CARBON FARMING CERTIFICATION SCHEME STANDARD

Sommario

PREMISE OF CARBON FARMING CERTIFICATION STANDARD

Climate change and the extinction of biodiversity are closely related crises that interact through a multitude of feedback loops and share some common causes and solutions considering soil deterioration such as shared factors. In this scenario, the intensification of agricultural land use over the past decades and widespread changes in land use for agriculture and urbanisation have contributed to nearly 25% of the world's anthropogenic greenhouse gas (GHG) emissions and can be considered such as one of the main factors contributing to the decline in biodiversity.

In this scenario, farmers play a central role, and a whole farm strategy so-called "Carbon Farming" is proposed by the EU to improve carbon sequestration in landscapes appling practices able to increase the rate at which CO_2 is extracted from the atmosphere and stored in plant and woody material and/or in soil organic matter. This certification scheme offers opportunities to advance a new positive agenda for soils with benefits for the climate as well as for biodiversity, farm profitability, and resilience of the ecosystems. With this scope the EU "Proposal for a Regulation of the European parliament and of the council establishing a Union certification framework for carbon removals [[1]"], highlights the importance of ensuring "the high quality of carbon removals, and to establish a governance certification system to avoid greenwashing by correctly applying and enforcing the EU quality framework criteria in a reliable and harmonised way across the Union".

Considering that the ecosystem's multifunctionality increases with increased biodiversity, and multifunctional ecosystems also store more carbon and are more resistant to the effects of climate change, pests, and disease, soil carbon can be assimilated to an agroecological transition catalyst. According to the European strategies on Biodiversity [[2]], Soil [[3]] and From Farm to Fork [4[4]], the current certification scheme gives a list of inalienable pillars of carbon farming to be respected from farmers, enterprises and other related stakeholders that will participate in the certification:

[1] European Commission Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing a Union certification framework for carbon removals, COM (2022) 672 final.

[2] EU Biodiversity Strategy for 2030 Bringing nature back into our lives, COM (2020) 380 final.

[3] EU Soil Strategy for 2030 Reaping the benefits of healthy soils for people, food, nature and climate, COM (2021) 699 final

[4] European Commission, 2020b. A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system, COM(2020) 381 final

- safeguard and improve soil health and functionality, especially through controlling organic matter and strengthening soil biological activity.
- maintaining and enhancing biodiversity and genetic resources and thereby the overall agroecosystem biodiversity in time and space at field;
- use the Integrated Pest management (IPM) approach for sustainable use of pesticides following the Directive 2009/128/EC;
- consider nature-based solutions such as the first option for any agriculture operation helping the environment, the rural and local community, the climate and biodiversity;
- water and pesticide usage must follow cautionary criteria possibly with the precision agriculture technology;
- undertake in raising farm self-sufficiency and decrease or eliminate dependence on external inputs (amendment, pesticide, etc) that must be purchased.

1 OBJECTIVES, SCOPE AND APPLICABILITY

1.1 OBJECTIVES

Objective of this standard is the establishment of the certification requirements to certify the net carbon removal benefits coming from carbon farming practices.

Carbon farming is defined as a carbon removal activity related to land use or/and management that results in the increase of carbon storage in living biomass, dead organic matter and soils by enhancing carbon capture and/or reducing the release of carbon to the atmosphere.

Furthermore, the carbon removal activity must respect the four parameters of QU.A.L.ITY: QUantification, Additionality, Long-term storage and sustainabilITY.

- Quantification

  A carbon farming activity shall provide a net carbon removal benefit, which shall be quantified using the methodologies described in chapter 4

- Additionality

  A carbon farming activity shall be additional. To that end, the carbon farming activity shall go beyond Union and national statutory requirements.

- Long-term storage

  An operator or group of operators shall demonstrate that a carbon farming activity aims at ensuring the long-term storage of carbon.

  For the purposes of paragraph 1, an operator or group of operators shall comply with the following criteria:

  - they shall monitor and mitigate any risk of release of the stored carbon occurring during the monitoring period;
  - they shall be subject to appropriate liability mechanisms in order to address any release of the stored carbon occurring during the monitoring period.
  - The carbon stored by a carbon farming activity shall be considered released to the atmosphere at the end of the monitoring period.

- Sustainability

  A carbon farming activity shall have a neutral impact on or generate co-benefits for all the following sustainability objectives:

  - climate change mitigation;
  - climate change adaptation;
  - sustainable use and protection of water and marine resources;
  - transition to a circular economy;
  - pollution prevention and control;
  - protection and restoration of biodiversity and ecosystems.

1.2 SCOPE AND APPLICABILITY

This standard is applicable to all the operator/groups of operators that want to generate certified carbon removal units from carbon farming practices on land where they have the ownership or the legal right to operate.

The present certification scheme operates on the basis of reliable and transparent rules and procedures, in particular with regard to:

- internal management and monitoring: operators or groups of operators commit to maintaining the application of selected carbon farming practices throughout the monitoring period, defined in this scheme equal to 5-10 years. Continuous internal monitoring is performed annually ensuring the implementation of the carbon farming practices and at the beginning and end of the monitoring period to quantify the carbon benefits, while verifying that surface occupied by recognized carbon removal land uses within the whole farmland are not subjected to a decrease.

- stakeholder consultation;
- development and management of registry: the carbon farming registry is public and available online, the registry reports information on carbon removal units generated, available and sold. The registry tracks over the years the certificate issued by the CB, information on the project from which each unit is derived, and information on purchasers of carbon removal units. The access to this information on request ensures transparency and publication of information;
- appointment and training of certification bodies;
- addressing non-conformity issues: procedures are defined below in this standard in chapter 5-10.3 to handle any non-conformities;
- Carbon removals estimation needs to consider possible risks associated with permanence. The scheme considers the possibility of events, natural and/or anthropogenic, which may be the cause of the carbon removals loss generated over time (fires, damage caused by insect attacks or other diseases, intense weather events that may cause tree crashes, etc.). In order to establish a rigorous approach and credible risk management, a buffer is identified, a percentage of the absorbed carbon that is set aside and not injected into the market, serving as a reserve for possible losses.

1.3 SUMMARY DESCRIPTION OF CERTIFICATION PROCESS

The present Carbon Farming certification scheme provides procedures and methodology to certify the net carbon reduction due to the application of carbon farming practices in management of agricultural land and plantation. This methodology is focused only on the net removal benefit of CO_2 obtained by increasing soil organic carbon (SOC) storage and/or carbon stocked into living biomass.

The baseline scenario assumes the carbon removal performance that would occur in similar environmental conditions in absence of carbon farming practices.

Additionality is demonstrated by the adoption of carbon farming practices applied beyond Union and national statutory requirements and taken place due to the incentive effect of the certification.

The eligible carbon farming practices and part of the scope of this standard are detailed in paragraph 4.

The process related to the certification of carbon farming and the sale of carbon removal units is schematized in figure 1

Operators/groups of operators who wish to certify the carbon removal units generated by a carbon farming practice must submit an application to the scheme owner, which issues a certification of adherence if successful. The carbon farming project is then certified by a third-party certification body. The certification can be for 5 or 10 years, renewable for 5 or 10 years.

Net carbon removals will be entered into the carbon farming register at the end of every year of certification. The amount of net carbon removal will be preliminary estimated and quantified *ex-ante* using literature data estimated annually (data reported in table 4). At the end of the monitoring period every 5-10 years a balance evaluation based on field measurements (at year zero "t_0" and at year 5-10 "t_x"), will quantify of the CO_2 removals and check if any discrepancy with the estimated quantity reported.

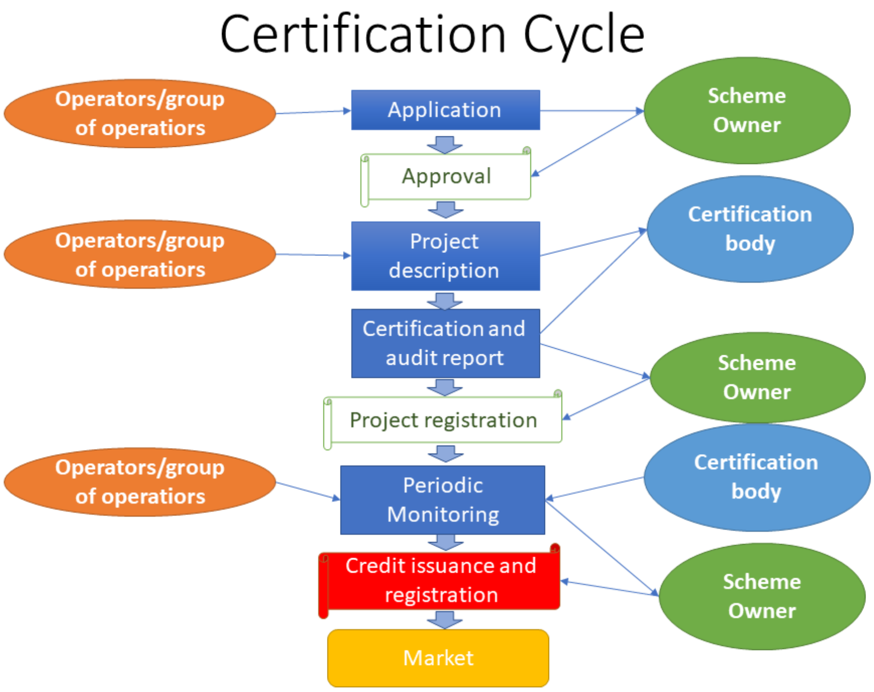

Figure 1: Carbon farming process

1.4 DOUBLE PAYMENT

In case of other financial support for the same certified net carbon removals, the project should not be considered as eligible for the issuance of units so should avoid the double payment. It is essential to avoid double funding, i.e. help ensuring that beneficiaries do not receive a double payment for the same action. For example, the mechanism CAP (Common Agricultural Policy) that supports the adoption such as investments, advisory services, training, research opportunities, collective approaches, etc. by providing payments for land managers/landowners to undertake certain practices, does not constitute a double payment. Those practices, even if they are beneficial for carbon removals, are part of the whole farming management. So the relevant payments are intended to finance such practices and not directly aimed at rewarding carbon removals, so that double funding is excluded. In conclusion, a combination of CAP funding and revenues from private markets would not constitute double funding.

