LIFE Project Number

LIFE18 CCM/LV/001158

Mid-term / Final Report

Covering the project activities from 01/08/2019[1] to 31/08/2024

Reporting Date[2]

30/11/2024

LIFE PROJECT NAME or Acronym

LIFE OrgBalt

Data Project

Project location:	Latvia, Lithuania, Estonia, Finland, Germany
Project start date:	01/08/2019
Project end date:	31/08/2023 **Extension date:** 31/08/2024
Total budget:	€ 3 360 948
EU contribution:	€ 1 844 004
(%) of eligible costs:	55

Data Beneficiary

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[1] Project start date

[2] Include the reporting date as foreseen in part C2 of Annex II of the Grant Agreement

This table comprises an essential part of the report and should be filled in before submission

Please note that the evaluation of your report may only commence if the package complies with all the elements in this receivability check. The evaluation will be stopped if any obligatory elements are missing.

Package completeness and correctness check	
Obligatory elements	**ü or N/A**
Technical report	
The correct latest template for the type of project (e.g. traditional) has been followed and all sections have been filled in, in English *In electronic version only*	x
Index of deliverables with short description annexed, in English *In electronic version only*	x
Mid-term report: Deliverables due in the reporting period (from project start) annexed Final report: Deliverables not already submitted with the MTR annexed including the Layman's report and after-LIFE plan Deliverables in language(s) other than English include a summary in English *In electronic version only*	x
Financial report	
The reporting period in the financial report (consolidated financial statement **and** financial statement of each Individual Beneficiary) is the same as in the technical report with the exception of any terminated beneficiary for which the end period should be the date of the termination.	x
Consolidated Financial Statement with all 5 forms duly filled in and signed and dated *Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets + full Excel file)*	x
Financial Statement(s) of the Coordinating Beneficiary, of each Associated Beneficiary and of each affiliate (if involved), with all forms duly filled in (signed and dated). The Financial Statement(s) of Beneficiaries with affiliate(s) include the total cost of each affiliate in 1 line per cost category. *In electronic version (pdfs of signed sheets + full Excel files) + in the case of the Final report the overall summary forms of each beneficiary electronically Q-signed or if paper submission, signed and dated originals**	x
Amounts, names and other data (e.g. bank account) are correct and consistent with the Grant Agreement / across the different forms (e.g. figures from the individual statements are the same as those reported in the consolidated statement)	x
Mid-term report (for all projects except IPs): the threshold for the second pre-financing payment has been reached	N/A
Beneficiary's certificate for Durable Goods included (if required, i.e. beneficiaries claiming 100% cost for durable goods) *Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets)*	N/A
Certificate on financial statements (if required, i.e. for beneficiaries with EU contribution ≥750,000 € in the budget) *Electronically Q-signed or if paper submission signed original and in electronic version (pdf)*	N/A
Other checks	
Additional information / clarifications and supporting documents requested in previous letters from the Agency (unless already submitted or not yet due) *In electronic version only*	x
This table, page 2 of the Mid-term / Final report, is completed - each tick box is filled in *In electronic version only*	x

**signature by a legal or statutory representative of the beneficiary / affiliate concerned*

1. Table of contents

2. List of keywords and abbreviations

Acronym	Definition
AB	Associated Beneficiary
BaltCoasts	Association Baltic Coasts
CAP	Common Agriculture Policy
CAP SP	Common Agriculture Policy Strategic Plan
CB	Coordinating Beneficiary
CCF	Continuous cover forestry
CCM	Climate change mitigation
CINEA	European Climate, Infrastructure and Environment Executive Agency
EF	Emission factor
GA	Grant Agreement
GHG	greenhouse gas emissions
IPCC	Intergovernmental Panel on Climate Change
KPI	Key Project-level Indicator
LAMMC	Lithuanian Research Centre for Agriculture and Forestry
LBTU	Latvian University of Life Sciences and Technologies
Luke	Natural Resources Institute Finland
LULUCF	Land Use, Land Use Change and Forestry
MA	Ministry of Agriculture of the Republic of Latvia
MSF	Michael Succow Foundation
MTR	Mid-Term Report
NW	National workshop
NECP	National Energy and Climate Plan
NGO	non-governmental organization
NGGI	National Greenhouse Gas Inventory
PPC	Public Private Cooperation
Project	Project “Demonstration of climate change mitigation potential of nutrients-rich organic soils in Baltic States and Finland” (LIFE OrgBalt, LIFE18 CCM/LV/001158)
RDP	Rural Development Plan
SILAVA	Latvian State Forest Research Institute “Silava”
SM	Simulation model
TCM	Temperate Cool and Moist
TWG	Thematic Work Groups
UT	University of Tartu

3. Executive Summary

Managed nutrient-rich organic soils are among the largest contributors to greenhouse gas (GHG) emissions in Europe's Boreal and Temperate Cool and Moist (TCM) climate zones, releasing disproportionately high emissions relative to their area. Project "Demonstration of climate change mitigation potential of nutrients-rich organic soils in Baltic States and Finland" (LIFE OrgBalt, LIFE18 CCM/LV/001158) (Project) addresses this problem by looking for balanced solutions.

The Project aims to implement climate change mitigation (CCM) measures in nutrient-rich organic soils in the TCM climate region, contributing to the achievement of EU and national climate policy targets by reducing GHG emissions from cropland, grassland, and forest land on nutrient-rich organic soils.

The main **Project objectives** are:

- to improve the GHG calculation methods and activity data for nutrient-rich organic soils under conventional management conditions;
- to identify and demonstrate sustainable and cost-effective CCM measures;
- to provide tools and guidance for the elaboration, implementation and verification of efficiency of CCM policies.

The key Project deliverables and outputs:

- filled knowledge gaps on GHG emissions from nutrient-rich drained organic soils by elaboration of regional GHG emission factors (EFs) and activity data in cropland, grassland and forest land based on regional in situ data measurements data (GHG and environmental parameters in demo and reference sites);
- improved tools and methods for evaluating the impact of different climate change scenarios on GHG emissions from nutrient-rich organic soils depending on management conditions and land use. Catalogue of CCM measures for nutrient-rich organic soils;
- CCM measures implemented in Project demonstration territories to assess and demonstrate CCM potential of different nutrient-rich organic soil management practices. Dissemination facilities (notice boards) established in demo sites;
- improved Land Use, Land-Use Change, and Forestry (LULUCF) sector-related policy planning documents in the Project partner countries by integrating the knowledge gained from the Project. Public and private partnerships in implementing the CCM measures demonstrated by the created single field level operating Public Private Cooperation (PPC) model. Socio-economic evaluation (including a report on stakeholder analysis) of proposed CCM measures performed to allow better-informed planning of farm and countries` level policy activities;
- spatial planning tool (Simulation tool) for decision support on implementation of CCM measures in nutrient-rich organic soils at country and regional level developed. Practical knowledge transfer from science to farmers, foresters and other identified stakeholders ensured by set of training sessions organized in all partner countries;
- scientific publications (8) in peer-reviewed journals about Project data analysis and results to support Project knowledge acknowledgement, distribution in the scientific community and general reliability;
- enhanced networking among regional sectorial experts in GHG calculation and policy making and establishing Joint Baltic and Finland Climate Change Mitigation Action Programme for science support related to nutrient-rich organic soil management. Stakeholders` awareness raised – 500 individuals reached through targeted training sessions and others.

