INCOME transfers to PR0101КЛ-4_ADDITIONALITY. The practices described in our procedure PR01 are based on supra-legal requirements for the condition and treatment of the soil - GAEC standards (Good Agricultural and Ecological Condition). The same are recognized at the national and European level / draft EC regulation on a voluntary framework for certification (page 4)/ for practices that define the so-called additionality for similar projects. The baseline is determined by taking a baseline georeferenced soil sample and performing laboratory chemical analysis in an accredited laboratory. The first soil samples taken will create the baseline scenario for each project. In the National Program for Conservation, Sustainable Use and Restoration of Soil Functions (2020-2030) in Bulgaria, it is stated that the decrease in the content of soil organic matter over the last 20-30 years is due to intensive and monoculture agriculture, non-application of scientific justified crop rotations, the limited application or the complete absence of organic fertilization, the unbalanced, one-sided fertilization, mainly with nitrogen fertilizers, which has a negative effect and is a serious factor in the course of dehumification due to the acceleration of the mineralization of organic matter. Failure to apply environmentally friendly agricultural techniques leads to the extraction of the same nutrients from the soil and its impoverishment. On page 19 (table 1.1-1) of the cited regulation, it is stated that the average reserves of organic carbon for the main soil groups in Bulgaria are in the range from 7.3 kg/m2 to 14.4 kg/m2 or an average of 11.79 kg/m2 in 0-100 cm. Average volumetric weight of soils in Bulgaria is 1300 kg/m3, which is equivalent to 0.907% carbon.*

b. *Drought and flooding should not affect our baseline because we sample and perform laboratory analysis that reflects the actual result. Sampling is not carried out in snow, mud and frozen, as well as waterlogged soils - this is marked in PR03, page 7. Manure can affect the amount of carbon in the soil, so we observe a post-fertilization quarantine period of 180 days for rotted manure, which is detailed in PR01, page 15*

c. *Before we include a farmer or plot in the CARBONSAFE program, a meeting/interview is held with the applicant, where experience, cultivation methods, crops, existing practices are specified. The next step is to send an application PR0201-Application_Certification_CARBONSAFE, in which there is a part about the history of the farm for 5 years back. In view of the collected information, an additionality assessment is prepared, which is part of ПР0101-КЛ for assessment of farm suitability*

Documentation provided by project participant

National Program for Conservation, Sustainable Use and Restoration of Soil Functions (2020-2030)

Draft EC regulation on a voluntary framework for certification
https://www.europarl.europ.eu/RegData/docs_autres_institutions/commission_europeenne/com/2022/0672/COM_COM(2022)0672_EN.pdf

PR0101 - Checklist for assessment of suitability of the farm,
PR03,
PR01,
PR0201-Application_Certification_CARBONSAFE

DOE assessment	**Date:** 06/04/2023

a. *"*PR0201-Application for registration in the CARBON FARMING program" and "PR0101 - Checklist for assessment of suitability of the farm", where an additionality assessment will be made - PR0101КЛ-4_INCOME transfers to PR0101КЛ- 4_ADDITIONALITY" and methodology document have been revised and the additionality section is updated. CARBONSAFE includes GAEC supra-legal environmental and climatic conditions which have been met by farmers and the farmers sign an undertaking for the same to get registered under the program. The revised forms now record the details of practices applied in baseline before project implementation, which will help ensure that only such farms which have applied additional practices compared to baseline are eligible for the project.
However, it is also noted from the program developer response that *the average reserves of organic carbon for the main soil groups in Bulgaria are in the range from 7.3 kg/m2 to 14.4 kg/m2 or an average of 11.79 kg/m2 in 0-100 cm. Average volumetric weight of soils in Bulgaria is 1300 kg/m3, which is equivalent to 0.907% carbon.* Programme developer is requested to provide further clarity on the qualification criteria of a farm- if there would be any additional cut-off criteria for disqualifying the farms with already much higher than average organic carbon, to ensure a further cross-check on the baseline farms identification. Since such farms would already have higher than average soil organic carbon, how would such farms be considered eligible to be part of the carbon programme? (Open)

b. In PR03 (page no.7), it is mentioned about unfavorable conditions that the sampling is not carried out in snow, mud and frozen, as well as waterlogged soils. In PR01 (page no. 15), a new section "Quarantine period" has been added where it is mentioned that 180 days post-fertilization Quarantine period is taken where rotted manure is applied and 40-60 days of quarantine where mineral fertilizers applied. (Closed)

c. The baseline scenario process before onboarding a farmer or a plot to the CARBONSAFE programme is elaborated in the document PR0101 - Checklist for assessment of suitability of the farm in tab ПР0101-КЛ. The form now captures all relevant details including the farmer's details, details of crops and existing practices, traced back to 5 years, equipment in use, among much other information. The baseline scenario is now found to be recorded for each farm registered in the project. However, the criteria of farm history for 5 years collected is not mentioned in the baseline section (section II.1) of the methodology. Programme developer is requested to incorporate all the baseline determination criteria in the baseline section of methodology. (Open)

CL#01 stands open.

Finding Response	**Date :** 19/04/2023

a. *The cited data on the average storage of organic carbon in the soils in Bulgaria are informative and indicative of the potential for the development of the CARBONSAFE programme. The programme baseline is determined for each project participant individually by direct measurement of organic carbon content. With the control measurements, the difference in the accumulated amount of organic carbon for each subsequent year is established. Agricultural plots/farms with organic carbon content higher than the average stock will be considered eligible as they also have soil carbon storage potential.*

b. *N/A*

c. *The baseline process before a farmer or plot is included in the CARBONSAFE program is developed in document PR0101 - Farm Suitability Assessment Checklist in section PR0101-CL. The form provides farmer data, crop details and existing practices traced back up to 5 years, equipment used. The baseline scenario is defined for each holding registered in the project. The text is added in section II.1 of the methodology (page 4)*

Documentation provided	
Methodology	
VVB assessment	**Date:** 20/04/2023

a. There wouldn't be any additional cut-off criteria for disqualifying the farms which have higher than average organic carbon. Since such farms have higher than average soil organic carbon, but still have the potential to store more carbon in soil. The CARBONSAFE methodology will consider farms that have organic carbon content less than the country's average as well as more than the country's average soil organic carbon content.
b. N/A
c. Section II.1 Baseline has been revised in the methodology and the finding is found to be appropriately addressed.