2 DEFINITIONS AND ACRONYMS

Baseline scenario – It is the carbon removal performance that would occur in similar environmental conditions in absence of carbon farming practices.

Operator - Any legal or physical person who operates or controls a carbon removal activity, or to whom decisive economic power over the technical functioning of the activity has been delegated; it can also be set as **group of operators,** a legal entity that represents more than one operator and is responsible for ensuring that those operators comply with this standard.

Carbon Removal- Means either the storage of atmospheric or biogenic carbon within geological carbon pools, biogenic carbon pools, long-lasting products and materials, and the marine environment, or the reduction of carbon release from a biogenic carbon pool to the atmosphere.

Carbon storage Permanence - A hypothetical ideal state in which stored carbon persists in perpetuity. Absolute permanence is not attainable, but real-world residence times of carbon in soils, forests, geology, and products can be compared against the ideal of permanence. A distinction can be drawn between physical permanence (as defined above) and contractual permanence, which is the use of legal and financial contracts to simulate permanence by holding someone responsible for remediation in the event of a reversal. Permanence is sometimes used to mean “residence time”, or the actual duration in years that a CO_2 is expected to remain out of the atmosphere.

CB – **Certification Body -A**n independent, accredited or recognised conformity assessment body that has concluded an agreement with a certification scheme to carry out certification audits and issue certificates.

Scheme owner/ certification scheme - A scheme managed by a private or public organisation responsible for developing and maintaining a specific certification scheme that oversees the certification of compliance of operators or group of operators with this standard.

CO_2 – Carbon Dioxide.
CAP - Common Agricultural Policy.
EC – European Commission.
GHG – GreenHouse Gases.

Additionality – Characteristic of a change which would not have occurred without the linked policy intervention or activity (IPCC, 2022). Since additionality is impossible to demonstrate with 100% certainty, it is more accurate to refer to estimate the "risk of non-additionality". International efforts such as the Integrity Council for the Voluntary Carbon Market (ICVCM) are adopting this approach. Note that additionality is a strict requirement of compensation claims (e.g., use of carbon removal for offsetting), but can potentially be relaxed or even ignored when there is no compensation claim being made (e.g., direct government payments to farmers to incentivise a shift to regenerative practices).

Carbon removal unit- One tonne of certified net carbon removal benefit generated by a carbon removal activity and registered by a certification scheme.

Leakage – The displacement of GHG emissions to another location due to actions in one location, thereby counteracting some or all of the desired mitigation effects (IPCC, 2022). For example, reforesting sheep pasture land in one site may lead to additional land clearing to make room for additional sheep pasture in another country to meet constant demand. Frameworks like the Carbon Opportunity Cost allow for analysis to estimate the magnitude of this displacement, which is a function of the efficiency of production at the location to which the activity is displaced.

Methodology – The corresponding process description for each carbon removal activity, with associated documentation allowing for the evaluation, measurement, and potential certification of a carbon removal unit. Methodologies could describe a discrete module of a carbon removal activity, such as a one or more practices or processes carried out by an operator/operators group resulting in permanent carbon storage, enhancing carbon capture in a biogenic carbon pool, reducing the release of carbon from a biogenic carbon pool to the atmosphere, or storing atmospheric or biogenic carbon in long-lasting products or materials;

Monitoring period - The period duration over which the carbon farming activity is monitored by the operator/operators group.

Complaints: Expression of dissatisfaction made to an organisation, related to its compliance with the requirements of this standard, or the complaints handling process itself, where a response or resolution is explicitly or implicitly expected.

3 PROJECT REQUIREMENTS

3.1 ADDITIONALITY

A project is considered additional if it goes beyond Union and national statutory requirements and takes place due to the incentive effect of certification.

In other words, if a carbon farming best practice is not mandatory or not enforced and faces barriers that can be objectively demonstrated and/or is not financially attractive, then the measure is deemed additional.

As a concrete evaluation of the effect of the additional practices, this standard asks for the evaluation of a balance sheet during the project period at the time zero "t_0" and at the time "t_x" and the result need to be higher level of sink than the standardised baseline level, considering the direct and indirect increase of GHG due to the carbon farming practices.

The baseline shall be determined taking into account the carbon removal performance of the common practices implemented and can be assessed using "standardised baseline". A standardised baseline provides the baseline scenario reflecting the standard performance of comparable activities in similar social, economic, environmental and technological circumstances and takes into account the geographical context, and positively recognises the action of first movers who have already engaged in carbon removal activities.The standardised baseline is identified with conventional management in cropland which includes continuous cropping systems, monoculture, bare fallow, mouldboard plough, crop residues removal and inorganic nitrogen fertiliser application.

3.2 CARBON FARMING ELIGIBLE PRACTICES AND APPLICABILITY CONDITIONS

Practices should be already ongoing at the beginning of the certification period or initiated at the start of the 5-10 years of certification and implemented continuously for the whole certification period.

Practices do not imply the removal of any pre-existing woody vegetation at the start of the certification period with exception of carbon farming activities with woody crops and/or tree plantation, where the removal of woody vegetation with replanting is considered as part of management activities.
Biomass burning not associated with energy production is not allowed**.**

The carbon farming practice listed in table 1 shall be considered the best practice eligible as carbon farming activities. Proposals of other practices not included in the following table will be evaluated for its eligibility by an expert group (scheme owner?) especially if the proponent provides scientific evidence (e.g peer-reviewed papers, project reports) of their carbon removal potential. To ensure both cost effectiveness of the operator engaging in carbon removal activities and additionality compared to business as usual practices within the Lombardy Region this Certification scheme strongly suggests the adoption of a combination of at least 3 practices listed in the following table (which however may vary among land-parcels). This list will be updated any time there is a new eligible best practice considered acceptable for carbon farming storage. Each additional best practice shall be evaluated by the scheme owner if worthy of consideration.

Eligibility conditions reflect minimum sustainable requirements with the aim of preventing from generating negative externalities related to other environmental indicators (e.g biodiversity, eutrophication, climate change) or other carbon pools.

Table 1. List of carbon-farming best practices

GROUP OF CARBON FARMING PRACTICES	*ACRONYM*	*CARBON FARMING PRACTICE*	*Definitions*	*Eligibility Conditions*
OA[1] Using of organic amendment	AGW	Agro-industrial waste	Organic waste obtained from crop industrial transformation (e.g olive mill waste)	This practice is considered Carbon farming only when plant biomass from which OA derives, was cultivated on the same farm it is applied. Alternatively, purchased OA applied to farmland may still be considered eligible when it is produced within the Regional boundaries or within a range of 5-100 kilometres and when the seller/OA producer does not benefit from certified carbon removals. OA application is considered eligible only for equivalent nitrogen application rate. Both partial and full substitution of inorganic nitrogen fertiliser are eligible underfull compliance with the Regional Action Programme for the protection of waters against pollution caused by nitrates from agricultural sources in vulnerable zones under Nitrates Directive 91/676/EEC – 2020-2023
	BC	Biochar	Carbon-rich material obtained by plant biomass pyrolysis	
	BD	Anaerobic digestate	Semi-liquid OA with fertiliser characteristics obtained from anaerobic digestion of plant biomass and/or animal manure and slurry as by-product of biogas plants	
	CO	Compost	Humus-like material with fertiliser characteristics obtained from aerobic digestion of solid waste	
	FYM	Farmyard manure	Decomposed animal faeces mixed with stubble with fertiliser characteristics	

GROUP OF CARBON FARMING PRACTICES	***ACRONYM***	***CARBON FARMING PRACTICE***	***Definitions***	***Eligibility Conditions***
RSD **Reduced soil disturbance**	MT	Minimum tillage	Non-inversion tillage at maximum 15-10 cm depth	This practice is considered Carbon Farming only if use of herbicides is eliminated during pre-sowing and post-harvest stages
	NT	No till	Sod-seeding	
	RIT	Reduced intensity tillage	Reduce number of tillage operation compared to business-as-usual	
	RT	Reduced tillage	Non-inversion tillage at maximum 25 cm depth	
CC **Cover Crops**	CC (GM)	Cover crops as green manure	Crops cultivated to obtain plant biomass incorporated into soil with tillage operations	This practice is considered Carbon Farming only if herbicides are not used as termination mode.
	CC (Mu)	Cover crops as green or dead mulch	Crops cultivated to obtain plant biomass which is mowed/trimmed and left on soil surface as dead mulch	
Agroforestry practices	SLA	Silvoarable systems	Woody species planted in parallel tree rows to allow mechanization and intercropped with an annual crop; usually used for timber but also for fuel. Usually low tree density per hectare.	