The planned Project activities are in line with the actual progress made. All Project activities are finished by the end of the Project on 31/08/2024. The Project implementation was extended by one year (Letter Amendment Nr.1 to Grant Agreement LIFE18 CCM/LV/001158 – LIFE OrgBalt (Letter Amendment Nr.1), and the Project ran from 01/08/2019 to 31/08/2024. The request to extend the Project implementation was based on the fact that the beginning of

GHG and environmental data measurement started about one year later (in January 2021) than initially anticipated (Action C1 (reference sites), Action C3 (demo sites)) because of the various impacts of the COVID-19 outbreak situation among which the severe delays with procurement procedures and deliveries (measurement equipment and materials) must be emphasized. The need to extend the Project implementation was explained in detail during the European Climate, Infrastructure and Environment Executive Agency (CINEA) visit to the LIFE OrgBalt project on 14 – 15 June 2022 and within the Mid-term report (MTR) (submitted on 31st of August 2021).

Since the majority of the Project objectives and results are closely tight to the regional GHG and environmental data measurements in the Project partner countries, the delay in the beginning of the measurements triggered the postponement of the related deliverables in linked actions (C2, C4, C5, D1, D2, D3, E1, E2, E3, F1). The Coordinating Beneficiary (CB) explained it, and the deadlines of the deliverable products of the Project were modified as set out in the forms attached to the Letter Amendment Nr.1. The extension of the Project implementation has not affected reach of the Project objectives or expected results, the only impact it caused was technical extension of the particular activities` deadlines by one year.

To summarize the achievements, deviations, important problems and difficulties:

1) among the main **achievements**, the development of the unique, harmonized GHG flux and environmental data protocols and the first regional Baltic/Finnish GHG emission factors for managed nutrient-rich organic soils must be recognized as well as the development of two instead of one CCM measures impact modelling tools. The PPC tool is available to analyze the climate change and economic impacts at the land parcel level, but the Simulation tool allows an understanding of country-level impacts;

2) no severe **deviations** affecting the expected Project results were encountered apart from the Project extension. The minor, resolved deviations are explained in detail in the technical part of the report on action-by-action bases;

3) as an **important problem or difficulty** encountered, the closed number of CCM measures analyzed within the Project must be mentioned. Measures that aim to permanently increase groundwater level (e.g., rewetting and renaturalization) were not included in the Project proposal and thus were not analysed using the developed tools and models. This situation triggered concerns that since the developed tools exclude these CCM measures, the modelled picture is not sufficiently inclusive. To mitigate the possible misunderstandings, the following disclaimer text was developed and agreed upon by all Project partners:

"*LIFE OrgBalt compiled the first regional Baltic/Finnish GHG emission factors for managed nutrient-rich organic soils (current and former peatlands), which have been made available for the customary scientific review and further verification for national GHG inventories in the hemiboreal region in Finland and the Baltic countries. While the project analysed selected CCM measures for drained organic soils in agriculture and forestry and developed spatial models and tools, it also identified remaining knowledge gaps. To bridge the remaining limitations and fill the gaps, it is essential to continue GHG measurements and model development, as well to broaden and complete the scope of the evaluated CCM measures in the after-LIFE-project period, notably by including rewetting and restoration of peatlands that are currently considered to be among the most recommended CCM measures on drained peatlands in the EU. In addition, the developed Simulation and PPC models still include limited macroeconomic considerations and lack assessment of all environmental impacts. For all these reasons, these models should be used carefully in CCM strategy development for identification of gaps in climate neutrality transition policy and funding frameworks and need further optimization for broader applicability as decision-making tools."*

The disclaimer text is placed at the beginning of all the deliverables and Project website in well visible way.

4. Introduction

The Project addresses managed nutrient-rich organic soils, which are one of the largest key sources of GHG emissions in boreal and TCM climate regions in Europe and worldwide despite not being widespread by area, GHG. Although important, the problem in 2019 (the start of the Project) was barely recognized in the EU's climate policy and sectoral policies at the local level –agriculture and forestry. Partly, this was because of the lack of scientifically sound information about: 1) the actual distribution of this soil type – regionally as well as at the country level; 2) country-specific GHG emission factors and activity data for GHG calculations and projections; 3) the climate-friendly and socio-economically sound management practices; 4) socio-economic impacts of the possible changes in existent management; 5) general awareness of the problem's existence. The Project was created to solve most of the problems mentioned and to do it at the regional level. Furthermore, the EU framework for achieving climate neutrality by 2050 and respective countries` specific recommendations concerning the EU` Common Agriculture Policy (CAP) recognize organic soil management as a problem to be dealt with in the near future. Thus, the Project results and outcomes are relevant for inclusion in national policy planning documents for agriculture and forestry sectors.

There are several interlinked technical and methodological solutions demonstrated/verified by the Project:

1) 17 CCM demonstration sites (demonstration "Introduction of legumes in conventional farm crop rotation" is located in two sites – LVC304 (a) in Lazdiņi and LVC304 (b) in Slampe) are established in agriculture and forest land to provide practical in-site demonstrations and explanations of CCM management practices by ensuring a technical solution for knowledge transfer and exchange and giving examples of possible solutions in organic soil management. The demonstration sites are supported by reference sites established in areas with stabilized ecosystem parameters to allow the elaboration of regional GHG EFs and evaluation of the long-term impact of the CCM measures;

2) prior to the Project, scientifically based GHG calculation methods (EFs) and activity data were available mainly for organic soils in boreal climate region while the Project ensured regional GHG and environmental data measurements (in accordance with regionally harmonized protocol), improved activity data set and GHG projections modelling methodology for hemiboreal region as part of TCM climate zone. The main methodological solutions demonstrated in this regard are the compilation of the first regional Baltic/Finnish GHG emission factors for managed nutrient-rich organic soils, the development of depth-to-water and wet area maps for the Baltic States, and the development of climate-sensitive GHG emissions projections modelling tool;

3) two practical models/tools for land-use management and policy planning concerning organic soil management were developed: 1) farm-level tool or so-called PPC model (Public-private cooperation model "Functional land management model - a tool for climate change mitigation and sustainable management" (C4)) for understanding and planning of organic soil management either in agriculture or forestry practices; and 2) country-level tool or so-called Simulation model (SM) (C5) for policy planning and projections concerning organic soil management at country or regional level. Both models include all CCM measures verified within the Project.

The main expected results of the Project are: 1) CCM measures demonstrated in nutrient-rich organic soils: afforested area on organic soils thus increasing an area under sustainable forest management (10 ha), other CCM measures apart from afforestation to demonstrate sustainable management of forests on organic soils (18 ha), area of agricultural land on organic soils under sustainable management (17 ha); 2) improved knowledge base for scientific, policy makers` and the Project` stakeholders communities – (a) scientific elaborations available for National GHG inventories (methodology for characterization of GHG related peat properties using infrared

screening method, satellite image driven methodology for evaluation of moisture regime and probability of GHG emissions from soil, regionally specific GHG calculation methods (EFs)), (b) Project` results based improvements adopted in National LULUCF sector policy planning and GHG reporting documents in the Project partner countries, (c) replicable and transferable simulation modelling tools for single field and regional projections of GHG emissions developed for different management options. Most of the expected results are monitored by monitoring the Key Project Indicators (KPIs). The overall direct GHG mitigation effect after the Project implementation (in demonstration sites) is pre-assessed to be around 420 tons CO_2 eq./year. The actual measured GHG mitigation effect after Project implementation (in demonstration sites, 45 ha) was assessed to be 109 tons CO2 eq./year if calculated as an average by 2050 or 3277 tons CO2 eq. as the total GHG reduction in the Project demonstration sites (45 ha) by 2050. In three years, period after the Project implementation, sustainable land-use management practice in nutrient-rich organic soil management is planned to be used in at least 80 ha of forest land (28 ha during the Project implementation and additional 54 ha within the three years after the Project end – all together 80 ha. There is a typo mistake in the Grant Agreement (GA) (Attachment "Project performance indicators") where 84 ha are mentioned). In agricultural land, the three years after the Project value - is doubled from the initially set value in the GA of 17 ha to 34 ha.