TR comment
Additionality: In the section on additionality, the methodology does not define how additionality of the project will be determined/calculated and confirmed. Please clarify if any investment analysis etc. will be conducted and protocol that will be followed. In addition to the demonstration of supra-legality of the activities, it is not clear how project proponent(s) will: 1. Identify barriers that would prevent the implementation of a change in pre-existing agricultural practices; and, 2. Demonstrate that the adoption of the proposed project activities/ practices is not common practice. Open

Finding Response	**Date :** 05/06/2023

Additionality is determined for each project participant separately in PR0101- Checklist for assessment of the farm suitability, KL 0101-4. Data for this assessment is collected from PR0201- Application for registration in the CARBON FARMING program, where farmers declare practices applied for the past 5 years. In KL 0101-4 - Additionality, an assessment of additionality is carried out based on the information provided, compared with the practices that should be implemented under the program. The additionality assessment confirms the fact that these activities did not reach the farmer before the existence of the project, but will be subject to the program. The text has been added to section II. SCOPE AND STRUCTURE OF THE METHODOLOGY, 2. Added value of the project or additionality, page 4 in the Methodology.

These supra-legal practices essentially represent a financial barrier for their implementation by farmers, because they cost an additional resource, such as large costs for machinery and equipment. This is one of the main reasons why they are not widely applied in Bulgaria. The generation of carbon credits and their sale will provide income for farmers to finance new good agricultural practices.

Documentation provided by project participant

Methodology
PR0201-Application for registration in the CARBON FARMING program
PR0101- Checklist for assessment of the farm suitability

DOE assessment	**Date:** 09/06/2023

The methodology developer has provided clarification about additionality assessment, clarifying that assessment of existing agricultural practices over past 5 years would indicate lack of resources to move to newer improved practices. Aassessment of additionality is carried out based on the information provided in KL 0101-4, compared with the practices that should be implemented under the program. The assessment will confirm if the project activities would have reached the farmers in absence of the project, thus indicating that the introduced initiatives would not have been common practice in baseline.
CL#01 is closed.

CLID	02	**Section no.**	*section II of methodology*	**Date :** 04/02/2023

Description of CL

***Crediting Period**: In document '08_11_METHODOLOGY CARBONSAFE.docx' on page no. 4, section II 'Scope And Structure Of The Methodology' 6th paragraph "The period of crediting", it is not clear after completion of 5 years what is the process for continuation of the project and what is the maximum limit of any project.*

Finding Response	**Date :** 30/03/2023

According to official data in the National Program for Conservation, Sustainable Use and Restoration of Soil Functions (2020-2030) in the Republic of Bulgaria, the average C content in soils is 11.79kg/m^2 0-100 cm. The average volumetric weight of soils in our country is 1300 kg. Soils have the potential to contain up to 5% C by weight or 650t/Ha. In Bulgaria, the average content of C, as we noted, is 117,875t Ha. With our goal of introducing good agricultural practices based on regenerative agriculture, we forecast an annual increase of 250 kg C or 2.12%, compared to the existing situation. This predetermines a working potential of nearly 213 years until full C saturation in the soil. i.e. we have no restrictions and limits in the implementation of the projects.
The following two options exist:
- After the expiry of the 5-year crediting period, the farmer is given the opportunity to extend the contract for another 5 years. The extension of the contract does not interrupt the certification process and the use of the already implemented new agricultural practices is permissible. In this case, the validity is extended by the duration of the contract. (page 6 in the Methodology)
- Signing a contract only for monitoring the implemented new agricultural practices and monitoring their correct implementation. In this case, the validity is extended by the period of exercising the monitoring. (page 6 in the Methodology)

Documentation provided by project participant

National Program for Conservation, Sustainable Use and Restoration of Soil Functions (2020-2030)
Methodology

DOE assessment	**Date:** 06/04/2023

The revised methodology document has 5 years crediting period and after expiry of 5 years, it may be renewed for next 5 years. However, the proposed methodology does not clarify if the baseline will be redefined at the time of crediting period renewal. Considering the possibility of the proposed initiatives as part of project becoming mainstream and business as usual in the five years of crediting period, programme developer is requested to further indicate how validity of baseline scenario will be confirmed at the time of renewal of contract and of crediting period.
Open

Finding Response	**Date :** 19/04/2023

In case of renewal of the crediting period for another 5 years, the baseline will be reviewed and determined anew. Only farms where there is still an opportunity to implement new supra-legal practices will be considered eligible. (section II, 4., page 6)

Documentation provided

Methodology

VVB assessment	**Date:** 20/04/2023

The programme developer reviewed and revised the crediting period section in the methodology. For renewal of the project after the completion of 5 years, the baseline will be reviewed and redefined. The section is revised in the methodology and the finding is found to be appropriately addressed.

TR COMMENTS (15/05/2023)

The methodology developer stated that "*working potential of nearly 213 years until full C saturation in the soil*". Clarification is requested on how it is determined that the working potential of carbon saturation is 213 years. The methodology developer is requested to provide supportive evidence for this statement.

CL #02 is OPEN.