GROUP OF CARBON FARMING PRACTICES	***ACRONYM***	***CARBON FARMING PRACTICE***	***Definitions***	***Eligibility Conditions***
	SLP	Silvopastoral systems	Woody species planted on permanent grasslands, often grazed.	
	HEDGE	Hedgerows	Establishment of natural or planted hedgerows delimiting cropland or grassland	
AM **Agronomic management**	INT	Intercropping	The practice of growing two or more crops in a field at the same time	
	IR	Improved crop rotations	Practice of growing different kinds of crops in recurrent succession on the same land	This practice is considered Carbon Farming when crops belonging to different botanical families are used in succession, at least 3 out of a 5-years crop rotation
	CONS	Conservation agriculture	Agronomic management applying reduced soil disturbance combined with maintenance of crop residues, crop rotations, cover crops, inorganic fertiliser application)	This practice is considered Carbon Farming only if herbicides are not used during pre-sowing and post-harvest stages and for cover crops/weeds termination mode
	ORG	Organic agriculture	Organic farming is defined by the Reg. UE 2018/848[2].	Organic Agriculture is considered carbon-farming when at least 3 of the following practices are

GROUP OF CARBON FARMING PRACTICES	***ACRONYM***	***CARBON FARMING PRACTICE***	***Definitions***	***Eligibility Conditions***
				combined: crop rotation, organic fertiliser, maintenance of crop residues and green manure cover crops. Synthetic fertilisers and herbicides are forbidden.
	R	Crop residues	Maintenance of crop residues on field	
	G/P	Grassland or pasture		This practice is considered carbon farming when overgrazing of pastures is avoided and when grasslands include multi-year herbaceous species
PENCONV **Conversion from annual crop to woody perennial plantation**	ORC	Orchard		Conversion to or maintenance of perennial woody crops will be considered eligible when: - permanent ground cover is maintained (planted or spontaneous). This practice is not mandatory during summer. - mouldboard plough is replaced with one technique of reduced soil disturbance
	VINE	Vineyard		
	OLIV	Olive		
	POP	Poplar		

GROUP OF CARBON FARMING PRACTICES	ACRONYM	CARBON FARMING PRACTICE	Definitions	Eligibility Conditions
	WOOD	Other woody plantations/reforestati on		-herbicides and plastic mulches are not used -woody residues such as pruning's are not burned (unless combustion is coupled with energy production), but trimmed on site or used to produce amendments (e.g. compost, biochar)

Note [1]: SOC sequestration has been defined by Olson (2013) and Olson et al., (2014); as "process of transferring CO2 from the atmosphere into the soil of a land unit through unit plants, plant residues and other organic solids, which are stored or retained in the unit as part of the soil organic matter. This definition includes OA produced and applied within farm boundaries. Purchased OA implies a transfer of carbon stock resulting in a SOC stock increase with no net carbon removal from the atmosphere. However, this practice is included as a circular economy good practice and substituting synthetic fertiliser with OA improves soil fertility and biodiversity and reduces GHGs from fertiliser production. To avoid transportation emissions this practice is eligible under conditions highlighted in the above table.

Note [2]: Organic farming is an overall system of farm management and food production that combines best environmental and climate action practices, a high level of biodiversity, the preservation of natural resources and the application of high animal welfare standards and high production standards in line with the demand of a growing number of consumers for products produced using natural substances and processes.

3.3 PROJECT BOUNDARY AND SELECTED CARBON POOLS

Selected carbon pools included in the project boundary in the baseline and project scenarios are listed in Table 2.

Table 2. Carbon pools included in the project boundaries

Pool	Included	Explanation
Living biomass (Aboveground and belowground biomass)	Yes/optional	Living biomass must be included where project activities result in an increase of this pool (Plantations, agroforestry). Woody biomass removal due to project activity is excluded as for the applicability conditions.
Dead wood	no	Carbon pool is not included because it is not subject to significant changes or potential changes are transient in nature on agricultural land
Litter	No	Carbon pool is not included because it is not subject to significant changes or potential changes are transient in nature on agricultural land
Soil Organic Carbon	Yes	Main carbon pool affected by carbon farming activities that is expected to increase in the project scenario
Harvested wood Products	Yes	Mandatory in case of perennial woody plantations as it is the main pool that need to ensure long term carbon storage

GHG sources included in the project boundary in the baseline and project scenarios are listed in Table 3 below.

Table 3. GHG sources included in the project boundaries

Source	**Gas**	**Included**	**Explanation**
Fossil fuel	CO_2	Yes	Must be included where the project activity may significantly increase emissions compared to the baseline scenario
Manure deposition	CH_4, N_2O	Yes	
Use of nitrogen fertilisers	N_2O		
Use of nitrogen fixing species	N_2O	Yes	If nitrogen fixing species are planted in the project, N2O emissions from nitrogen fixing species must be included in the project boundary.
Biomass burning	CH_4, CO_2, N_2O	No	No biomass burning is allowed as for applicability conditions that exclude the burning

3.3.1 TIME AND SPACE BOUNDARIES

Operators applying for a carbon farming certification scheme may choose to include in the project boundaries only part of farmland, meaning a fraction of the land owned or rented by the operator. Conventional farming can be applied on the remaining farmland but will be included for monitoring purposes as to avoid internal leakage. Therefore, while carbon-farming project areas only will be subjected to measurement and accounting for carbon removal units, the remaining farmland will be subjected to monitoring aimed at verifying that areas under grassland, pasture, shrubland, forest, orchard, agroforestry and hedgerows are not subjected to a net surface decrease during the project time boundaries. No net decrease means that the total surface (hectares) of high carbon removal land-uses must not be subjected to a decrease during and at the end of the carbon removal activity compared to the initial situation. Minimum time engagement for operators will be set at 5-10-10 years, renewable every 5-10-10 years.

4. METHODOLOGY APPLIED FOR NET CARBON REMOVAL BENEFIT CALCULATIONS

CO_2 removals that can be generated from project activities are calculated as the difference between the project scenario (in which the virtuous practice is applied) and the standardised baseline. The difference (Δ) between these two scenarios correspond to the amount of CO_2 stocked into the project pool. The unit of measurement used is the carbon dioxide equivalent ton (tCO_2).

A carbon removal activity shall provide a net carbon removal benefit, which shall be quantified using the following formula:

$$\text{Net carbon removal benefit} = CR_{baseline} - CR_{total} - GHG_{increase} \quad \text{(eq.1)}$$

where:

$CR_{baseline}$ is the carbon removals under the baseline;

CR_{total} is the total carbon removals of the carbon removal activity;

$GHG_{increase}$ is the increase in direct and indirect greenhouse gas emissions, other than those from biogenic carbon pools in the case of carbon farming, which are due to the implementation of the carbon removal activity.

Quantities referred in the formula shall be designated with a negative sign (-) if they are net greenhouse gas removals and with a positive sign (+) if they are net greenhouse gas emissions; they shall be expressed in tonnes of carbon dioxide equivalent.

All emissions shall be expressed in CO_2 equivalent using the Global Warming potential with a 100-year-time-horizion from the IPCC fifth assessment report shall be used (IPCC, 2014), or any 100-year-time-horizon GWP value from the subsequent agreed IPCC assessment reports if agreed by Parties of the Paris Agreement.

4.1 CARBON REMOVAL UNDER THE STANDARDISED BASELINE

At present data and methodologies to define if soils under business as usual agricultural management within the Lombardy Region represent a net CO_2 source or sink are lacking. However, literature data suggest that soils under conventional management act as net sources. Average soil organic carbon losses under the business-as-usual scenario were estimated at 3.1 t CO_2 ha/yr in European arable land (Vleeshouwers & Verhagen 2002). For specific conventional agronomic practices Francaviglia et al., (2017) report for Mediterranean countries an average loss of 3.2 t CO_2 ha/yr for bare fallows, 0.6 t CO_2 ha/yr for application of inorganic nitrogen fertiliser and 1 t CO_2 ha/yr for continuous cropping systems (repetition of monoculture). Notwithstanding, for a conservative standardised baseline CO_2 emission from cropland SOC losses may be assumed equal to 0. If the standardised baseline includes any carbon farming activity, carbon removals need to be accounted for and quantified according to available models or literature data (see table 4).

The choice to assign one or more carbon removal activities to the baseline or to assume that it is equal to 0 will be delegated to the expert committee of the scheme owner on the basis of the practices commonly adopted in the specific project area.

4.2 CARBON REMOVAL UNDER THE CARBON-FARMING PROJECT

The CR_{total}, at the end of the monitoring period, is calculated on the basis of measurement of the carbon pools at two points in time to assess the carbon stock changes due to the application of the carbon farming practice. The carbon pools include soil (SOC), living biomass (LB) and harvested wood products (HWP) and are expressed in tons CO2/ha/yr.

Change in the carbon stocks in project, occurring in the selected carbon pools, in year t is calculated as follows:

$$CR_{total} = \Delta C_{SOC} + \Delta C_{LB} + \Delta C_{HWP} \text{ (eq.2)}$$

$$\Delta C_{SOC,LB,HWP} = (C_{t1} - C_{t0}) / t_1 - t_0 \text{ (eq.3)}$$

$$\Delta CO_2 = -44/12 * \Delta C \text{ (eq.4)}$$

Where:

CR_{total}= Total change in carbon stocks under the carbon-farming project, expressed as tonnes C yr^{-1}
ΔC_{SOC}=Total change in soil organic carbon stocks under the carbon-farming project, expressed as tonnes C yr^{-1}
ΔC_{LB}= Total change in above and below ground living biomass carbon stocks under the carbon-farming project, expressed as tonnes C yr^{-1}
ΔC_{HWP}=Total change in harvested wood products carbon stocks under the carbon-farming project, expressed as tonnes C yr^{-1}

$\Delta C_{\mathbf{SOC,LB,HWP}}$ = annual carbon stock change in the pool, tonnes C yr^{-1}

C_{t1} = carbon stock in the pool at time t_1, tonnes C

C_{t0} = carbon stock in the pool at the beginning of the certification period (time t_0), tonnes C

ΔCO_2 (i) = annual CO_2 removals from net changes of the soil carbon stock in during the monitoring period, in t CO_2 yr^{-1}

If the C stock changes are estimated on a per hectare basis, then the value is multiplied by the total area within each stratum to obtain the total stock change estimate for the pool. The measurements should be performed every 5-10 years according to a protocol [to be defined].

For living biomass, the stock difference method (Equation 2.8, IPCC2006) can be applied using measured volume at the monitoring event, while for soil organic carbon equation 2.25 of the IPCC 2006 guidelines.

Methodology for carbon removals in harvested wood products is provided in paragraph 4.4.2.

4.2.1 EX ANTE ESTIMATION OF CARBON REMOVAL ACTIVITIES

Data reported in table 4 refer to CO_2 removals from soil organic carbon change from the application of carbon farming practices derived from scientific literature. The table provides an estimation of the potential effect of the practices, against a given baseline scenario and can serve as an indication of the project potential or, in case of *ex-ante* payment is agreed with the buyer, the first quartile value (Q1) for soil organic carbon and mean value subtracted by standard deviation (mean-sd) for biomass can be used for assessing the quantity of the annual carbon sequestration that need to be monitored every 5-10 years.