The most important result and climate action-related benefit of the Project is that awareness-raising and replication activities of the Project are supposed to trigger changes in partner countries' policy documents by the inclusion of climate efficient organic soil management practices and improved GHG reporting and projections by the inclusion of the EFs and activity data developed within the Project. Considering European Union climate action policy development, the Project is foreseen to generate long-term impact since one of the Project's objectives is to contribute to different international and EU policies based on scientifically sound evidence. EU's Regulation for the Land Use, Land Use Change and Forestry (LULUCF) is revised in 2023, and EU Member States must integrate land use considerations into their National Energy and Climate Plans (NECPs) and CAP Strategic Plans (CAP SP), ensuring alignment with the targets set out in the revised LULUCF regulation. The revised LULUCF regulation introduces the EU-wide net removals target for 2030, aiming to increase the EU`s net removals by about 15% and reverse declining trends. Shifting from an accounting benchmarks approach (reference levels) to reported emissions and removals leverages precise data and advanced monitoring technologies where the Project results (e.g. scientific elaborations of GHG reporting methodologies) contribute significantly to the hemiboreal region and thus also TCM climate zone. Consequently, if the countries decide to use the Project results in their GHG inventories and policy planning, the Project results will contribute to improving the precision of the EU`s GHG emission calculations and projections, climate action, and sectorial (agriculture and forestry) policies in the long run—towards the climate neutrality goal 2050.

The reporting period for the Final report`s financial and technical part coincides and is from 01/08/2019 to 31/08/2024.

5. Administrative part

To establish the Project management system, the CB Latvian State Forest Research Institute "Silava" (SILAVA) started by signing the Partnership Agreements (PA) (submitted with MTR) with all Associated Beneficiaries (AB). After the Project extension (approved by Letter Amendment Nr.1), all PAs were amended accordingly.

The Project management structure was built in three levels: 1) Project Steering Group ensured overarching guidance of the Project development; 2) regular Progress Meetings allowed comprehensive tracking of the progress of all activities; 3) Thematic Work Groups (TWG) allowed concentration of targeted expertise around the specific workflows. An in-depth explanation of the Project management structure is provided in the technical part of this report (Action F1 – Project management by SILAVA).

No significant problems were encountered regarding Project management and partnerships involved. The clear Partnership Agreements (including the defined responsibilities), regular communication between CB and AB and transparent management structure ensured overall smooth Project management. As a working method, the Microsoft Office 365 Teams platform (LIFE OrgBalt channel) was used to store data and documents and for everyday communication. For a short period, the ZOOM platform was used (the license was bought) but then switched to the MS Teams platform based on the Project's expert conclusion that this was the most convenient and the safest (measurements` data storage) service available at that time.

As set in PA, financial and technical reporting information was collected from AB and pre-checked by CB quarterly. AB submitted the reporting information in a commonly agreed-upon format to CB within 15 working days after the end of each three-month reporting period. Quarterly reporting was done following internal reporting guidelines prepared by CB.

Communication with CINEA and Monitoring team was organized in the envisaged manner - the Project coordinator was the sole contact point for this communication. The Monitoring team provided various assistance and participated in the Project Kick-off meeting (October 2019) and Project monitoring visits (January 2020, June 2021, June 2022, August 2024).

The changes encountered due to the amendment to the GA (approved by the Letter Amendment Nr.1) include:

1) the extension of the duration of the Project (Art I.2.2. of the GA) by setting the Project run from 01/08/2019 to 31/08/2024;
2) the deadlines of the deliverables and milestones set out in form(s) A1/A5/C2/C3 in Annex II of the GA were modified (basically – extended following the Project extension by one year) as it was set out in the new Form(s) A1/A5/C2/C3 attached to the Letter Amendment Nr.1;
3) the abbreviations of the two ABs were changed — the AB Lithuanian Research Centre for Agriculture and Forestry LRCAF became LAMMC, and the AB Latvia University of Life Sciences and Technologies LULSat became LBTU.

Except for the modifications mentioned above, all other provisions of the GA remained unchanged and in full force.

6. Technical part

As an overall **deviation,** the rescheduling of the submission deadlines must be noted. The deadlines of the deliverables C1/2, C1/5, C1/6, C2/2, C2/4, C4/1, C4/2, C4/5, C5/1, C5/4, C5/5, C5/6, C5/7, C5/8, D1/3, D2/2, D3/4, E1/4, E1/5, E1/6, E1/7, E1/8, E1/9, E2, E3, F1/2 were rescheduled from their initial dates (set in the proposal) to the new, revised ones (approved by the amendment to the GA (Letter Amendment Nr.1)), to allow for the analysis of necessary data collected during the Project. All reports were successfully delivered by the revised deadlines. The same shift in deadlines concerned the respective milestones of the Actions. All milestones are reached by the revised deadlines. The delay in data collection was due to the Covid-19 pandemic (as described in the Executive summary and chapter 6.2 "Main deviations, problems and corrective actions implemented" of this report).

6.1. Technical progress, per Action

A.1: Development of the project framework

Status:	**Foreseen start date:**	**01/08/2019**	**Actual start date:**	**01/08/2019**
Completed	Foreseen end date:	31/12/2019	Actual end date:	31/12/2019
Deliverable name			Deadline	Status
Project work plan including monitoring guidelines (A 1/1)			31/12/2019	Completed (submitted with the MTR)
Report on current situation – applied emission factors and projections of greenhouse gas emissions from organic soils (A 1/2)			31/12/2019	Completed (submitted with the MTR)
Report on the identified climate change mitigation targeted management practices on organic soils (A 1/3)			31/12/2019	Completed (submitted with the MTR)
Milestone name			**Deadline**	**Status**
Project framework developed			31/08/2019	Completed

Action A1 was completed within the deadlines set in the GA, all three deliverables were submitted with the MTR, and the **milestone** (Project framework development) is reached. No significant deviations were encountered. A joint international partner meeting in Finland for Project implementation framework development was substituted with a Project kick-off meeting in Riga (October 2019).

Main activities undertaken:

1) the development of the Project work plan and planning of the Project impact monitoring formed the backbone of the Project framework development and was done by preparing the deliverable A1/1, "Project work plan including monitoring guidelines" (**Action A1: Task 1, Task 2**). The activity was performed primarily by SILAVA and BaltCoasts (the Project employees who contributed the most are listed as authors). The outcome was used through the Project implementation for day-to-day management needs. The final version of the deliverable was revised based on comments received from the monitoring team – during the second monitoring visit on June 11, 2021 - aspects of tracking the allocated budget expenditures per activity were included in the monitoring guidelines;
2) analysis of existing organic soil management practices and GHG calculation methodologies (**Action A1: Task 3**) was done by preparing deliverables A 1/2 "Report on the current situation – applied emission factors and projections of greenhouse gas emissions from organic soils" (**Action A1: Task 3**) and A1/3 "Report on the identified climate change mitigation targeted management practices on organic soils" (**Action A1: Task 3**). The lead authors for this work were Luke and SILAVA, but UT and LAMMC contributed significantly. Reports (A 1/2 and A 1/3) summarize status quo information at the beginning of the Project implementation: (1) organic soil characteristics, formation and

management history in Baltic countries and Finland, (2) applied emission factors and projections of CO_2, CH_4 and N_2O emissions in Baltic countries and Finland, (3) GHG monitoring methodologies by inspecting the status of anthropogenic GHG emission data from forests on drained organic soils - lessons learned on data collection, reporting and further data needs including projections, (4) organic soils management practices in place, (5) knowledge-based assessment of high impact approaches in organic soils and potential mitigation impact. The information gathered was used as a reference for further work on C1, C2, C3, and C4 actions and for informing the Project stakeholders.