Finding Response	**Date :** 05/06/2023

Calculations for determination of the working potential are available in file Calculation_years working potential.xlsx

The predicted potential of the soil for saturation with Organic carbon up to 5% of its volumetric weight indicated by Us is due to the following:
1. "soils that already have very high levels of organic matter (eg >5% C by mass) have a low tendency to increase C further.";
(https://www.frontiersin.org/articles/10.3389/fclim.2019.00008/full?eType=EmailBlastContent&eId=5537412e-f2c3-4e1d-a788-17310037660f
)
2. "Soil organic carbon is a measurable component of soil organic matter. Organic matter makes up only 2–10% of most soil mass and plays an important role in the physical, chemical, and biological function of agricultural soils." (https://www.agric.wa.gov.au/measuring-and-assessing-soils/what-soil-organic-carbon)
10% OM / 1.724 = 5.8% C;
There is a proven correlation of a unit of organic matter to organic carbon and it is 1.724:1.000.
In relation to the above statements, We allow a potential for saturation with Organic Carbon of up to 5% of the volumetric weight of the soil.
Whether this potential will be fulfilled in 100, 200 or 213 or more years is a mathematical model presented by us. This depends on the types of practices applied, their duration, as well as the relationship with other external factors of the environment. It is quite possible after a certain period of time to mix the soil layer in depth to release the potential for further accumulation of organic matter. This mixing/deepening/plowing should be combined with timely planting of cover crops to prevent C from returning to the atmosphere (goal: as short a period of open soil as possible).
Here, the content of other micro and macro elements and especially the content of N has an influence.
Based on the current carbon content of the soils in Bulgaria, with an average volume weight of the soil of 1.3 tons/m3, as well as a capacity for carbon saturation in the soil of 5% of its volume weight, we purely mathematically express a potential for saturation of the soil with Carbon of 65 tons/decare.
Our minimum target is to achieve an annual increase of 0.25 carbon credits/decare, for cereals, which equates to an annual increase of around 66 kg. carbon/decare, representing an increase of 0.1% per year. We believe that this is possible, as there are initiatives that foresee an annual increase of 0.4% per year - 4 per 1000 - France
It can be said that the Mathematical potential for carbon saturation of the soil, as incredible as it sounds in this case, is over 800 years - based solely on the mathematical model.
Of course, external factors and the circulation of substances greatly influence the process, and in this case we will comply with the scientific claims of a working potential of 25-30 years.*

Documentation provided

Calculation_years working potential.xlsx
Fertilization of agricultural crops.pdf
https://www.frontiersin.org/articles/10.3389/fclim.2019.00008/full?eType=EmailBlastContent&eId=5537412e-f2c3-4e1d-a788-17310037660f
https://www.agric.wa.gov.au/measuring-and-assessing-soils/what-soil-organic-carbon
**Global Sequestration Potential of Increased Organic Carbon in Cropland Soils, Introdution, para 3*
https://www.nature.com/articles/s41598-017-15794-8

VVB assessment	**Date:** 09/06/2023

The calculation for working potential of the of the soil until full saturation has been detailed in the document “Calculation_years working potential” sheet. The calculations are reasonable to support the carbon saturation timeline estimated. The statement has now been supported with relevant evidence and studies. CL#02 is closed.

CL ID	03	**Section no.**	*section II of methodology*	**Date :** 04/02/2023
Description of CL				

***Leakages**: In document '08_11_METHODOLOGY CARBONSAFE.docx' on page no. 4, section II 'Scope And Structure Of The Methodology' 7th paragraph "Leakage- the present methodology is strictly conservative and does not admit leakages". However, the following point is noted, which can result in leakages, but is not accounted for in the proposed methodology:*
In document PR01-' Appendix 01_Procedure for AGRONOMIC ASSESSMENT.doc' several disadvantages are mentioned which can discourage the farmer from adopting these treatments and farmer to discontinue the project in the middle of the project.

Please clarify.

Finding Response	**Date :** 30/03/2023

There are disadvantages/advantages to every technology and cultivation method. We have identified the main shortcomings in order to be able to monitor and refine them and, in connection with this, prepare a suitability assessment before including the project in the program - PR0101. The monitoring we carry out, as well as the on-site visits to the farms, contribute to the strict implementation of the set indicators and the implementation of the practices mentioned in the technology map and the recommendations of the agronomists. Even if the farmer stops participating in the program, it will not be negatively affected because the 5% Buffer (non-tradable) will cover this leakage (page 5,section "Leakages" in the Methodology). We guide them to implement supra-legal practices and activities defined by the EU's Common Agricultural Policy (CAP). We perform an analysis of micro and macro elements and issue recommendations for fertilization that actually optimize their costs, i.e. our activity has a high added value for farmers in addition to the benefits of carbon certificates.

Documentation provided by project participant

Methodology, page 5, section "Leakages"
PR0101

DOE assessment	**Date:** 06/04/2023

The methodology developer has clarified that the methodology is strictly conservative, hence does not admit leakages. For any unfavorable situation where any possibility of leakages, the methodology accounts for 5% buffer which will cover all possible leakages in it.

Finding#3 is closed.

CL ID	04	**Section no.**	*section II*	**Date :** 04/02/2023

Description of CL

A. *In document '08_11_METHODOLOGY CARBONSAFE.docx' on page no. 5, section II 'Scope And Structure Of The Methodology' 10th paragraph "Permanence of the projects is secured by the additional activities, which guarantee the absence of reduced produce yield, and even lead to its increase".*

Please clarify and substantiate the statement that the projects implemented will always 'guarantee the absence of reduced produce yield'.

B. *In document '08_11_METHODOLOGY CARBONSAFE.docx' on page no. 5, section II 'II. Scope And Structure Of The Methodology' 12th paragraph "Buffer".*

Please clarify the process/ steps taken by project owner to claim the buffer credits after completing a cycle of the project.