Table 4. CO2 removals from soil organic carbon (SOC) under carbon farming practices according to literature review

BEST PRACTICE	***OTHER BEST PRACTICE***	***Treatments description***	***Mean ΔSOC (tCO_2/ha/yr)***	***SD***	***Data entries***	***Q1***	***Baseline***
OA	**/**	Using of organic amendment	2.5	1.33	4	1.60	Application of inorganic nitrogen fertiliser (INF)
RSD	**/**	Reduced soil disturbance	1.12	1.41	24	0.32	Conventional tillage (mouldboard ploughing) (CT)
RSD	**+R**	Reduced soil disturbance + crop residues	2.5	2.32	23	0.57	Conventional tillage associated with the removal of crop residues (CT-R)
CC (GM)	**/**	cover crops as green manure	1.85	1.13	16	1.04	Bare soil between crop rotations characterised by the absence of vegetation (application of herbicides or ploughing) (BS)
CC (Mu)	**/**	cover crops as green or dead mulch					

INT	**/**	Intercropping	1.01	0.97	6	0.30	Monoculture, i.e., growing one crop species in a field at a time (as opposed to inter-cropping and multiple-cropping systems) (MC)
IR	**/**	improved crop rotations	0.63	0.42	11	0.33	Continuous cropping systems: monoculture (i.e., growing one crop species in a field at a time) and continuous cropping (same crop every year in the same field) (CCS)
CONS	**/**	conservative agriculture	2.48	0.79	5	1.65	Conventional crop management (ploughing, continuous cropping systems, application of inorganic fertiliser, bare fallow between crop rotations) (CONV)
ORG	**/**	Organic agriculture	3.29	1.11	8	2.27	Conventional crop management (ploughing, continuous cropping systems, application of inorganic fertiliser, bare fallow between crop rotations) (CONV)
R	**/**	crop residues	0.54	0.12	6	0.46	Removal of crop residues (-R)

LUC/SET-A-SIDE	**/**	cropland or conversion of cropland with annual crops to grassland/pasture land or permanent crops	4.69	4.77	12	1.70	Annual cropland as land-use category (CRO)

Mean $\Delta SOCO_2$ evaluation deriving from the selected carbon farming practice. Descriptive statistics for practices with less than 3 data entries are not shown

SD:standard deviation; data entries: number of observations; Q1: first quartile of the data distribution. ΔSOC refers to the 0-30 cm soil layer and is calculated through pair comparison methodology, therefore representing a CO2 emission mitigation compared to a common business as usual practices (shown in baseline column). For full details of the methodology see Report for Action A2.

Table 5. CO2 removals from above ground and below ground woody biomass from orchards and short-rotation forestry derived from scientific literature*

BEST PRACTICE	*OTHER BEST PRACTICE*	*Treatments description*	*Mean ΔCO_2 in woody biomass (tCO2/ha /yr)*	*SD*	*Data entries*	*Mean-SD*	*Baseline*
PENCONV POPLAR	**/**	Conversion from annual crop to poplar plantation	9.5	3.1	113	6.4	Annual cropland as land-use category (CRO)
PENCONV VINE	**/**	Conversion from annual crop to vineyard plantation	1.8	0.3	63	1.5	Annual cropland as land-use category (CRO)
PENCONV ORCHARD	**/**	Conversion from annual crop to orchard plantation	2.6	0.8	110	1.7	Annual cropland as land-use category (CRO)
PENCONV OLIVE	**/**	Conversion from annual crop to olive plantation	2.2	0.5	73	1.7	Annual cropland as land-use category (CRO)
HEDGEROWS		Establishment of natural or planted hedgerows delimiting cropland	4	2	12	2	Annual cropland as land-use category (CRO)

SILVOARABLE		Woody species planted in parallel tree rows to allow mechanisation and intercropped with an annual crop	4.2	2.2	14	2	Annual cropland as land-use category (CRO)
SILVOPASTORA L		Woody species planted on permanent grasslands, often grazed.	11.1	5.8	10	5.3	Pasture as land-use category

***Note:** the previous practices can be certified and the carbon removal units can be sold for a maximum period of 20 years

Data for hedgerows, silvoarable and silvopastoral systems include carbon storage in above and belowground biomass for all Temperate Regions and are taken from IPCC guidelines (2019)

Biomass storage rates and tree density for hedgerows are presented per kilometre of hedgerows, not per hectare of agricultural field or per hectare of hedgerows

4.2.2 METHODOLOGY FOR CALCULATING CO2 REMOVALS IN HARVESTED WOOD PRODUCTS

Estimates of CO_2 emissions and removals arising from HWP can be calculated using either IPCC guidelines (2019) or verified carbon standard methodology (VMD0005-10 Estimation of carbon stocks in the long-term wood products pool (CP-W), v1.1).

According to the IPCC guidelines (2019) CO_2 removals from HWP can be estimated from Tier 1 according to the simple decay approach

$$\Delta CO_{2TOT}(i) = -44/12 * \Sigma\Delta C_{(i)}; \quad \text{(eq.5)}$$

$$Inflow_{(I)} = HWP_{DPI\,(i)} * cf; \quad \text{(eq.6)}$$

$$C_{(i+1)} = e^{-k} \cdot C_{(i)} + \left[\frac{(1-e^{-k})}{k}\right] \cdot Inflow_{(i)}; \quad \text{(eq.7)}$$

$$k = \ln(2)/HL; \quad \text{(eq.8)}$$

$$\Delta C_{(i)} = C_{(i+1)} - C_{(i)}; \quad \text{(eq.9)}$$

Where:

$\Delta CO_{2TOT}(i)$ = total CO_2 removals from net changes of the carbon stock in HWP in use during the year (i), in Mg CO_2

$\Sigma\Delta C(i)$: sum of changes of the carbon stock C for all HWP commodity classes during the year i, in Mg C yr-1

Inflow (i): carbon inflow in a particular semi-finished HWP commodity class in the year (i), expressed as Mg C yr^{-1}

$HWP_{DPI}(i)$: production of the particular semi-finished HWP commodity class in the year (i), in m^3

cf: conversion factor for the specific commodity class, in Mg C/m^3 (see table 7 below)

i = year

$C_{(i)}$ = the carbon stock in the particular HWP commodity class at the beginning of the year i , Mg C

k = decay constant for each HWP commodity class given in units yr^{-1} *(= ln(2)/HL) HL= is the half-life of the particular HWP commodity in the HWP pool in years (see table 6 below)*

$\Delta C_{(i)}$ *= carbon stock change of the HWP commodity class l during the year i , Mg C yr-1.*

Table 6. Default half-life values and conversion factors (cf) recommended by IPCC 2019 Refinement.

HWP commodity class	Half-Life (Year)	C Conversion Factor (cf) (Per Air Dry Volume) [Mg C/m3]
Sawn wood (aggregate)	35	0.229
Coniferous sawnwood	35	0.225
Non-coniferous sawnwood	35	0.28
Wood-based panels (aggregate)	25	0.269
Hardboard (HDF)	25	0.335
Insulating board (Other board, LDF)	25	0.075
Fibreboard compressed	25	0.315
Medium-density fibreboard (MDF)	25	0.295
Particle board	25	0.269
Oriented strand board (OSB)	25	0.265
Plywood	25	0.267
Veneer sheets Density	25	0.25

Half-life value means the number of years it takes for the quantity of carbon stored in a harvested wood products category to decrease to one half of its initial value.

4.3 GHG INCREASE UNDER THE PROJECT SCENARIO: $GHG_{increase}$

To calculate $GHG_{increase}$, emissions in the carbon farming project must be compared with those generated in the baseline scenario and included only when the project activity significantly increases such emissions compared to the baseline scenario. The GHG increase can be generated by direct and indirect emissions increase. Direct emissions are those linked to the practices implemented on the land unit e.g. use of machinery, fertilisers applications etc.

Indirect emissions are those that occur outside the project boundary and are due to the carbon farming practice, such as the displacement of agricultural activities on other land (e.g. on grassland or forest land), usually referred as leakage. As the leakage outside the farm is difficult to estimate, only possible leakages within the farm boundaries will be monitored as reported in paragraph 3.3.1. Therefore, $GHG_{increase}$ is calculated through equation n. 9 and evaluates only differences >0 deriving from emissions between the carbon farming project and the baseline.

$$GHG_{increase} = GHG_{cf} - GHG_{bsl} \quad \text{(eq.10)}$$

$$GHG_{cf} = GHG_{direct} + GHG_{indirect} \quad \text{(eq.11)}$$

Where:

$GHG_{increase}$	*increase in direct and indirect greenhouse gas emissions, other than those from biogenic carbon pools in the case of carbon farming [tCO_2eq/yr]*
GHG_{bsl}	*GHG emissions other than biogenic carbon pools in the baseline scenario [tCO_2eq/yr], including soil emissions from fertiliser application and fossil fuel use related to agricultural operations*
GHG_{cf}	*GHG emissions other than biogenic carbon pools in the project scenario [tCO_2eq/yr] including soil emissions from fertiliser application and fossil fuel use related to agricultural operations*
GHG_{direct}	*direct GHG emissions other than biogenic carbon pools due to the carbon farming activity within the project boundaries [tCO_2eq/yr]*
$GHG_{indirect}$	*direct GHG emissions including biogenic carbon pools due to the carbon farming activity outside the project boundaries [tCO_2eq/yr]*

Since data needed to calculate GHG_{bsl} are not available we propose the use of farms pre-project average GHG emissions

When direct emissions GHG_{bsl} is proved to be equal or higher than GHG_{cf}, then the operators can assume that $GHG_{increase}$ is equal to zero. In other terms, if on the CF plot the fossil fuel use and nitrogen application from organic fertilisers or cover crops is equal or lower than the mean values over the past five years, then $GHG_{increse}$ can be considered not occurring (equal to zero). If during the project duration any of these values (i.e. fossil fuel use and/or nitrogen fertiliser applications) exceed the pre-project average, then GHG increase needs to be calculated according to methodologies presented in section 4.3.1 below.

Note: all operators fully substituting inorganic nitrogen fertilisers with organic fertiliser and/or nitrogen-fixing cover crops, on equivalent nitrogen content base, are exempted from $GHG_{increse}$ calculation from fertiliser application, in both moist and dry climatic conditions. Moreover, all operators applying for conservation management are exempted from $GHG_{increse}$ accounting due to fossil fuel use, considering scientific evidence of lower fossil fuel consumption under conservation management (Brenna & Tabaglio., 2017;Johnson et al. 2007; Reicosky and Archer 2007).