A.2: Elaboration of the project communication platform

Status:	**Foreseen start date:**	**01/08/2019**	**Actual start date:**	**01/08/2019**
Completed	Foreseen end date:	31/03/2020	Actual end date:	31/03/2020
Deliverable name		Deadline	Status	
Plan for awareness rising and stakeholder engagement plan (A 2/1)		31/12/2019	Completed (submitted with the MTR)	
Communication strategy (A 2/2)		30/03/2020	Completed (submitted with the MTR)	
Replicability and Transferability Plan (A 2/3)		30/03/2020	Completed (submitted with the MTR)	
Milestone name		**Deadline**	**Status**	
Project communication platform developed		31/03/2020	Completed	

Within this action a framework for communication, dissemination, replicability, and transferability of the Project results and outcomes to identified target groups was elaborated. The action was completed in the anticipated timing, the plan for awareness rising and stakeholder engagement, communication strategy and replicability and transferability plan were prepared (deliverables A 2/1, A 2/2 and A 2/3 submitted with the MTR), and **milestone** was reached – Project communication platform was developed (**Action A2: Task 1, Task 2**).

The Project Communication strategy defines the plan for the beneficiaries to follow. It addresses all relevant stakeholders involved in deploying and replicating the Project results and disseminating its outcomes. It includes a detailed communications actions timetable. Toward the completion of the communication strategy, there was developed a further internal document, "Guidelines for the dissemination of information and organization of networking and training events" (submitted with the MTR), provided partners with a description of the specific tasks for each activity and kept track of the LIFE communication requirements and the communication channels. BaltCoasts developed both mentioned documents in consultation with all Project partners, and the authors who contributed the most are listed on the title pages of the deliverables. The Communication strategy includes a list and analysis of the main stakeholders defined under Task 2 of this Action "Development of stakeholder network".

The deliverable A 2/3 "Replicability and Transferability Plan" (**Action A2: Task 3**) analyses the potential of the Project to be replicated and transferred during and after its implementation by describing following activities: (1) sustainability activities aimed at ensuring the continuation of the Project after its end, (2) specific replicability and transferability tools (Action C5), (3) the role of communication activities in enhancing the replicability and transferability strategy. BaltCoasts developed the deliverable in consultation with all Project partners. Overall, the Project exceeds the target audience reach indicators set under Action A2 (refer to the descriptions for Actions E1, E2, and E3 for more details).

C.1: Filling knowledge gaps on GHG emissions from organic soils

Status:	**Foreseen start date:**	**01/10/2019**	**Actual start date:**	**01/10/2019**
Completed	Foreseen end date:	31/03/2024	Actual end date:	31/03/2024

Deliverable name	Deadline	Status
Report on carbon inputs with litter and fine roots in forests on organic soils (C 1/1)	31/08/2021	Completed (submitted in BUTLER)
Catalogue of climate change mitigation actions (C 1/2)	31/03/2024	Completed (submitted in BUTLER)
Interim draft report on improved methodologies for GHG inventory reporting and related national reports (C 1/3)	31/08/2021	Completed (submitted in BUTLER)
Interim draft report on improved GHG emission factors for nutrient-rich managed organic soils in Baltic States (C 1/4)	31/08/2021	Completed (submitted in BUTLER)
Report on improved GHG emission factors for nutrient-rich managed organic soils in Baltic States (C 1/5)	31/03/2024	Completed (submitted in BUTLER)
Improved methodologies for GHG inventory reporting and related national reports (C 1/6)	31/03/2024	Completed (submitted in BUTLER)
Milestone name	**Deadline**	**Status**
Catalogue of CCM actions elaborated	31/03/2024	Completed
GHG emission factors for nutrient-rich managed organic soils in Baltic States improved	31/03/2024	Completed
Methodologies for GHG inventory reporting and relevant national reports improved	31/03/2024	Completed

C1 deliverables were completed and uploaded to the BUTLER by the set deadlines. The preparation process of all deliverables was coordinated by two TWG – "Measurements" (led by UT) and "Modelling" (led by LAMMC). The core content of deliverable C 1/1 "Report on carbon inputs from litter and fine roots in forests on organic soils" (**Action C1: Task 1**), is based on a review of scientific literature and expert recommendations regarding modern methods used to study above- and below-ground carbon inputs in organic soils. The methodologies described were implemented at the Project's field sites starting spring 2020. The report assesses the state-of-the-art regarding litter input and fine root data and presents protocols for collecting new data as part of the Project. The report also offers practical guidance. For open sites in agriculture, adapted protocols were developed. The report's materials were streamlined by Luke, with the final textual format collaboratively finalized by Luke, UT, SILAVA, and LAMMC. The objective of this deliverable was achieved through successful data collection within the Project. The refinement of the data collection protocols into a publication is considered and planned to form one of the After-LIFE activities. The deliverable "Catalogue of climate change mitigation actions" (C 1/2) (**Action C1: Task 3**) compiles data from reference and demo sites on GHG emissions, socio-economic impacts, and activity data relevant to CCM in accordance with the pre-defined CCM practices analyzed in the Project. Each CCM measure in the report is analyzed following unified approach 1) the objectives of each measure are outlined first, detailing specific environmental and economic goals, such as reducing GHG emissions, increasing carbon sequestration, or producing biofuel; 2) suitability and limitations are defined, specifying the types of land and conditions each measure is suited for, as well as any geographic, ecological, or regulatory restrictions that might limit its application; 3) the implementation technology is addressed, providing practical guidance on fieldwork, including methods for soil preparation, planting, and maintenance; 4) a climate impact analysis quantifies the measure's potential effects on CO_2 removals and GHG emissions, often projected over the measure's life cycle; 5) an analysis of socio-economic impact and costs includes estimated setup and maintenance expenses,

potential revenue (such as from timber or biofuel), and cost-effectiveness in terms of GHG mitigation. The report also considers potential adverse effects, identifying risks like methane emissions in wet conditions or drought susceptibility, which may affect the measure's effectiveness and long-term viability. Long-term sustainability is assessed, focusing on the measure's durability and potential to sustain positive environmental impacts. Recommendations are provided for actions required to maintain the measure's effect over time. SILAVA was the main contributor to the preparation of this report with the support of other partners involved in related actions (C1, C3). Data summarized in this report was used for modelling tools (C2, C4, C5).