Finding Response	**Date :** 30/03/2023

a. *There is no data from world practice about reduced yield with the cited processing methods. These methods aim to increase soil fertility, conserve soil moisture, protect soil from erosion and lead to the accumulation of organic matter, contribute to the development of beneficial microorganisms and fungi in the soil, and increase biological diversity. The above practices are a prerequisite for the absence of reduced yield.*
b. *All CO2 removals are reduced by 5%, being set aside in a buffer account - buffer pool and securing possible leakages. Buffer credits are not going to be paid to the project owner. ('08_11_METHODOLOGY CARBONSAFE.docx' on page no. 7)*

Documentation provided by project participant

Methodology, page 7

DOE assessment	Date: 06/04/2023

1. The assessment team has been able to conclude based on its independent review that the proposed methods will result in an increase in yield of the farms. The information provided by methodology developer is found sufficient and therefore, the findings is closed.
2. Programme developer has provided clear information about buffers and they are not claimed by project owner. The section is revised in the methodology and finding is found to be appropriately addressed.

TR COMMENT

Methodology developer has decided the 5% buffer credits in the methodology. However, further clarification is requested on how these 5% buffer credits are considered rational for the SOC methodology. The methodology developer is requested to provide justification for the this decision on the buffer credits, while considering precedence of other similar and prevalent methodologies under other standards and registries. Open

Finding Response	Date : 05/06/2023

Buffer - although the CARBONSAFE methodology is extremely conservative it foresees a buffer mechanism in the amount of 5%.
The buffer is a guarantee fund in which 5% of each issued carbon credit is allocated. The buffer account is not traded and served to cover leakages during the credit period.
The main leakage in the implementation of the Carbon Program is the result of an incorrect calculation of the baseline and its subsequent amendments. At CARBONSAFE, this is avoided by taking georeferenced soil samples with automatic probes at three depths according to a specialized protocol and testing the soil for organic carbon in an accredited laboratory and recording the results for each field in specialized software. It is for this reason that we believe that the method applied by us is extremely reliable and there is no option to "overestimate" farmers in terms of the organic carbon content of their plots.
Insuring against damage caused by adverse climatic events (droughts, floods, frosts, salinization, etc.) is also a type of leakage. Of course this will be accounted for in the soil lab analysis - the control sample and if it has affected carbon sequestration it will not be certified - simply because there will be no increase over the baseline. However, in the general buffer pool of 5%, 0.20% is provided, which will serve to ensure the possible loss of certain areas in case of adverse climatic events. The forecast was made on the basis of the average loss of land for the country, as a result of such factors (Table 1), compared to the usable agricultural area (UAA).
Table 1

Year	Failed areas[1] ha	Used agricultural area (UAA)[2] ha	% Failed areas
2022	1 423,70	5 046 597	0,03%
2021	3 324,80	5 046 597	0,07%
2020	14 000,00	5 047 252	0,28%
2019	7 000,00	5 037 470	0,14%
		Average:	**0,13%**

In PR0214 - GUIDELINES FOR CANDIDATING UNDER THE CARBONSAFE PROGRAM IN THE AGRICULTURAL SECTOR (new document), it is written that within 10 days the Operator is obliged to inform in writing about any force majeure event that has occurred on the plots that are included in the program. A document issued by the relevant institution must be presented for the event.
The authentication of the "force majeure" that has occurred is carried out with a force majeure certificate issued by the Bulgarian Chamber of Commerce and Industry and/or another competent institution (PR0202, Art. 30).
It is also possible to drop plots, due to the specifics of Bulgarian land use. Part of the farmers sign annual commitments for the use of land, receiving the relevant legal grounds for its use. Hypothetically, it is possible that such land, ceded on the basis of legal grounds in the relevant year, will not be part of the farmer's land in the following year, but this land to go to another farmer. In such a situation, where the same areas are not present in CARBONSAFE (areas with the same identifiers), no payment is made to the relevant farmer, and the issued carbon credits are secured by the Buffer account. A similar situation is foreseen and CARBONSAFE does not recommend participation with all areas that are worked under agreements. We at CARBONSAFE, before including a farm in our carbon program, carry out an assessment of the farmers' areas and for those who are covered by the aforementioned annual agreements, a buffer of 10% of the land that is not allowed in the program is set. This buffer serves to provide in case part of the land in the following year/years will be used by another farmer. For example, if a farmer works 1000 ha under agreements in a given land, then the reserve of 100 ha will serve if another farmer gets the right to work + 100 ha. Precisely those 100 ha that are outside the program will be given to the other farmer so as not to compromise participation in the Carbon Program. Deviations are also possible here and for this reason we provide an additional 1.0% of the buffer account to cover such risks.

Another possible cause of leakage is farmers' failure to follow good agricultural practice recommendations issued by CARBONSAFE agronomists. The recommendations for good agricultural practices are formalized in an individual farm management strategy PR0103 and a technology map for carbon farming PR0104. These practices are also checked with an on-site visit to the farm and the results are described in monitoring report PR0107. As a result of such failure to implement the practices proposed by CARBONSAFE, there will most likely be no increase in organic carbon in the soil and, respectively, no certificate will be issued. Moreover, for such cases, we have provided for an additional sanction in the Contract in the amount of 20% of the annual value of the service, which is paid to CARBONSAFE in the form of a fee - art. 28, para. 2 of PR0202. However, guided by conservatism, we foresee an additional 1.0% of the buffer account to cover such risks.

The risks thus described form a need for a buffer in the amount of 2.2%, but CARBONSAFE allocates 5.0%, the difference being for other unforeseen risks, including that the Program should guarantee security to the public and potential buyers.

We believe that the main problem in relation to the occurrence of leakage comes from incorrect determination of the baseline and subsequent deviations. Compared to existing standards, our baseline is determined by direct measurement and no deviations are possible. Bearing in mind the above, we believe that 5% buffer credits are considered rational for the Methodology.
In addition, the CARBONSAFE program sets strict control measures and will closely monitor any leaks, including the emergence of new ones. In the event that during the course of the certification process a shortfall in the volume of the intended buffer of 5% is found, CARBONSAFE will take timely action to review it.