4.3.1 METHODOLOGY FOR CALCULATING BASELINE AND PROJECT GHG EMISSION SCENARIO

GHG_{bsl} include direct and indirect GHG from inorganic nitrogen fertiliser application ($GHG_{(INF)}$) and direct GHG from fossil fuel consumption ($GHG_{(FUEL)}$) related to agricultural operations; it also may include GHGs from organic nitrogen fertiliser application ($GHG_{(OA)}$), nitrogen-fixing cover crops (GHG(CC)

GHGcf include GHGs from organic nitrogen fertiliser application ($GHG_{(OA)}$), nitrogen-fixing cover crops ($GHG_{(CC)}$), GHG emissions from fossil fuel consumption related to agricultural operations ($GHG_{(FUEL)}$) and GHG from inorganic nitrogen fertiliser ($GHG_{(INF)}$) if this is applied in the project.

$$GHG_{cf;bsl} = GHG_{(INF)} + GHG_{(FUEL)} + GHG_{(OA)} + GHG_{(CC)} \quad (eq.12)$$

$$GHG_{(INF)} = X_{(INF)} \times EF_{(INF)} /1000 \quad (eq.13)$$

$$GHG_{(FUEL)} = X_{(FUEL)} \times EF_{(FUEL)} /1000 \quad (eq.14)$$

$$GHG_{(OA)} = X_{(OA)} \times EF_{(OA)} /1000 \quad (eq.15)$$

$$GHG_{(CC)} = X_{(CC)} \times EF_{(CC)} /1000 \quad (eq.16)$$

Where:

$GHG_{cf;bsl}$: total emissions from the baseline or the project, expressed as t CO_2/ha/yr

$GHG_{(INF)}$:soil direct and indirect emissions from inorganic nitrogen fertiliser application, expressed as t CO_2/ha/yr

$GHG_{(FUEL)}$:direct emissions from fossil fuel use for machinery operations, expressed as t CO_2/ha/yr

GHG_{cf}: total emissions of the carbon farming project, expressed as t CO_2/ha/yr

$GHG_{(OA)}$: soil direct and indirect emissions from organic nitrogen fertiliser application, expressed as t CO_2/ha/yr

$GHG_{(CC)}$:soil direct and indirect emissions from nitrogen-fixing cover crops cultivation with biomass returned to soil, expressed as t CO_2/ha/yr

X= amount of Nitrogen applied to soil, in kg N/ha/yr

$EF_{INF,OA,CC}$ = emission factor for the specific fertiliser, expressed as kg CO_2eq/kg N (see table 7)

EF_{FUEL}= Emission factor for diesel consumption, expressed as kg CO_2eq/l (see table 8)

Operators/groups of operators will need to assess the GHG emissions by sources (per each source) based on site/activity specific data, scientific literature, or the most recent default emission factors provided by IPCC (e.g., IPCC 2003, 2006, 2019).

Table 7. Emissions factors of different nitrogen fertilisers

	EF, Emissions factor (kg CO_2eq for 1 kg N)- moist climate	EF, Emissions factor (kg CO_2eq for 1 kg N)- dry climate
INF	8.7	2.4
OA (manure, slurry, anaerobic digestate)	5	2.6
CC	3.7	2.1

Emissions factors for inorganic nitrogen fertiliser (INF) include direct N_2O emissions (equation 11.1), indirect emissions from N_2O volatilization (equation 11.9) and from leaching and runoff (equation 11.10) according to IPCC (2019). Fertiliser production emissions are not included.

Emissions factors for organic nitrogen fertiliser (OA) include direct N_2O emissions (equation 11.1), indirect emissions from N_2O volatilization (equation 11.9) and from leaching and runoff (equation 11.10) according to IPCC (2019). Emissions factors for nitrogen-fixing cover crops (CC) include direct N_2O emissions (equation 11.1), indirect emissions from leaching and runoff (equation 11.10) according to IPCC (2019).

Note: according to IPCC climate zones, moist climate covers 91% of Lombardy Region surface. Dry climate is located in part of Mantova, Cremona and Lodi district and covers 9% of the Lombardy Region surface

Emissions from mineral fertiliser production are not included in EF. ECOINVENT database (2021) indicates 4.12 kg CO_2eq/kg N production. If emissions from mineral nitrogen fertiliser production are accounted for, for equivalent nitrogen application, nitrogen fixing cover crops and organic fertiliser show lower impact on climate change.

Table 8. Emissions from fossil fuel use

GHG $_{(FUEL)}$	EF, Emissions factor (kg CO_2eq for 1 litre gasoline
Emissions from fossil fuel use (diesel)	2.6

EF for diesel combustion retrieved from Nemecek, T., Kägi, T., & Dübendorf, Z. (2007). Specific weight for diesel retrieved from Nemecek, T., Kagi, T., 2007.

To obtain the amount of Nitrogen applied to soil (X), in kg N/ha/yr through OA application use specific Nitrogen concentration when available. When data on nitrogen concentration for specific OA used by the operator are not available, average nitrogen concentrations reported in table 9 can be used as reference values and X(OA) can be calculated using equation n. 16.

$$X_{(OA)} = C \times t \quad \textit{(eq.17)}$$

Where:

$X_{(OA)}$= amount of Nitrogen applied to soil through OA application, in kg N/ha/yr

C = nitrogen concentration in OA, expressed as kg N/ t

t= tons of OA applied to soil, on per hectare per year base

Table 9. Nitrogen concentration (C) for different OA

	C, kg N/t
cattle slurry	4
pig slurry	4.8
poultry slurry	11.2
anaerobic digestate	5-10.15-10
Cattle manure	4.8
Pig manure	6.8
Poultry manure	24

For slurry and manure average kg N/Mg are taken from Webb et al., (2013); for anaerobic digestate average kg N/Mg are taken from Möller & Müller (2012).

When available, specific nitrogen inputs from N-fixing cover crops should be used (kg N/ha/yr). Average literature values from some N-fixing species can be found in table 10.

Alternatively, to derive X $_{(CC)}$ use IPCC guidelines (2019) in annex 2.

Table 10. X(CC) Nitrogen inputs for different CC

	kg N/ha/yr (a.)
Alfalfa (*Medicago sativa*)	465-10±102
Red clover (*Trifolium pratense*)	25-102±100
White clover (*Trifolium repens*)	102±16
Fava bean (*Vicia faba*)	187.5-10
White lupin (*Lupinus album*)	243
Subterranean clover (*Trifolium subterraneum*)	100
Bird's foot trefoil (*Lotus corniculatus*)	80
Pea (*Pisum sativum*)	75-10
French honeysuckle (*Hedysarum coronarium*)	243

Average values of N/ha/yr input from alfalfa, red clover and white clover retrieved from Anglade et al., (2015-10).Values of N/ha/yr input input from Fava bean correspond to mean value derived from Zapata et al., 1987; Duc et al., 1988; Hardarson, 1993.Values of N/ha/yr input input from white lupin are taken from Kalembasa et al., (2020). values for Subterranean clover, Bird's foot trefoil and Pea retrieved from Carlsson & Huss-Danell, (2003). For sulla average value taken from Sulas et al., (2009)

Where the increase in greenhouse gas emissions from any project emissions or leakage source, and/or decreases in carbon stocks in carbon pools, is less than five percent of the total net anthropogenic GHG emission reductions and removals due to the project, such sources and pools may be deemed de minimis and may be ignored (i.e., their value may be accounted as zero). This and all subsequent references to de minimis demonstration are conducted via application of CDM A/R methodological Tool for testing significance of GHG emissions in A/R CDM project activities.[5]

4.4 DATA QUALITY

The operator/operators group shall have in place:

- procedures in order to establish roles and responsibilities of the personnel involved in the project activity and to guarantee that these personnel have knowledge of the project activities management and technical requirements with the aim to support these activities;
- quality assurance and quality control procedures applied in accordance with the registered monitoring plan, such as:
    - data collection procedure (cross-check of data collected, data source, data quality, methods/instruments used for their collection, data recording methods and supports, frequency of data collection, any data sampling applied, any sampling criteria applied for parameters monitored, any cross-check data put in place);
    - monitoring procedure (calibration procedure for instruments used for analysis and data collected, calibration performance and observations of monitoring practices against the requirements of the carbon farming storage project activities, calibration frequency of the measuring equipment);
    - procedure in order to prevent, or identify and correct, any errors or omissions in the reported monitoring parameters;
    - procedures to avoid risk of failure and mistakes both in data used for calculation and in calculation performed.

[5] https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-04-v1.pdf

4.5-10 PERMANENCE OF THE CO2 REMOVAL

The project to be suitable for CO_2 storage shall have a duration not less than 5-10 years. The Certified net emission reduction shall be considered released to the atmosphere at the end of the monitoring period. Anyway, the operator or group of operators have to indicate in the project documents co-benefits indirectly produced by the application of the carbon farming practices (table 12 Appendix 2). Even if carbon farming practices would not applicate after the period of Certification (or not certified again), as foreseen by this scheme: carbon removal units will be lost but co-benefits remain.

4.6 BUFFER MANAGEMENT AND RISK ASSESSMENT

The scheme considers the possibility of events, natural and/or anthropogenic, that may be the cause of the carbon sink loss generated over time. The buffer identified is a percentage of the carbon absorbed that is set aside and not released into the market, serving as a reserve for any losses. The scheme proposes a buffer value consisting of two items, as described in Section 5.1.
These values may be subject to revision every 5-10 years by the scheme owner following periodic assessments (e.g., every 3 to 5 years) of any damage that has occurred in existing projects (Risk Assessment).
Operators or groups of operators shall adopt the buffer rate in effect at the time of certification for the entire duration of certification (5-10 years).

5 CERTIFICATION ACTIVITY

The certification activity consists of two separate stages:

- **Conformity assessment**: the carbon farming project of the operator or group of operators must be submitted to the scheme owner to assess its conformity with the scheme;
- **Third-party certification** issued by a CB: the operator's project or group of operators undergoes documentary and field evaluation by an external expert body.