Deliverable C 1/3, "Interim Draft Report on Improved GHG Emission Factors for Nutrient-Rich Managed Organic Soils in the Baltic States" (**Action C1: Task 1**) evaluates modern monitoring techniques employed under field conditions, utilizing manual dark chambers and specific site preparation for monitoring, along with data collection methods implemented by the Project. The field methodologies described involve extensive spatio-temporal data collection that exceeds typical average criteria observed in boreal and temperate zones during the early 2020s. The protocols provide a detailed approach for assessing the annual soil CO_2 balance, which includes: 1) aggregating CO_2 flux data collected throughout the year and; 2) evaluating mass-based carbon (C) stock changes, incorporating both carbon inputs and the decomposition of aboveground and belowground litter. The assessment of the soil GHG balance for methane (CH_4) and nitrous oxide (N_2O) is guided by gaseous flux monitoring from soil surfaces covered by ground vegetation. The report materials were developed jointly by partners. The literature survey was led by Luke, and the final textual format of the report was collaboratively finalized by Luke, UT, SILAVA, and LAMMC. The objectives of this deliverable were achieved through successful data collection within the Project. The refinement of the data collection protocols into a publication is planned as one of the After-LIFE activities. The deliverable C 1/5, titled "Report on improved GHG emission factors for nutrient-rich managed organic soils in the Baltic States" (**Action C1: Task 1**) summarizes the EFs at Tier 1 and Tier 2 levels, as defined by the IPCC, specifically for drained nutrient-rich organic soils in agricultural and forest lands across the Baltic States and Finland. It analyzes the data structure of IPCC default EFs at the Tier 1 level for quantitative data availability and spatial coverage across various climate regions. Additionally, the report details the methods employed to collect Tier 2 and higher eligible data within the Project. Key characteristics of the data collection process, as well as site characteristics and types of data monitored, are summarized in the report. The findings include first soil EFs (currently under scientific writing peer-review) for carbon (CO_2-C), methane (CH_4), and nitrous oxide (N_2O), based on data collected during the Project. The report also provides a summary of key findings related to EFs and site characteristics in forest lands and agricultural systems on nutrient-rich organic soils in the Baltic region. Luke led the preparation of this deliverable, with support from partner teams from SILAVA, UT, and LAMMC.

The deliverable C 1/3 "Interim Draft Report on Improved Methodologies for GHG Inventory Reporting and Related National Reports" (**Action C1: Task 2**) summarizes the general methodology for calculation of GHG emissions from organic soils according to the IPCC guidelines, specifically 2006 IPCC Guidelines for National Greenhouse Gas Inventories (NGGI) and 2013 Supplement to the 2006 IPCC Guidelines for NGGI: Wetlands. Additionally, the report details the currently used methodologies including EFs for calculation of GHG emissions from organic soils within NGGI in Baltic States and Finland. Current reporting approaches and used EFs differ significantly among the Baltic States and Finland. The report also provides a description of Latvia's experience in implementation of improved methodologies (results of previous LIFE project, specifically LIFE REstore) in NGGI report including estimation of impact on NGGI and related national reports. To provide wider insight into potential impacts of recalculations of GHG emissions from organic soils by implementation of improved

methodologies, the report also presents approximate evaluation of possible impact of application of the previous LIFE project's (LIFE REstore) EFs in NGGI reporting in Lithuania and Estonia (compared to currently used and IPCC default EFs). Deliverable C 1/6 "Improved methodologies for GHG inventory reporting and related national reports" (**Action C1: Task 2**) supplements the deliverable C 1/3 "Interim Draft Report on Improved Methodologies for GHG Inventory Reporting and Related National Report" with updated (the latest) information about currently used methodologies including EFs for calculation of GHG emissions from organic soils within national GHG inventories in Baltic States and Finland. The LIFE OrgBalt provides information to improve NGGI in studied region; both region-specific GHG EFs are elaborated (provide an opportunity to improve the Tier 2 method) and additional data to support implementation of higher Tier level methodology aiming at Tier 3 are available. The core result of this deliverable is estimation of potential impact of LIFE OrgBalt EFs' (currently under peer-review within the scientific publishing process) application in NGGI reporting and related national reports. The impact of the Project`s EFs' application is evaluated in comparison with the currently used and IPCC default EFs. SILAVA led the preparation of deliverable C 1/3 and C 1/6, with support from Luke, UT, and LAMMC.

All **milestones** of the Action C1 were reached in the set time. Action C1 involved the organization of GHG flux and environmental data measurements at reference and demonstration sites. The TWG "Measurements", consisting of representatives from UT, Luke, SILAVA, and LAMMC, was established to organize and harmonize field measurements within the Project. The TWG included 11 subgroups, each addressing varying topics, with the most experienced members from the AB`s organizations leading the coordination of field measurements throughout the Project. By the end of 2020, the TWG developed two key reference documents for fieldwork: "Flux and Environmental Data Protocols" and "Biomass and Litter Decomposition Measurement Protocols." The site selection and management descriptions (**Action C3: Task 1**) provide details on the sites and studied CCM measures. Additionally, practical hands-on seminars focused on measurement calibration were held in Estonia (29-30/06/ 2020) and Lithuania (25-26/08/2020). GHG flux measurements were conducted as planned, alongside the measurement of environmental parameters such as soil temperature and moisture. The chemical and physical characteristics of soil and water were assessed across all participating countries. Field data collected during the Project is stored in a joint database on MS SharePoint, making it accessible to all beneficiaries. Partners evaluated the flux data based on their collection efforts, and all gathered data was categorized for joint processing. Planning meetings for data publication were held in Tartu (12-13/06/2023) and Helsinki (31/08/2023), during which lead authors and supporting co-author teams were organized for each planned manuscript containing EF-data. The harmonized methods, rigorous fieldwork, and thorough data analyses underpin extensive and high-quality scientific reporting, which is valuable for various policy documents related to climate and energy. The scientific publications and presentations resulting from the Project (as detailed later in this document) serve as essential resources for policymakers.

Deviations. As described in the report`s Executive summary, Covid-19 caused about a 1-year long delay with the start of field data collection. As a result, the beginning of field measurements in the Baltic States was postponed due to the delayed equipment delivery and started in January 2021. In Finland, the GHG measurements started already in spring 2020 (as there was no delay with the access of field instruments) and were finished in spring 2022, and in the Baltic states data collection was between January 2021 and December 2023 (In Lithuania by 31/10/2023).

C.2: Tools for modelling of impact of climate change on GHG emissions

Status:	**Foreseen start date:**	**01/04/2020**	**Actual start date:**	**01/10/2019**
Completed	Foreseen end date:	31/03/2024	Actual end date:	31/03/2024

Deliverable name	Deadline	Status
Activity data for accounting & Projections of GHG emissions from organic soils (C 2/1)	31/12/2020	Completed (submitted with the MTR)
Mathematical equations and tools (spreadsheets and R scripts) for elaboration of projections of GHG emissions from organic soils (C 2/2)	31/03/2024	Completed (first stage report submitted with the MTR, final report submitted in BUTLER)
Harmonised methodology for characterisation of peat properties using infrared screening method (C 2/3)	30/06/2021	Completed (submitted with the MTR)
Report on integration of climate scenarios and projections of GHG emissions from organic soils (C 2/4)	31/03/2024	Completed (submitted in BUTLER)
Methodology for socio-economic analysis of the proposed measures (C 2/5)	31/08/2022	Completed (submitted in BUTLER)
Milestone name	**Deadline**	**Status**
Activity data for accounting & Projections of GHG emissions from organic soils	31/12/2020	Completed
GHG emission projection tools elaborated	31/08/2021	Completed
GHG emission factors and climate change scenarios integrated	31/03/2024	Completed
Methodology for socio-economic analysis of the proposed measures elaborated	31/08/2022	Completed
Further testing, verification and adoption of developed tools and models by application within the Project actions implemented	31/03/2024	Completed

Action C2 was coordinated by TWG "Modelling" (led by SILAVA), and work on integrating climate change scenarios was led by LAMMC. The main activities undertaken included work on the set of activity data for Baltic States to be used for reporting and projections of GHG emissions and integrating climate scenarios and projections. The results of this work are summarized in deliverables C 2/1, C 2/2, C2/3 and finally - C 2/4. All deliverables of the action are submitted according to the initial or revised deadlines.