Documentation provided by project participant

Source1: https://www.mzh.government.bg/bg/press-center/novini/stopanite-poluchavat-47-mln-leva-kompensacii-za-pr/
https://www.agroinfo.bg/index.php/news-astanik/item/2818-2022
https://www.novinite.bg/articles/175759/Ministar-Taneva-Okolo-70-hil-dka-sa-zasegnatite-ploshti-ot-gradushki-ot-nachaloto-na-201-g
https://www.dfz.bg/bg/prescentar/novini/kompensacii-zemedelski-stopani-prirodni/

Source2: Ministry of Agriculture - Agrarian Report
The data for UAA by year are on page 16. The data for 2023 are calculated as of December 2023. - we assume that they are equal to 2022.

DOE assessment	**Date:** 09/06/2023

The methodology developers (MD) have identified the major plausible causes or risk of losing permanence as force majeure events and loss of land by farmers due to loss of legal rights and end of agreement with the landowner. However, the instances of such losses have been computed by the MD and the loss is expected to be less than 1%. Therefore, applying 5% buffer credits appears to be a rationale approach. Additionally, further adding to the point, it is also noted by assessment team that unlike other GHG programs and registries, here the buffer credit are secured from each farm (which counts as each project here) separately, not for a group of farms and farmlands.
The assessment of argument and supporting documents provided above concludes that 5% buffer credits are reasonable for this methodology. Finding is closed.

CL ID	05	**Section no.**	PR0201	**Date :** 04/02/2023

Description of CL

***Applicability of methodology**: The methodology clarifies under part III of the document that "Projects not complying with the requirements set forth in the "Checklist for assessment of the suitability of the farm", part of Application 01_Procedure for agronomic recommendations and assessment, are not admissible". However, no criteria has been listed in the methodology to check the qualification of the farm plot and project area to be admissible under the programme or the methodology. For instance, if any plot is covering wetland, riverbed and forest land etc. or the nearby areas, in that case it is not clear if the methodology will be applicable. Similarly, criteria is not found to be defined for when the methodology will or will not be applicable.*

Finding Response	**Date :** 30/03/2023
We work with plots of land in a land use system - in PR0201 "Application for registration in the CARBONSAFE program" we ask for copies of an inquiry card for the registration of an agricultural holding or an application for support under ISAK or equivalent documents proving the legal basis of the blocks of the agricultural holding. This is indisputable proof of the legal basis of the areas and of the fact that they are part of the usable agricultural area in Bulgaria. This circumstance excludes the possibility of wetlands, riverbeds and forests - they are not in the land use system, the specified documents are certified annually by the National Competent Authority, and this information is also required, which is laid down in the Application PR0201. In Methodology, sector III. APPLICABILITY OF THE PROJECTS (p.9) we have mentioned that: "The projects cover all agricultural lands that are in a land use system. The project activities will be carried out on the same plot of land as the baseline. Ineligible are projects that are located on the territory of the Forest Fund	
Documentation provided by project participant	
Methodology *PR0201 "Application for registration in the CARBONSAFE program*	
DOE assessment	**Date:** 06/04/2023
CARBONSAFE has revised the “PR0201 "Application for registration in the CARBONSAFE program”. CARBONSAFE verifies the land from indisputable legal proof before including it to the project. It is also included in the methodology that “Plots falling into wetlands, peatlands and riverbeds are not allowed - they are not part of the National Land Use System.” The explanation given by CARBONSAFE is sufficient to close the finding. Finding#05 is closed.	

CL ID	06	**Section no.**	*Appendix 03*	**Date :** 04/02/2023
Description of CL				
***Sampling of soil samples**: In document “Appendix 03_ Procedure for automated georeferenced soil sampling.doc”* *During the site visit, the programme developer demonstrated the soil sample collection process and the procedure was found to be appropriately followed with specific protocols in place, executed in line with the guidance and training provided to the soil sampler. However, the following points related to sampling approach were not found to be reported fully in the programme documentation:* *1. Time of sampling is not described, or the stage of soil sample collection is not described. For eg. Soil samples are collected before tillage or after harvest etc.* *2. On page number 4 statement ‘Under unfavorable conditions, the task is not started, the operator is directed to the next task to be executed and returns to the previous one when conditions are available for its execution.’ Please clarify the type of unfavorable conditions that are being referred to here.* *3. Please describe what should be the ideal sample, from where the ideal sample is collected and what are the areas/conditions that should be avoided while taking a soil sample.* *Only one condition is found mentioned in the document i.e. "avoid the boundaries of the plot". However, it is not clear how methodology will account for various other aspects which can have an impact on the SOC for instance, waterlogged area in the field, or sample being collected from the soil under a tree, (which may result in higher SOC due to litter decomposition). Additionally, timing of soil sample collection is also to be described in further detail- soil sample collected just after manure/ fertilizer application can have a significant impact on SOC estimation.* *4. Please clarify, how it is verified that the equipment used during sampling and testing is in good, calibrated condition. Frequency of the calibration of the used equipment and conservative approach if the equipment is not calibrated has not been discussed in the programme documents.* *5. Please clarify how it will be ensured that the sample selected is representative of the whole area*				
Finding Response				**Date :** 30/03/2023