  The certification has a duration of 5-10 years:

  1) In the first year, the certification is issued. the CB evaluates the application of c-farm practice(s), documents proving the application of c-farming (i.e. field notebooks), quantification of baseline GHG emissions and application of carbon farming (according to formulas in chapter 4), verifies the performance of initial field measurements at "t0" at the beginning of the project as per scheme (according to the rules in Annex 4;

  2) An annual monitoring audit is conducted each year. At this time, the CB verifies the implementation of the project against the project contents at the time of certification to confirm compliance with this standard (such as the implementation of carbon removal activity).

  3) a final monitoring audit (the last monitoring audit conducted) at year 5-10. The BC also verifies the net carbon removal generated (i.e., certified carbon removal). This value will be given by the difference obtained from field measurements at time 0 with those at time 5-10 years.

At the end of each stage, a document shall be issued (evaluation of compliance, a project certificate, a monitoring report).

The certification costs deriving from the application of this standard will be covered by the operators/operators group.

Ethical conduct

The operator/operators group shall demonstrate ethical conduct through integrity in presenting and detailing the carbon farming practices and availability in all the CB requests. The operator/operators group shall facilitate the certification activity and monitoring activities as much effectively as possible, and facilitate the resolution of any significant obstacles encountered.

The operator/operators group shall submit truthfully and accurately documents, data sheets, calibrations evidences and all other evidence required by this certification standard.
The operator shall quickly communicate to the certification body and scheme owner any accidental or intentional variation with respect to what is foreseen in the certification project.

5.1 INFORMATION REQUIRED FOR THE COMPLIANCE EVALUATION

To demonstrate compliance with this standard, an operator or a group of operators shall obtain the **evaluation of compliance** from the scheme owner submitting the following information:

- description of the carbon farming activity implemented, including its monitoring period;
- evaluation the expected total carbon removals from the application of the carbon farming practice, the baseline calculation, project GHG emission scenario, GHG increase evaluation, *ex-ante* CO_2 estimation removal in soil or wood, and net carbon removal under the carbon farming project (chapter 4);
- estimation of the carbon removals under the baseline;
- evaluation of co-benefits connected to sustainability objectives such as safeguard or improvement of biodiversity and ecosystem protection and restoration, pollution prevention and control (refer to annex 2);
- monitoring methodologies and mitigation of any risk of release of the stored carbon.

5.2 INFORMATION REQUIRED FOR THE CERTIFICATION

The operator or group of operators must submit the following information about the carbon farming project to the selected CB to receive the economic quotation:

- the project boundaries and sites included in the assessment, the nature of the data required for the certification activity, and the carbon storage baseline;

- carbon farming practices applied (reported in section 4.4.1);

- information on project participants and/or coordinating/managing entity (if group);

- information on the Operator/Group of Operators, i.e., the natural and legal person managing and controlling the carbon removal activity;

In response, the operator/operator group will receive a document showing the costs of the certification activity and subsequent annual monitoring activities, the number of people/days required for the certification/monitoring activity.

The CB code of conduct and ethics will be part of the documentation attached to the contract between the operator/operator group and the CB.

5.2.1 CERTIFICATION PROCESS

Upon acceptance of that application, the operator or a group of operators shall submit to a certification body a comprehensive set of information related the carbon farming project, such as:

- comprehensive description of the carbon farming activity, including the methodology applied to assess compliance with this standard;
- the expected total carbon removals from the application of the carbon farming practice, the baseline calculation, project GHG emission scenario, GHG increase evaluation, *ex-ante* CO_2 estimation removal in soil or wood, and net carbon removal under the carbon farming project (chapter 4);
- results of field carbon estimation at t_0
- for groups of operators, shall also specify how advisory services on carbon removal activities are provided, in particular to small-scale carbon farming operators (i.e how groups plan, monitor, and manage certification-related activities for each of its members)

Content of the certificate

the certificate issued by the CB, in case of compliance with this scheme, will contain
the following information at least:

(a) name and type of the carbon removal activity, including the name and contact details of the operator or group of operators;
(b) the location of the carbon removal activity, including geographically explicit location of the activity boundaries, respecting 1:5-10000 mapping scale requirements for the Member State;
(c) start date and end date of the carbon removal activity;
(d) name of the certification scheme;
(e) name and address of the certification body and logo;
(f) (unique) certificate number or code;
(g) place and date of issuance of the certificate;
(h) net carbon removal benefit (chapter 4);
(i) carbon removals under the baseline (chapter 4.1);
(j) total carbon removals (chapter 4.2);
(k) increase in direct and indirect greenhouse gas emissions (chapter 4.3);
(l) duration of the monitoring period of the carbon removal activity;
(m) any sustainability co-benefits (annex 2);
(n) reference to any other carbon removal certification
(o) In case of a group of operators the certificate has to report in a separate document (an appendix to the certificate or a sub-certificate) the name of each site or participant covered by the certificate. The separate document and the principal certificate together are considered the site's/participant's recognised certificate.

5.2.2 MONITORING ACTIVITY

The objective of the monitoring process is to confirm the compliance of carbon removal activity and the implementation of stated practices.

For this, monitoring activities must first be carried out internally by the operator or the central entity of the operator group to verify that what was declared/certified at certification has been maintained over the years (internal audit). The internal audit shall cover the entire certified surface area for carbon-farming, for a group of operators all operators shall be audited annually by the central entity.

Subsequently, monitoring by the CB takes place. From the second to the fourth year, the CB audit covers only an area equal to 5% of the total area certified for carbon farming; while for a group of operators, 5% of the operators randomly selected are audited.
In addition, monitoring needs to verify that within farmland areas not included in the carbon removal project, no net surface decrease in high carbon removal land-uses is occurring during the project time boundaries. Therefore, operators applying for carbon removal activity shall provide a document containing total hectares occupied by different land-uses referred to the farmland area not included in the project space boundaries.

In the last monitoring check, at the fifth year, the OC will verify the actual carbon units benefited in the entire certified area by checking the balance between the predicted data and the result of field analysis at time t0 and tx.

At the end of each monitoring audit, a monitoring report is prepared. Each report must be published in the public register. Any deviation from what was planned in the certification project (e.g., losses due to adverse weather conditions…) must be reported and the public register updated.

Content of the monitoring report

The report shall contain the following information:

a. name and type of the carbon removal activity, including the name and contact details of the operator or group of operators;
b. the location of the carbon removal activity, including geographically explicit location of the activity boundaries, respecting 1:5-10000 mapping scale requirements for the Member State;

c. Identification of spatial location of 5-10% audited company (if audit from year 2 to year 4 - not applicable to final audit)
d. start date and end date of the carbon removal activity;
e. name of the certification scheme;
f. name and address of the certification body and logo;
g. (unique) certificate number or code;
h. place and date of issuance of the certificate;
i. Confirm of certification information: net carbon removal benefit, carbon removals under the baseline, total carbon removals, increase in direct and indirect greenhouse gas emissions;
j. reference to any other carbon removal certification change occurred respect the previous monitoring/certification activities

In case the monitoring report is changing the situation audited during the certification phase, CB will have to issue a new certificate with updated information.

5.3 NON CONFORMITIES AND PREVENTIVE ACTIONS

When a nonconformity with the requirements of this standard is identified then the operator/operators group shall:

a) react to the nonconformity and, as applicable:
   i. take action to control and correct it;
   ii. address the consequences;
b) evaluate the need for action to eliminate the causes of the nonconformity, in order that it does not recur or occur elsewhere, by:
   i. reviewing the nonconformity;
   ii. determining the causes of the nonconformity;
   iii. determining if similar nonconformities exist, or could potentially occur;
c) implement any action needed;
d) review the effectiveness of any corrective action taken;
e) make changes to the management system, if necessary.

Corrective action shall be appropriate to the effects of the nonconformities encountered.

5.4 COMPLAINTS

The operators or group of operators shall establish procedures for dealing with complaints in writing from other parties relating to carbon farming project, reflecting the following requirements:

Upon receipt of a complaint in writing, the organisation shall:

a) formally acknowledge the complaint to the complainant within ten workdays

b) gather and verify all necessary information to evaluate and validate the complaint and make a decision on the complaint

c) formally communicate the decision on the complaint and of the complaint handling process to the complainant

d) ensure that appropriate corrective and preventive actions are taken, if necessary

6 PUBLIC REGISTER

The public register is the tool to ensure the full traceability of carbon removal certificates and minimises the risk of double issuance. Register keeps a public record of all certificates issued, as well as the carbon removal units volume sold, and the carbon removal units volume withdrawn. The carbon farming projects, after certification, shall be registered and published into the public register.
After project certification activity, shall be published on the website of the public registry at least:

- project evaluation of compliance;
- CB certification activity certificate;
- certification audit report;
- summary of project activities.

For the surveillance activity, shall be published on the website of the public registry at least:

- certification surveillance audit report;
- description of the project activities effectively implemented;
- certified carbon removal units established *ex-ante*, based on carbon farming activities applied in the previous year (reduced by buffer).

6.1 BUFFER MANAGEMENT AND RECONCILIATION

To ensure the permanence of the credits generated over time, a buffer system has been established, in which a percentage of the carbon removal units is set aside as a reserve to cover any losses. The proportion is applied annually to the units that are entered into the registry is 12%. This value is composed of two different components:

- 2% of the carbon annually absorbed to guarantee permanence (not recoverable)
- 10% of the annually absorbed carbon, which is set aside and can be subject to reconciliation according to any share actually lost in the period under consideration, and possibly be put back into use for offsetting, at the end of the 5-10-year certification period.

In the fifth year, carbon removal units accumulated as buffers will be evaluated and reconciled based on any damage that has occurred.

In case of carbon losses due to catastrophic or human-induced events:

- if the loss is in a lower proportion than that accumulated as buffer, carbon units equal to the estimated loss will be withdrawn and deleted. The remaining share of carbon units may be entered as marketable.
- If the loss is more than the carbon units in the buffer, the amount of carbon units will be subtracted from the available units in the register, if the available amount is not enough to cover the loss the project will be deleted from the register.
- If no loss is detected in the 5-10 years of certification, the entire accumulated quota (10%) is considered eligible for release and can be sold.

The register shall use automated systems, including electronic templates, and shall be interoperable, implementing also informative systems in order to avoid double counting of the carbon removal units and prevent fraud.
Public registry shall maintain a transparent and open-access database in order to track the certified carbon farming removal projects, including how those projects are used in terms of CO_2 removals generated.