The main results of Activity C2 as regards activity data are 1) **Depth-to-Water (DTW) and wet area maps**, which are critical for estimating emissions based on groundwater levels (deliverable C 2/1 "Activity data for accounting & Projections of GHG emissions from organic soils" (**Activity C2: Task 2**)). These maps provide harmonized data across the region, supporting more precise GHG modeling and aiding in the planning of land management practices; 2) **a set of equations and a spreadsheet model** ("SEG modelis") to calculate GHG emissions under various land management scenarios, including methods for calculating carbon stock changes, emissions from soil, and the impact of land-use changes, enabling users to compare different CCM strategies and their economic impacts (deliverable C 2/2 "Mathematical equations and tools (spreadsheets and R scripts) for elaboration of projections of GHG emissions from organic soils" (**Activity C2: Task 2**)). The spreadsheet model can be customized with local data, making it adaptable for regional applications; 3) **a harmonized methodology using infrared spectroscopy** to characterize peat properties in nutrient-rich organic soils (potential of

mid-infrared (MIR) spectroscopy to rapidly and cost-effectively predict soil parameters like pH, carbon (C), nitrogen (N), calcium (Ca), and magnesium (Mg) concentrations) (deliverable C 2/3 "Harmonized methodology for characterization of peat properties using infrared screening method" (**Activity C2: Task 2**)). Initial calibration models created, and a spectral library built.

The developed mathematical tool (spreadsheet tool "SEG modelis") (deliverable C 2/2) for the elaboration of projections of GHG emissions under different climatic conditions and activity data for projections of GHG emissions from organic soils was used and demonstrated while working on deliverable C 2/4 "Report on integration of climate scenarios and projections of GHG emissions from organic soils" (**Activity C2: Task 1**). The preliminary results obtained from the SUSI-simulator runs, showed significant inconsistencies between actual measurements, therefore it was decided not to continue developing SUSI-simulator for this action. Significant inconsistencies occurred in groundwater level projection, which, compared to the actual measurements in the Project sites, was overestimated and thus may have led to an underestimation of projected GHG emissions due to the drainage of organic soils. Due to the lack of time and human resources for better SUSI-simulator parameterization according to Baltic conditions, it was decided to shift to solely developing calculation tool "SEG modelis". The deliverable (C 2/4) presents the calculation tool "SEG modelis" developed for GHG emissions and removals projection from different land uses and different climatic conditions, considering regional emission factors developed during Action C1. The report also compares the projected GHG emissions and removal balance estimated by applying different CCM measures/scenarios. A comparison of total GHG emissions from the drainage of organic soils, applying different EF sets available (IPCC 2006 Guidelines, IPCC 2013 Wetlands Supplement, LIFE REstore results, LIFE Peat Restore results, SNS-120 project results) was made. The spreadsheet tool "SEG modelis" consists of estimation of carbon stock changes in all carbon sinks and pools, as required for NGGI report under the 2006 IPCC Guidelines: living biomass, dead wood, litter (for forest land category), soil, harvested wood products (for forest land category). Additionally, it was developed to estimate GHG emissions from soil due to the heterotrophic respiration (CO_2), GHG emission saving due to the substitution effect (natural gas substitution with woody biomass) and preliminary evaluate the implementation costs of CCM actions. Finally, the calculation tool estimates the difference in projected GHG emissions between business as usual and the CCM scenario implemented. All parameters used in the calculation tool are selectable for 5 countries or regions, including general assumptions for boreal and temperate climate regions. Most of the parameters in the default version of the model are the same for all regions but can be updated during the adaptation of the model to represent different conditions better. GHG emissions from organic soils are estimated considering climate change – climate projections from the CORDEX database (RCP4.5 scenario) for all countries and regions were included in the calculation tool. GHG emissions (CH_4, N_2O) from drained or wet organic soils in forest and non-forest land were estimated with EF, combined from the Project results, as obtained in Action C1, and default values from IPCC 2006 Guidelines. GHG emissions due to soil heterotrophic respiration were estimated considering the projected average monthly temperature in each Baltic country, thus including the climate change effect. Quantities of dissolved organic carbon were also estimated, applying emission factors available for drained and wet soil conditions.

Methodology for socio-economic analysis (deliverable C 2/5 "Methodology for socio-economic analysis of the proposed measures" (**Action C2: Task 3**) is based and related to Actions C1, C2, C3, C4, D1 and D2. The methodology for the socioeconomic impact assessment of the measures proposed is based on PPC model input and output data indicators and calculations. Data gathered by the implementation of the methodology outlined in D2/1 are used for the development of methodology for socio-economic analysis of the proposed measures and development of the PPC model under C4. Deliverable C2/5 provides an overview of financial and socio-economic-specific indicators for each CCM measure implemented. Sources are

provided for each data group. The socio-economic analysis methodology includes the following indicators for each CCM measure: investment costs (for example, territory cleaning works, drainage system (reconstruction, development, creation), purchase and planting culture), maintenance and renewal costs, public co-financing of capital investments, existing support payments, productivity, production costs, prices, income, and reduction of GHG emissions, emission reduction costs and monetary value of ecosystem services. The methodology involves calculating the costs and benefits of each CCM measure for the following six periods: 5 years, 10 years, 25 years, 50 years, 100 years, and 200 years. The assessment includes the full range of impacts (investment costs, financial net present value, financial internal rate of return, reduction of GHG emissions, GHG emission reduction value, revenue from sales of products, value of ecosystem services, economic net present value, economic internal rate of return).

Action C2 **Milestones** were reached (in the initially planned or revised deadlines) by concluding the work on particular deliverables.

C.3: Implementation of climate change mitigation measures in selected demo sites

Status:	**Foreseen start date:**	**01/07/2020**	**Actual start date:**	**01/10/2019**
Completed	Foreseen end date:	30/06/2022	Actual end date:	30/06/2022
Deliverable name		Deadline		Status
Report on implementation of CCM measures in demo sites in Finland (C 3/1)		01/01/2021		Completed (submitted with the MTR)
Report on implementation of CCM measures in demo sites in Latvia (C 3/1)		01/01/2021		Completed (submitted with the MTR)
Milestone name		**Deadline**		**Status**
CCM measures on demo sites implemented		01/01/2021		Completed