1. *A soil sample is taken after harvesting or at the beginning of the vegetation of the plants - the information is available in the preamble in tabular form by crop;*
2. *Sampling is not carried out in snow, mud and frozen, as well as waterlogged soils - this is marked in PR03, page 7.;*
3. *We work only with ideal samples - for each plot in a control system, regardless of its size, sampling is carried out through 25 evenly distributed points for each soil layer. The maximum size of a sampling cell cannot exceed 25 Ha (3% tolerance allowed) as indicated on page 12 of the Methodology. Sampling from waterlogged areas is not permitted. In permanent stands, samples are taken between the rows and not next to the tree. Manure can affect the amount of carbon in the soil, so we observe a post-fertilization quarantine period of 180 days for rotted manure. For all mineral fertilizers, we observe a quarantine of 40-60 days until sampling (PR01 page 15);*
4. *The probes arrive calibrated with a manufacturer's certificate. Wintex soil probes calibrate themselves at each drilling.Measurements are calibrated for 3 depths in the range 0-90 cm.*
   The calibration is valid until the machine completes the cycle and until the first 25 mm of the probe tip is worn.
5. *The formation of a representative sample for soil sampling follows the following specified rule: 25 evenly distributed points for each soil layer in a plot size up to 25 Ha (3% tolerance). Each stitch samples the three soil layers, which are separated into separate vessels on the probe. After sampling is completed in the respective plot, the increments from each layer are mixed and this constitutes a representative sample for each soil layer. This is a representative sample for the entire territory - i.e. We sample all cells involved in the project!*

Documentation provided by project participant

Preamble (entire new document)
Manufacturer's certificate for calibration
PR03, PR01

DOE assessment | **Date:** 06/04/2023

1. Programme developer has added a new document named "*Preamble" in which it is mentioned that the soil sample is taken after harvesting or at the beginning of the vegetation of the plants.*
2. In PR03, it is mentioned about unfavorable conditions that the sampling is not carried out in snow, mud and frozen, as well as waterlogged soils.
3. In PR01 (page no. 15), a new section "Quarantine period" has been added where it is mentioned that 180 days *post-fertilization* Quarantine period is taken where rotted manure is applied and 40-60 days for mineral fertilizers.
4. Programme developer has provided two calibration certificates dated 24th June 2022 and 22nd December 2022. In the calibration certificates two criteria of validity are mentioned:
   a. valid until the machine completes the cycle
   b. until the first 25 mm of the probe tip is worn
5. Section 1. "CONTROL AND REPORTING OF SEQUESTERED SOIL CARBON" is updated by Programme developer and provide clarification on the sample selected from all cell involved in the project are representative of that area.

Finding#06 is closed.

CL ID	07	**Section no.**	*PR0106*	**Date :** 04/02/2023
Description of CL				

***Project emissions from fuel consumption**:*

1. *Please clarify the formula used in excel sheet named as the 'PR0106-Checklist for calculation of separated CO_2 under the project' in tab "METHODOLOGY M3M" how the Average fuel consumption litres/ hectare is calculated. Please provide supporting documents.*
2. *Please clarify the Fuel type being discussed in the methodology and 'PR0106-Checklist for calculation of separated CO_2 under the project'.*
3. *Please clarify how the emission factor of the different fuels in use during the project implementation will be determined.*

Finding Response	**Date :** 30/03/2023

1. *Scientifically based methodology of the Ministry of Agriculture for determining the individual annual quotas in connection with the implementation of the state aid scheme "Aid in the form of a discount on the value of the excise duty on gas oil used in primary agricultural production". The methodology takes into account the consumption of diesel fuel per hectare for each crop under conventional cultivation technology in a land use system in the Republic of Bulgaria.*

Source: https://www.mzh.government.bg/bg/politiki-i-programi/programi-za-finansirane/darzhavni-pomoshti/otstapka-akciz-gaziol/

2. Fuel type is only Diesel

3.For calculation of the emissions from diesel the following should be counted: 1l Diesel I equal to 36MJ (Ordinance No H-18 of 8 August 2016). 1MJ is equivalent to 95,1 g CO_2 (Methodology for determining the intensity of greenhouse gas emissions from the entire life cycle of fuels and energy of non-biological origin in transport).

However, the calculation could be made for the different types of fuels, according to Ordinance No. H-18 of August 8, 2016 and Methodology for determining the intensity of greenhouse gas emissions from the entire life cycle of fuels and energy of non-biological origin in transport.

Documentation provided by project participant

Methodology for determining the individual annual quotas in connection with the implementation of the state aid scheme "Aid in the form of a discount on the value of the excise duty on gas oil used in primary agricultural production"
https://www.mzh.government.bg/bg/politiki-i-programi/programi-za-finansirane/darzhavni-pomoshti/otstapka-akciz-gaziol/

METHODOLOGY FOR DETERMINING THE INTENSITY OF GREENHOUSE GAS EMISSIONS FROM THE ENTIRE LIFE CYCLE OF FUELS AND ENERGY OF NON-BIOLOGICAL ORIGIN IN TRANSPORT
https://www.moew.government.bg/static/media/ups/tiny/2017/07/Metodika_final.pdf

Ordinance No. H-18 of August 8, 2016
file://10.255.91.252/Regulatory_Documents/Related%20to%20the%20findings/Ordinance%20No%20H-18%20of%208%20August%202016.pdf

DOE assessment	**Date:** 06/04/2023

1. Programme developer has provided the supporting document and source for the diesel consumption per hectare. The values are obtained from the Ministry of Agriculture in the document "Guidelines for the implementation of the state aid scheme "Aid in the form of a discount on the value of excise duty on gas oil used in primary agricultural production" in 2022. The values are found to be consistently applied and since the Ministry of Agriculture is a national authority, the source is considered credible and acceptable. Closed.
2. The fuel type as diesel is confirmed from the Ministry of Agriculture data.
3. Evidence for emission factor calculation provided has been checked by the assessment team. It is confirmed that the information is consistent between PDD and submitted evidence. The calculations are found appropriately devised. The credibility of the sources is also assessed and since only national data released by the government is used, it is considered reliable and follows a scientific methodology.

Finding#07 is closed.