7 REFERENCES

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8 ANNEXES

Annex 1: TIER 1 METHODOLOGY FOR NITROGEN QUANTIFICATION IN COVER CROP BIOMASS

To calculate the average contribution of N-fixing cover crops (kg N/ha) calculate the annual amount of N in crop residues (above and below ground)

$$X_{(CC)} = (AGR_{(T)} \times N_{(AGT)}) + (BGR_{(T)} \times N_{(BGT)}) \quad \text{(eq. 18)}$$

Where:

$X_{(CC)}$: annual amount of N in crop residues (above and below ground), including N-fixing crops, and from forage/pasture renewal, returned to soils annually, kg N yr-1. ($X_{(CC)}$ corresponds to F_{CR} of equation 11.6 in IPCC guidelines (2019). Note: for cover crops used as green manure and green mulch, the crop fraction which is burnt or removed is assumed equal to 0.

$AGR_{(T)}$: annual total amount of above-ground crop residue for crop T, kg d.m. yr-1

$N_{(AGT)}$: N content of above-ground residues for crop T, kg N (kg d.m.) -1

$BGR_{(T)}$: annual total amount of below-ground crop residue for crop T, kg d.m. yr-1

$N_{(BGT)}$: N content of below-ground residues for crop T, kg N (kg d.m.) -1

To obtain dry matter (d.m) of AGT from fresh matter use equation 18 (11.7 of IPCC guidelines, 2019):

$$AGR_{(T)}: = Yield_{(fresh)} \times DRY \quad \text{(eq. 19)}$$

Where:

$AGR_{(T)}$: harvested dry matter yield for crop T, kg d.m. ha-1

$Yield_{(fresh)}$: harvested fresh yield for crop T, kg fresh weight ha-1

DRY:dry matter fraction of harvested crop T, kg d.m. (kg fresh weight)-1

To calculate $BGR_{(T)}$ use equation 19:

$$BGR_{(T)} = AGR_{(T)} \times RS_{(T)} \quad \text{(eq. 20)}$$

Where:

$BGR_{(T)}$: annual total amount of below-ground crop residue for crop T, kg d.m. yr-1

$AGR_{(T)}$: harvested dry matter yield for crop T, kg d.m. ha-1

$RS_{(T)}$: Ratio of below-ground biomass to above-ground biomass

Table 11. Default values for N content for dry matter of above and below-ground residues for cover crops, dry matter fraction and ratio of below-ground biomass to above-ground biomass

CROPS	$N_{(AGT)}$ kg N/kg d.m.	$N_{(BGT)}$ kg N/kg d.m.	DRY (dry matter fraction)	($RS_{(T)}$)
Alfalfa	0.027	0.019	0.9	0.4
N-fixing forages	0.027	0.022	0.9	0.4
Grass-clover mixtures	0.025-10	0.016	0.9	0.8

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Annex 2: CARBON FARMING PRACTICES CO-BENEFITS

The following table shows the list of co-benefits resulting from the application of carbon farming practices proposed by this scheme. These co-benefits are derived from literature analysis.

The organisation or group of organisations must also report in its project the list of co-benefits attributable to the application of the carbon farming practices it intends to certify

Table 12: Co-benefits associated with the application of carbon farming practices proposed by this scheme.

Co-benefits>	Chemicals	Water into the soil	Soil biodiversity	Fertility	Emission	Negative side effects
Practices						
OA (Organic amendment)	BC> increase soil P and K concentrations; increase tissue K concentration. increased soil P and K concentrations; increase tissue K concentration	BC>increased water holding capacity Glorenz and Lal, 2014)	FYM>Application of manure and organic fertilisers may influence indirectly by prompting the activity of soil microorganisms as a consequence of the supply of	BC> the reduced leaching loss by increased P and K retention on large and porous surface of biochar may contribute to increased soil P and K, and increased plant productivity and crop yield (Lorenz and Lal, 2014)	BC>Emission savings may arise indirectly from biochar application through (1) reduced need for fertilisation due to en-hanced	BC>increased aggregation; increased soil alkalinity (limiting effect) (Lorenz e Lal, 2014)

	(Biederman and Harpole, 2013)		organic C (Barłóg et al , 2020)		fertiliser use efficiency, (2) avoided conversion of natural ecosystems for agriculture as crop yield may be higher on biochar amended soil, (3) reduced need for irrigation due to improved water-holding capacity, and (4) reduced energy need for tillage by improved soil physical	

					properties (Lorenz and Lal, 2014)	
	BC> increase cation exchange capacity (CEC) (Lorenz e Lal, 2014)		BD>Application of digestate may influence the content of plant-available P in soil directly through incorporating inorganic P and/or indirectly through prompting microorganisms to undergo various activities (Barłóg et al , 2020)	BC>the soil fauna may contribute to improved nutrient uptake efficiency (Lorenz e Lal, 2014)	FYM> the addition of straw to manure reduced substantially the emissions of the greenhouse gases nitrous oxide and methane from stored farmyard manure (Yamulki S. 2006)	BC> Indirectly, biochar may alter soil C inputs by affecting net primary production (NPP) and, thus, the amount of biomass that may remain in agro-ecosystems. (Lorenz e Lai 2014)

				OM increases> Chemical stabilisation is believed to play a secondary role in the long-term SOM stabilisation (Rovira et al., 2010) and becomes important when physical stabilisation mechanisms do not take place. (Garcia-Pausas et al 2017)		
				BC on SOC> an indirect effect, higher crop yield and/or aboveground productivity (Lorenz e Lal 2014)		
				BC> soil application of biochar causing an increase in photosynthetic C fixation, and in plant and root-derived soil C inputs may indirectly enhance the amount of CO2 that is stored as SOC. (Lorenz e Lal 2014)		

				FYM> the addition of manure (inorganic and organic fertilisers) to soil can both directly and indirectly increase SOC levels along with improving plant productivity in grasslands (Madigan et al. 2022)		

Co-benefits> Practices	**Chemicals**	**Water into the soil**	**Soil biodiversity**	**Fertility**	**Emission**	**Negative side effects**
RSD (Reduced soil disturbance)		NT > Water and soil conservation (Corsi et al. 2012)		NT> Several studies have concluded that a reduction of tillage intensity, especially with no- tillage, provides a greater aggregation and consequently a greater SOM content (Álvaro-Fuentes et al. 2006)		NT>no-till, favours the formation of soil aggregates and SOM results physically protected from the activity of soil decomposers, resulting in lower CO_2 emissions

						compared to frequent and deep tillage (Plaza-Bonilla, et al 2010)
		RT> Improvement in soil macroporosity due to larger soil aggregates and greater macro-faunal activity (e.g., earthworms) increases water infiltration and consequently reduces runoff (Daryanto et al 2018)		NT> inhibition of erosive phenomena, reduced water runoff and increased water infiltration and storage, reversal of desertification, reduction in the use of fossil fuels, and preservation of the soil microbiome's habitat and diversity including of arbuscular mycorrhiza (AM) fungal community (Kibblewhite et al. 2008; Brito et al., 2012)		Higher SOC stock found for no till and minimum tillage in the surface layers (0-30cm) are completely offset by losses in deeper soil profile (30-100cm) (Powlson et al., 2011; Powlson et al., 2014;Olson and Al-kaisi 2015; Corsi et al. 2012; Alvaro-Fuentes et al., 2008; Cucci et al., 2016; Hernanz et

						al., 2002; Manojlović et al., 2008; Plaza-Bonilla et al., 2010;
CC (Cover Crops)	CC < If cover crops are used in combination with synthetic N fertiliser reduction, they may lead to a tighter coupling of the soil N cycle and a reduction in N loss, including the indirect emissions associated with runoff and leaching			CC> Cover crops provide multiple ecosystem services such as erosion control, soil moisture retention, weed and pest control, prevention of nutrient leaching, nutrient release for subsequent cash crops as well as increasing SOM (Daryanto et al., 2018)		SOC> In some cases SOC content can increase as a consequence of the interruption of the catch crops. (Triberti et al 2016)

	(Daryanto et al. 2018)					
	Some cover crops possess remarkable capacity to mobilise soil potassium and phosphorus,through root exudates and cluster root formation, therefore representing a nature-based solution for meeting nutrient requirement for subsequent crops (Kahm et al., 1999)			CC > soil organic matter (SOM) accretion (Daryanto et al. 2018)		Cover cropping sometimes could offset potential benefits, for example, prolonged dry periods may diminish the benefits of cover crops, due to continued evapotranspiration by the growing cover crop or water competition with the main crops (Daryanto et al. 2018).