Both deliverables of Action C3 (C 3/1 and C3/2) were prepared by the set deadline (01/01/2021) and were submitted with the MTR. In total 17 CCM demonstration sites (demonstration "Introduction of legumes in conventional farm crop rotation" is located in two sites – LVC304 (a) in Lazdiņi and LVC304 (b) in Slampe) were established in agriculture and forest land in Latvia (14 demo sites) and Finland (3 demo sites). The type of CCM measures to be demonstrated and further analyzed within the Project was set in the Project proposal (attachment to the proposal "TABLE C3.1 Description of demo sites)") and followed in the Project implementation. Each demonstration site was linked to 1-2 reference sites (16 reference sites in Latvia, 10 reference sites in Lithuania and 10 reference sites in Estonia – in total, 36 sites) that were measured following the methodology used for demonstration sites. Deliverables (C 3/1 and C 3/2) provide a detailed description of the established demonstration sites. Deliverable C 3/1 "Report on the implementation of CCM measures in demo sites in Finland" (**Action C3: Task 1**) report focuses on the characteristic differences between typical forest management practices, i.e. conventional even-aged forestry and continuous cover forestry (CCF), on GHG emission in nutrient-rich forestlands in Finland. CCF was studied as the more climate-friendly management option in the Project. The Project demonstration included 3 forest site areas exemplifying CCF management in the South- and North part of the Boreal climate zone in Finland. Each demo site includes 2 or 3 locations where monitoring was conducted by CCF management and controls representing conventional forestry practices. Report materials are used as information sources on the implemented management actions on the sites for other

reporting and planning needs. The report for Finland was prepared by Luke. Deliverable C 3/1 "Report on implementation of CCM measures in demo sites in Latvia" (**Action C3: Task 1**) was prepared by SILAVA and LBTU. Demonstration sites in Latvia were established in forest and agriculture land owned/managed by research-linked agencies ("Forest Research Station" and the training and research farm of LBTU "Vecauce") and some agriculture sites – on privately owned land (where there are specific agreements with owners). Forest land-related CCM measures are divided into 1) measures related to afforestation and forest restoration and 2) measures aiming to increase forest carbon stocks (soil and biomass) by modifying forest management practices. Agriculture land related CCM measures include agroforestry, land use change (from cropland to grassland), riparian buffer zones management, controlled water level and crop change (introduction of legumes) practices. Each CCM practice tested within the Project in Latvia is characterized by the area requirements, research tasks and activities, related reference sites (characterizing GHG balance before and after implementation of the measure), practical implementation and site management activities needed.

The milestone for implementing CCM measures in demo sites in Finland and Latvia was conducted as planned. To avoid monitoring disturbance conditions, management activities defining the CCM measures at the sites in Finland were done several years before monitoring implementation, and thus, the key activity for this reporting was collating data on previous management operations performed and establishing or upgrading monitoring infrastructure for the Project. A short-term delay in establishing a controlled drainage site in agriculture land (LVC305) was experienced as a **deviation** from the planned (because of a complicated procurement procedure) but was successfully overcome without impacting the Project implementation.

C.4: Strategies and action plans

Status:	**Foreseen start date:**	**01/01/2020**	**Actual start date:**	**01/10/2019**
Completed	Foreseen end date:	30/06/2024	Actual end date:	30/06/2024

Deliverable name	Deadline	Status
Proposal for PPC model and adopting of the Project results in Rural Development Plan (C 4/1)	31/03/2024	Completed (first stage report submitted with the MTR, final report submitted in BUTLER)
Report on public communication with the main stakeholders' groups (C 4/2)	30/06/2024	Completed (first stage report submitted with the MTR, final report submitted in BUTLER)
Interim draft report on proposals for improvement of sectoral strategies and action plans to reduce GHG emissions from organic soils (C 4/3)	31/08/2022	Completed (submitted in BUTLER)
Report on economic benefits of CCM measures for nutrients-rich land management practices on farm level (C 4/4)	31/08/2022	Completed (submitted in BUTLER)
Report on proposals for improvement of sectoral strategies and action plans to reduce GHG emissions from organic soils (C 4/5)	30/06/2024	Completed (submitted in BUTLER)
Milestone name	**Deadline**	**Status**
Proposal for PPC model and adopting of the Project results in Rural Development Plan elaborated	31/03/2024	Completed

Public communication with the main stakeholder groups within the demonstration of PPC model implemented	30/06/2024	Completed
Improvements adopted in Biannual reports and national reporting in Baltic countries	30/06/2024	Completed (as far as was possible by the set deadline)
Improvements adopted in GHG emissions and CO2 removals due to cropland and grassland management	30/06/2024	Completed (as far as was possible by the set deadline)
Improvements adopted in National LULUCF action plan progress reports in Baltic countries and Finland	30/06/2024	The final National LULUCF action plans (Information on LULUCF actions according to Article 10 of Decision No 529/2013/EU) progress reports were submitted to the EC by the end of 2020; thus, improvements in these documents could not be adopted after 2020.

Work on a proposal for the PPC model and report on public communication was carried out in two stages – the first stage reports were submitted with MTR, but work needed to be continued to include the results of the Project data (there was a delay in data collection due to the Covid-19 pandemic - described in the Executive summary part of this report). The final version of deliverable C4/1, titled "Proposal for PPC Model and Adoption of Project Results in the Rural Development Plan" (**Action C4: Task 2**) and relevant **milestone** was completed by July 2024. The report reflects continuous improvements to the PPC model, shaped by stakeholder feedback and recommendations from training workshops. The report builds on Actions C1, C2, C3 and previous deliverables (interim submission of C 4/1 and C 4/4). The report includes: Annex 1 "PPC MS Excel Model" and Annex 2 "User Manual for the PPC Model." BaltCoasts prepared this deliverable in collaboration with the TWG "Economic Analysis", key contributors are acknowledged in the opening pages. The PPC model is fully completed, with parameters and data integrated for all Project CCM measures (implemented in Latvia) and 1 LIFE REstore CCM measure. A detailed justification and description of the PPC model is provided, covering methodology, data including guiding principles, and results for CCM measures. Additionally, the report presents a summary of CCM measure outcomes from the model. It proposes a suite of economically beneficial measures (considering GHG emission reductions and ecosystem service assessments) that, while not highly profitable for landowners, may be suitable for integration into the CAP SP or other policy documents. For broader application as additional decision-making tool, the PPC model remains open to updates, including more precise data on a wide range of environmental impacts and the inclusion of additional CCM measures, such as peatland rewetting and restoration. PPC model is accessible from the Project webpage (https://www.orgbalt.eu/?page_id=2761). BaltCoasts is committed to maintaining and updating the PPC model according to the After-LIFE plan.

The final deliverable C4/2, titled "Report on Public Communication with Key Stakeholder Groups" (**Action C4: Task 2**) and relevant **milestone**, was completed in August 2024 by BaltCoasts (in cooperation with all partners), building on the first stage report submitted with the MTR. The final report outlines the primary target audiences and stakeholders reached and key engagement activities conducted with stakeholders since the Project's inception. Its development aligns with the progression of activities C1, C2, and C3. BaltCoasts developed it in collaboration with TWG "Communication". The report is grounded in core outcomes, including developed models that were thoroughly tested during two rounds of workshops held across partner countries—Estonia, Finland, Germany, Latvia, and Lithuania. Workshops

engaged over 500 stakeholders from various sectors, including ministries, municipalities, agencies, universities, non-governmental organizations (NGOs), and private companies. To assess the workshops, surveys were distributed to collect feedback on CCM measures, model functionality suggested improvements and other recommendations. Additional details on this feedback can be found in deliverable C 5/8, "Developed Simulation tool applied in real life conditions at least 5 times in partner countries". The deliverable C4/4, "Report on economic benefits of CCM measures for nutrient-rich land management practices at the farm level", was completed on schedule by August 31, 2022. The potential socio-economic impacts of the CCM mitigation measures explored are assessed. The report evaluates advantages and disadvantages of each measure to determine which offers the greatest societal benefit or is the most cost-effective. Impacts are defined as any direct or indirect, positive or negative, changes resulting from the CCM measures applied. The analysis focuses on two main indicators: the costs and income opportunities associated with implementing the CCM measures and the resulting reduction in GHG emissions. These indicators are analyzed by comparing specific sets of measures with reference sites that share similar characteristics and conditions. Additionally, the "costs of inaction" are compared against the projected benefits of implementing the proposed CCM measures. A comprehensive socio-economic analysis is provided within the deliverable D 2/2, "Final monitoring of the socio-economic impacts of the Project actions".