CL ID	08	Section no.	*Appendix 02*	Date : 04/02/2023

Description of finding

***Exported Carbon**: In document "Appendix 02_ Procedure for registration and monitoring of projects.docx" on page number 18 in 'SECTION II- Monitoring And Organization On Georeferenced Soil Sampling' point "II. Control And Accounting of Exported Carbon" please justify*

1. *How the accounting and claiming exported carbon for credits is considered appropriate, considering that even in the absence of project activity, cultivation was still done in that area.*
2. *How does the methodology verify that the exported carbons shall actually store carbon and not become a part of leakage emission. For instance- secondary products of crop residues which are produced in the project activity may be used as fuel after being removed from the field or might result in being leaked back into the atmosphere at a later stage.*
3. *Please clarify the formula used in excel sheet named "the Checklist for calculating carbon from exported production - PR0206" cell H11, H12 and H13. In cell H11 factor 0.2 is multiplied while in H12 factor 0.26 is multiplied and in H13 factor 0.4 is multiplied. All the three factors are inconsistent in the PR0206 document.*

Finding Response — **Date :** 30/03/2023

Exported carbon will be subject to a different methodology. All the relevant documents including this information are revised accordingly.
Appendix 02_ Procedure for registration and monitoring of projects_v1_r1_27.03.23_KCC
PR0106-Checklist for calculation of separated CO2 under the project_v1_r1_20.03.23
PR0207-Calculation checklist of the total amount of carbon under the project_v1_r1_09.03.23
PR0209-CARBONSAFE_Certificate_v1_r1_21.03.23

Documentation provided by project participant

All the relevant documents including this information are revised.

DOE assessment — **Date:** 06/04/2023

The section related to exported carbon is removed from the methodology and revised in all supportive documents. The name of the methodology is also revised from "Methodology For Improving And Reporting The Level Of Sequestered Carbon In The Soil, Crop Growing Production And Secondary Products From Crop Residues In The Agricultural Sector" to "Methodology For Improving And Reporting The Level Of Sequestered Carbon In The Soil In The Agricultural Sector" in all supportive documents.
The calculation of total amount of carbon is calculated by "*PR0207-Calculation checklist of the total amount of carbon under the project_v1_r1_09.03.23*", which has been revised accordingly.

Finding#08 is closed.

CL ID	09	Section no.	PR0202	Date : 04/03/2023

Description of CL

Project ownership and carbon credits ownership:
During the site visit and interviews with the programme developers, it was noted that the farmer directly is the project proponent and carbon credits owner until the credits are transferred through specific payment terms. However, the payment and buying terms are not clarified in the programme documents.

Finding Response — **Date :** 30/03/2023

Carbon credits issued by CARBONSAFE are a transferable, tradable financial instrument that is issued in the name of the farmer. It is possible, if he wishes, to be traded on his behalf and for his account, against a commission for CARBONSAFE. Payment and trading terms will be subject to additional agreement between the parties. In the framework contract PR0202, the general terms and conditions for trading and payment methods for the issued carbon certificates have been added.

Documentation provided

PR0202 - Contract

VVB assessment — **Date:** 06/04/2023

Programme developer has updated the PR0202 and revised and added several articles in the contract which clarify about the Project ownership and carbon credits ownership. The payment and buying terms are clarified in contact PR0202 and added article 21 to 26. CL#09 is closed.

CL ID	10	**Section no.**	PR0405	**Date :** 04/03/2023
Description of CL				
Trainings of the personnel involved: *The programme and its procedures involve various personnel at different stages for sampling, data collection, testing and calculations. Programme developer is requested to clarify the frequency, means and procedure for imparting regular trainings to these personnels to ensure maintenance of high quality and accurate results.*				
Finding Response				**Date :** 30/03/2023
The personnel involved in the work at all stages of the Program have the necessary basic qualifications. Additionally, in connection with a particular specific, the staff attends various trainings, for which there are compiled documents. Staff training is a mandatory part of the company's activities and is held periodically. Section IV. EDUCATION FOR THE TEAM is added to PR04. For this purpose, a register "PR0405-Team, Qualification of the team and Documents of qualification and Training", part of PR04				
Documentation provided				
PR0405-Team, Qualification of the team and Documents of qualification and Training				
VVB assessment				**Date:** 06/04/2023
Programme developer has provided clarification and updated the section IV EDUCATION FOR THE TEAM is added to PR04. Document “PR0405-Team, Qualification of the team and Documents of qualification and Training” has provided by Programme developer in which educational background of personnel working in CARBONSAFE at different stages for sampling, data collection, testing and calculations have the necessary basic qualifications. CL#10 is closed.				

Table 2. CAR from this validation

CAR ID	01	**Section no.**	*PR0208*	**Date :** 04/02/2023
Description of CAR				
Calculation sheet of the total amount of generated carbon credits for the project - PR0208 in cell G11 the carbon to carbon dioxide conversion factor is COEFFICIENT 3.666666667 but in the methodology the 3.67 value is used. Please clarify how the round up value is used if the methodology is based on a conservative approach.				
Finding Response				**Date :** 30/03/2023
A value 3.667 is used for calculation – the difference is equalized in all documents				
Documentation provided by project participant				
IPCC Special Report on Carbon dioxide Capture and Storage, page 12, table AI.6 *https://www.ipcc.ch/site/assets/uploads/2018/03/srccs_annex1-1.pdf*				
DOE assessment				**Date:** 06/04/2023
The carbon to carbon dioxide conversion factor is 3.667, which is verified from the “*IPCC Special Report on Carbon dioxide Capture and Storage”.* In the methodology document the value is consistent but in document “Appendix 02_ Procedure for registration and monitoring of projects_v1_r1_27.03.23_KCC” (page no. 24) the value is inconsistent and still is 3.67. Programme developer is requested to make it consistent in all relevant documents. CAR #10 stands open.				
Finding Response				**Date :** 19/04/2023

Value in document "Appendix 02_ Procedure for registration and monitoring of projects_v1_r1_27.03.23_KCC" (page no. 24) is corrected.
Documentation provided
Appendix 02_ Procedure for registration and monitoring of projects_v1_r1_27.03.23_KCC
VVB assessment **Date:** 20/04/2023
The value of carbon to carbon dioxide conversion factor is 3.667, which is now consistent in all the documents of Programme developer. The changes done by Programme developer are correct and consistent, hence the finding is closed. CAR #10 is closed.