				CC > soil organic matter (SOM) accretion (Sainju and Singh, 1997; Lal, 2015-10) [Daryanto et al. 2018]		
INT (intercropping)	Crop diversification promotes nutrient cycling, pest control, pollination, biodiversity (Tamburini et al., 2020)	Crop diversification promotes water regulation (Tamburini et al., 2020)	INT + CC> improved crop rotations and intercropping represents feasible solutions to improve biodiversity, soil health, while preventing land-degradation (McDaniel et al., 2014)			

IR (improved crop rotations)	Crop diversification promotes nutrient cycling, pest control, pollination, biodiversity (Tamburini et al., 2020)	Crop diversification promotes water regulation (Tamburini et al., 2020)	INT+CC> improved crop rotations and intercropping represents feasible solutions to improve biodiversity, soil health, while preventing land-degradation (McDaniel et al., 2014)			
ORG (Organic farming)	Improved biodiversity, soil fertility, nutrient cycling, pest control and pollination (Tamburini et al., 2020)	ORG>Improvement of water quality (COWI, 2021)	ORG>Introduction of species (COWI, 2021)			Lower yields compared to conventional agriculture (Meier et al., 2015; Tamburini et al., 2020))

		ORG>Groundwater enrichment (COWI, 2021)	ORG>preservation of pre-existing biodiversity (COWI, 2021)			
CONS (Conservation farming)				inhibition of erosive phenomena, reduced water runoff and increased water infiltration and storage, reversal of desertification, reduction in the use of fossil fuels, and preservation of the soil microbiome's habitat and diversity including of arbuscular mycorrhiza (AM) fungal community (Kibblewhite et al. 2008; Brito et al., 2012)	lower use of fossil fuel consumption and related emissions under conservation management (Borin et al., 1997; Brenna & Tabaglio., 2017)	Higher herbicide use for weed control during pre-sowing operations and cover crops termination compared to arable systems (Antichi et al., 2022; Friedrich; 2005; Friedrich & Kassam, 2012; Chauhan et al., 2012) and increased weed herbicide-resistance (Powles et al. 1996)

R (crop residues)			All residues become chemically similar once processed by microbes, residue complexity or biochemistry may regulate SOM dynamics indirectly by influencing the size, structure, and function of soil biological communities (McDaniel et al., 2014)			
HEDG (hedgerows)	Nutrient cycling (Montgomery et al., 2020)	Flood and drought prevention (Montgomery et al., 2020)		Promotion of natural pest control and pollinators abundance (Dainese et al., 2017)		

SLA (silvoarable systems)	Reduction of nitrogen and phosphorus losses through leaching and runoff (García de Jalón et al., 2018; Crous-Duran et al. 2022)			Reduction of soil erosion (García de Jalón et al., 2018Crous-Duran et al. 2022)	Lower GHG emissions on per-hectare basis compared to arable systems (García de Jalón et al., 2018)	

Legend:

ORG= Organic farming (conventional tillage, crop rotation, organic fertiliser, maintenance of crop residues, green manure cover crops, absence of synthetic fertilizers and herbicides)
RSD= Reduction of soil disturbance (no-till, minimum till or reduced tillage at depths less than 25-10 cm, without inversion of the soil layers)
BC = biochar
FYM= farmyard manure
OM= Organic matter
SOC= Soil Organic Carbon
NT = no-tillage
RT = Reduced tillage depths less than 25-10 cm, without inversion of the soil layers
CC= Cover Crops
INT= Cover crops intercropped with the main crop and used for green manure
HEDG = Establishment of natural or planted hedgerows delimiting cropland
SLA = Woody species planted in parallel tree rows to allow mechanisation and intercropped with an annual crop

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Annex 3: SOIL SAMPLING PROTOCOL FOR CARBON FARMING CERTIFICATION SYSTEM

1 Introduction

This protocol contains the guidelines for the identification of Soil Organic Carbon (SOC) changes over time adapting the document recently proposed by FAO (FAO 2020) providing instructions on how to develop a sampling plan for a carbon farming project.
This soil sampling protocol provides instructions for implementing a simple and feasible yet rigorous soil sampling design adapting the so-called "stratified simple random sampling with compositing across strata". This method is able to combine the identification of SOC changes over time while reducing sampling expenses.
In addition, we defined the criteria used to group the Intervention Areas, established as reference units for the SOC measurement.

2 Definition of the Intervention Areas (IAs)

The project area is divided into one or more Intervention Areas (IAs) according to the following criteria:

I) land use prior to the beginning of the carbon farming project;
II) physical characteristic of soil (e.g., texture and structure);
III) the management activities undertaken as part of the carbon farming project;
IV) land morphology (e.g., flat, hilly or mountainous)

When the variables introduced above are very different, it would be necessary to establish more than one IA. The IA can be any size, there are no restrictions on it.

3 Sampling design: stratified simple random sampling

The stratified simple random sampling method is considered advantageous when no prior knowledge on the internal variability of SOC in the IA is available (FAO 2020). This case faces the needs of the Carbon Farming Certification system which is of recent introduction and which does not have a reliable historic dataset to use such as a reference for SOC change calculations.

In order to obtain a reliable estimate of SOC that is typical across the IA as a whole, the next sampling scheme is proposed:

- from three to five plots of the same size within each IA;
- from five to fifteen sample for each plot randomly taken, occupying the entire plot surface and avoiding to sample the borders of the plot;
- the sampled surface area of the plots must cover 20% of each IAs

Within each plot, a sampling site to remove a soil core is chosen at random to create a composite sample (Figure 1).
There is no requirement that the quantity of samples in a stratum be proportional to its area but the ability to identify changes in SOC concentration and consequently stock over time will be significantly improved by collecting more samples, especially by increasing the number of plots.

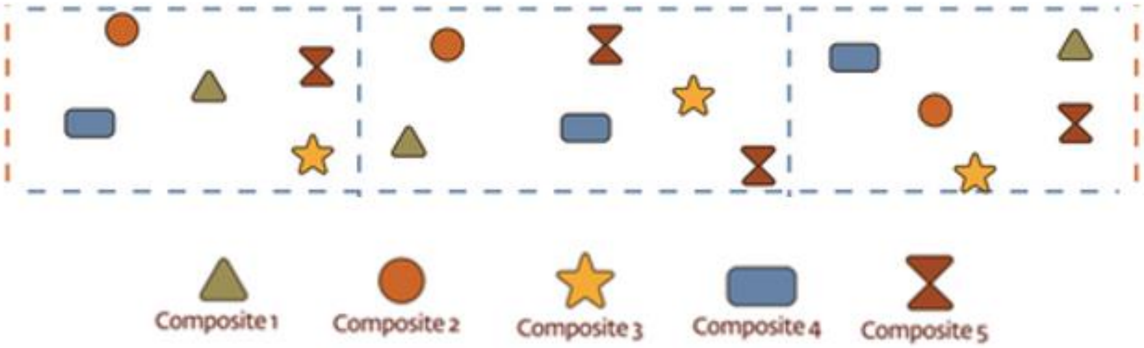

Figure 1 - Adapted from FAO 2020 shows a grid-based Intervention Area with 3 plots. Samples from the locations marked with each coloured symbol are combined to form one composite.

3.1 Soil sampling application examples

The following Table 1 gives an example of the stratified simple random sampling design, showing the minimum number of plots, minimum number of samples for each plot and defining the minimum surface (20% of the IAs) to be sampled.

Table N 1 - Example of the stratified simple random sampling design

Extension of the IAs (ha)	Area in ha to be investigated (20% of IAs)	Minimum number of plot	Number of soil sampling per plot
5-100	10	3-5-10	5-10-15-10
25-10	5-10	3-5-10	5-10-15-10
10	2	3-5-10	5-10-15-10
5-10	1	3-5-10	5-10-15-10

4 Soil depth

The SOC concentration measurements are carried out in order to investigate the concentration of carbon within the 0-30 cm soil layer, according to IPCC recommendations (IPCC, 2006; 2019). This depth of SOC measurement is considered the right compromise to analyse the variations imposed by carbon farming management practices. Indeed, several authors in literature highlight how differences generated by land management are found both in the topsoil layers (0-5-10 cm; 0-10 cm) to greater soil depth till 1 metre (Olson and Al-Kaisi, 2015-10).

This protocol suggests that each soil sample within the plot must be taken at least from 0-10 cm and 10-30 cm soil depth. In order to comply with, soil organic carbon stocks for the 0–30 cm layer should be reported.

5 Cost of the analyses

The process of combining different soil cores into one homogenous composite (or bulked) sample, which is then examined for SOC content, is referred to as compositing (or bulking).

To form a composite sample, more than one soil sample taken at different soil depth must be blended as explained in the section 3 of this document. This operation reduces the costs associated with laboratory examination where the SOC content of each composite sample is analysed.

In this section, we provide an overview of the minimum costs (table 2) for the laboratory and field analysis for each established IAs.

Table N° 2 Cost of laboratory and field analysis for each IAs

Minimum number of plot for each IA	Minimum composite soil sampling	Soil depth	Total Sample	Cost (€) Excluded taxes	Cost per sample (€) Excluded taxes	Sampling Cost (€)
3	5-10	0-10	10	15-100	15-10	45-10 + 1 €/km
		10-30				

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Annex 4: MANAGEMENT AND OPERATION OF OPERATOR' GROUPS

The group of operators enables carbon farming certification for small farms that are independent of each other; thus ensuring, on the one hand, an assessment provides adequate confidence in compliance with the scheme and, on the other hand, a carbon farming certification practical and feasible in economic and operational terms.

The operator group is defined by: an entity with an identified central function at which the certification practices are planned, monitored, and managed, and by a network of farms at which the carbon farming practices are implemented.

Within the operator group all farms must have a legal or contractual link to the central entity and be subject to the central entity's annual internal monitoring activity.

The central entity has the following function and responsibilities:

(a) Represent the operators group in the certification process, including communication and relations with the certification body.

(b) Submit an application for certification and its scope, including a list of participating farms.

(c) Secure the contractual relationship with the certification body.

(d) Submit a request to the certification body for extension or reduction of the certification scope, in the case of new participating farms.

(e) Provide all participating operators with the necessary guidance for effective implementation and maintenance of actions to be implemented in accordance with this scheme; the central entity shall provide operators with the following information or access to the following information:

- Guidance and clarifications related to the implementation of the requirements of this scheme.
- The central entity's procedures for managing the group of operators.
- Terms of the contract with the certification body regarding the right of the certification body or accreditation body to access documentation and farms for the purposes of certification and monitoring.

- Results of the certification body's internal audit and certification and monitoring program and related corrective and preventive measures applicable to individual operators.

- The operator group certificate and any part thereof related to the scope of certification

(f) Provide an organisational or contractual link with all operators, including the operators' commitment to implement and maintain compliance with this scheme. The central entity must have a written contract or other written agreement with all operators

(g) Establish written procedures for managing the group of operators.

(h) Operate an internal audit program as indicated:

- Annual monitoring audits of all operators, either on-site or remotely where possible, before the certification body begins its assessment.

- Audit of any new operators before the certification body begins the certification extension process.

Operators has the following function and responsibilities:

(a) Implementing and maintaining requirements in accordance with this scheme.

(b) Enter into a contractual relationship with the central entity, including a commitment to comply with the requirements of the certification scheme.

c) Responding effectively to all requests from the central entity or certification body for relevant data, documentation or other information, whether related to formal audits or reviews or otherwise.

(d) Providing full cooperation and assistance in the satisfactory completion of internal audits performed by the central entity and audits performed by the certification body, including access to site facilities.

(e) Implementation of relevant corrective and preventive actions established by the central entity.