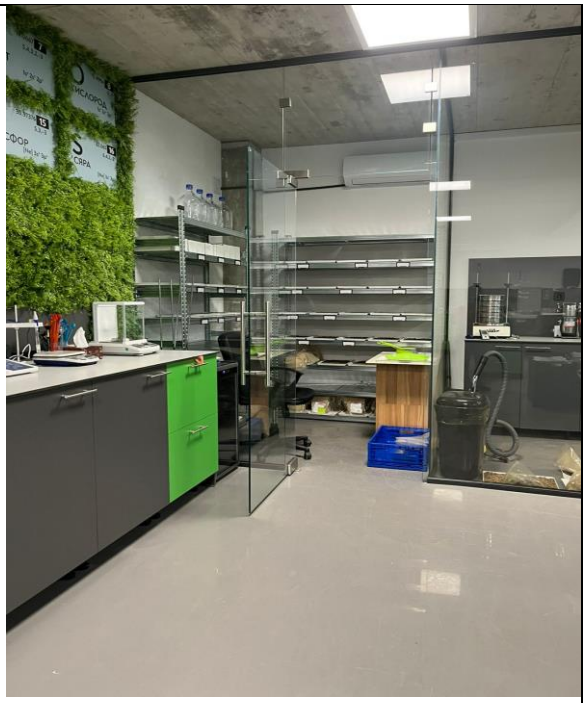
Table 3. Forward action request from this assessment:

FAR ID	1	**Section no.**		**Date :** 04/03/2023
Description of finding				
Carbon title transfer: *At the time of the current audit, the carbon title transfer documents and mechanism is not fully developed by the programme developer. Therefore, it shall be assessed during the first verification assessment by the relevant assessment team.*				
Finding Response				**Date :** DD/MM/YYYY
NA				
Documentation provided				
NA				
VVB assessment				**Date:** DD/MM/YYYY
NA				

FAR ID	2	**Date :** 04/03/2023
Description of finding		
Lab Accreditation: *The laboratory where testing of soil will be conducted (AGvisor Lab) is under the process of obtaining accreditation at the time of this audit. The next assessment team shall ensure that:* *a. the lab has obtained accreditation before the results form lab are used for calculation of carbon credits; or* *b. the testing is conducted by an accredited lab until the AGvisor lab obtains its accreditation.*		
Finding Response		**Date :** DD/MM/YYYY
NA		
Documentation provided		
NA		
VVB assessment		**Date:** DD/MM/YYYY
NA		

Appendix V: Site Visit Evidence

1. Farm visit



2. Soil Testing Laboratory

3. Soil Sample Collected from Farm

4. Laboratory Equipment

5. Laboratory Equipment for Soil Testing

Appendix VI: List of documents and forms appended to the methodology

Methodology and Procedures			
1	Methodology	Main Document	METHODOLOGY FOR IMPROVING AND REPORTING THE LEVEL OF SEQUESTERED CARBON IN THE SOIL, CROP GROWING PRODUCTION AND SECONDARY PRODUCTS FROM CROP RESIDUES IN THE AGRICULTURAL SECTOR
2	PR01	Appendix 01	PROCEDURE FOR PREPARATION OF AGRONOMICAL PRESCRIPTIONS, RECOMMENDATIONS AND AN INDIVIDUAL STRATEGY UNDER THE "CARBON FARMING" PROGRAMME
3	PR02	Appendix 02	PROCEDURE FOR REGISTRATION AND MONITORING OF PROJECTS IN THE CARBONSAFE PROGRAMME
4	PR03	Appendix 03	PROCEDURE FOR AUTOMATED GEOREFERENCED SOIL SAMPLING UNDER THE “CARBON FARMING” PROGRAMME

5	PR04	Appendix 04	Maintenance of the documentation and team

FORMS		
	PR0101	Checklist for assessment of the farm suitability
	PR0102	Prescription for bringing into suitability
	PR0103	Individual strategy for management o used areas in the farm
	PR0104	Technological map for crop growing by the carbon farming method
	PR0105	Agronomical recommendation
	PR0106	Checklist for calculation of separated CO2 under the project
PR01	PR0107	Monitoring report from on-the-spot inspection
	PR0201	Application for registration in a programme CARBON FARMING
	PR0202	
	PR0203	Register of projects_contracts SOC
	PR0204	Register Unfaithful projects
	PR0205	Calculation checklist for sequestered soil carbon (SOC)
	PR0206	Calculation checklist for carbon from exported production
	PR0207	Calculation checklist of the total amount of carbon under the project
	PR0208	Calculation sheet for the total quantity of generated carbon credits on the project
	PR0209	CARBONSAFE_Certificate
	PR0210	Register of issued certificates
	PR0211	Annual_Periodic Report
PR02	PR0212	For determining of overlapping areas
	PR0301	Register of Technological Equipment
	PR0302	Equipment Problem Log
	PR0303	Protocols from performed repairs
PR03	PR0304	Protocol of soil sampling

	PR0401	REGISTER OF DOCUMENTS AND RECORDS_ 08.11.22
	PR0402	List of controlled copies of documents distributed_allocated
	PR0403	List of external documents (statutory instruments, standards)
	PR0404	Register of Orders in Certification System
	PR0405	Team, team qualification and Documents from qualification and Training
	PR0406	Protocol from team meeting held
PR04	PROC0401	REGISTER OF DOCUMENTS AND RECORDS_ 08.11.22