Deliverable C 4/3 "Interim draft report on proposals for improvement of sectoral strategies and action plans to reduce GHG emissions from organic soils" (**Action C4: Task 1**) was prepared by the set deadline (31/08/2022). The action was led by MA with great collaboration and contribution from all partners in order to elaborate on national CCM targeted strategies and policies. The deliverable includes an analysis of CCM strategies implemented or planned at the Project partner country levels and organic soil measures planned in the CAP SP in all Project partner countries. Report also includes an overview of upcoming legislation planned at the EU level until the end of 2021. This report set the scene on organic soil measures in partner countries and gave an insight on which documents to focus on. As the CAP SP (former Rural development plan (RDP)) was already approved, the Project results were communicated with relevant stakeholders, however, they can be implemented in the CAP post-2027 if relevant. Deliverable C4/5 "Report on proposals for improvement of sectoral strategies and action plans to reduce GHG emissions from organic soils" (**Action C4: Task 1**) was prepared by the revised deadline (30/06/2024). The report summarizes the CCM measures analysed within the Project as well as GHG emission factors (EF) and looks at the implementation in policy in relevant Project countries. This report gives an insight in possible policy documents where CCM measures for organic soils could be implemented as well as limitations and possibilities for such actions. The main climate policy action document at the time of preparing the report was the NECP, most organic soil measures can be implemented in this document. However, the report also reviews changes in CAP regarding peatland protection. The report also has an overview of existing and possible EU level climate legislation that could affect organic soil management. The CCM measures researched in the Project were implemented in the Latvian NECP, however, similar measures could be found in other partner country NECP's as well. To obtain thorough information about all Project partner countries, the ministries responsible for the NECPs of the Baltic States and Finland were contacted, however, as the plans were in progress at that time (spring of 2024), the information used for the overview was from the draft NECP's submitted by the member states by end of 2023. Only Latvian and Finnish updated NECP's were available, therefore, a more accurate overview of those countries was possible.

Milestones "Improvements adopted in Biannual reports and national reporting in Baltic countries" and "Improvements adopted in GHG emissions and CO2 removals due to cropland and grassland management" were reached as far as possible by the end of the Project. GHG EF elaborated based on the Project data are currently (November/December 2024) going through a

scientific peer review process to be published in scientific journals. After publishing, national authorities responsible for NGGI will be equipped with data on improvements elaborated within the Project, but the decision on inclusion of the relevant GHG EFs or activity data in NGGI remains solely up to each country and often could be linked with the planning of CCM target achievement. In the case of Latvia, the Monitoring Committee for Greenhouse Gas Inventory and Projections will analyse the Project results to see whether to implement them in the NGGI. Other Project partner countries are informed about the Project results and may decide on implementation.

C.5: Replicability tools

Status:	**Foreseen start date:**	**01/07/2020**	**Actual start date:**	**01/03/2020**
Completed	Foreseen end date:	31/08/2024	Actual end date:	31/08/2024

Deliverable name	Deadline	Status
Interim draft report on development of Framework for training sessions for individual stakeholders for application of the developed tool (C 5/1)	31/08/2023	Completed (submitted in BUTLER)
Interim draft report on development of Simulation model (C 5/2)	31/08/2022	Completed (submitted in BUTLER)
Interim draft report on development of Tables with default parameters for calculations of efficiency of the climate change mitigation measures (C 5/3)	31/08/2022	Completed (submitted in BUTLER)
Data utilised in the model published in 2 peer reviewed articles by Luke, SILAVA, UT and LAMMC and presented in at least 2 international scientific conferences (C 5/4)	30/06/2024	Completed (submitted in BUTLER)
Final framework for training sessions for individual stakeholders for application of the developed tool (C 5/5)	31/03/2024	Completed (submitted in BUTLER)
Simulation model with spreadsheet interface for a single parcel based calculations of business as usual scenario and different management options (C 5/6)	31/03/2024	Completed (submitted in BUTLER)
Tables with default parameters for calculations of efficiency of the climate change mitigation measures (C 5/7)	31/03/2024	Completed (submitted in BUTLER)
Developed Simulation tool applied in real life conditions at least 5 times in partner countries (C 5/8)	31/08/2024	Completed (submitted in BUTLER)
Milestone name	**Deadline**	**Status**
Default parameters for calculation of CCM effects as supplement for model tool elaborated and provided	31/03/2024	Completed
Initial framework for training sessions for individual stakeholders elaborated	31/08/2023	Completed
Two-level training sessions organised and held	30/06/2024	Completed
Application of the developed planning tool-Simulation. model integrated into policy planning	30/06/2024	Completed
At least 20 individual users in each of Baltic States representing at least 10000 ha of organic soils in forest and	30/06/2024	Completed

agricultural lands applied the planning tool-Simulation model		
Framework for training sessions for individual stakeholders elaborated	31/03/2024	Completed
Simulation model tool elaborated	31/03/2024	Completed
Simulation model, different management options and tables with default parameters for calculations of efficiency of CCM measures with integrated data from Finland and Baltic States available	31/03/2024	Completed
Developed tools applied at end users' level at least 10 times	30/06/2024	Completed
Ministry of Agriculture of Latvia has taken over and applied implementation measures for CCM	31/08/2024	Completed
Proposed CCM measures integrated in Rural Development Programmes for the post 2020 planning	31/08/2024	Completed

Replicability actions under Action C5 were targeted to the provision of applicable support tools (PPC model (Action C4) and Simulation model (SM) (Action C5)), enabling their application on regulatory as well as end-user levels and providing data support to carry out the replicability activities. All reports were delivered by initial or revised deadlines. The work on Action C5 and preparation of all deliverables was coordinated by two TWG "Economic Analysis" (led by LBTU and BaltCoasts) and "Communication" (led by BaltCoasts).

The deliverable "Final framework for training sessions for individual stakeholders for application of the developed tool" (C5/5) (**Action 5: Task 1**) was completed in March 2024, building on the Interim draft report (C5/1) submitted in August, 2023 (within relevant **milestone** - Initial framework for training sessions for individual stakeholders elaborated). The work on the development of training sessions was led by BaltCoasts but members of TWG "Economic Analysis" and "Communication" contributed significantly. The training framework was developed in order to train individual stakeholders, policy makers, consultant organizations, institutions and NGOs on the functioning and main contents of the PPC model and SM. The report includes updates made to the planned framework and specific dates of the national and training workshops carried out in spring 2024. The main objectives and contents of the training workshops are described together with a summary of the application requirements in this respect. Workshops mainly were planned and structured in A. THEORETICAL PART: 1) theoretical introductions on the Project's achieved results also focusing on their potential implementation into policy documents; 2) presentation of the PPC model (at least in one workshop per country): the model backgrounds and objectives; 3) presentation of the SM (at least in one workshop per country): the model backgrounds and objectives. B. PRACTICAL PART: 1) training session on how to use the PPC model and how to interpret results (at least in one workshop per country); 2) training session on how to use the SM and how to interpret results (at least in one workshop per country) and C. FINAL DISCUSSION AND CONCLUSIONS: 1) feedback, assessments (needed improvements to make the models more useful for final users, how to disseminate the models, transferability potential, etc.) collected through post-It Note feedbacks, brainstorming sessions, questionnaires, etc. The report also outline format, target audience, speakers, trainers and logistic organizations.

The deliverable C5/2 "Interim Draft Report on Development of the Simulation Tool" (**Action 5: Task 1**) focuses on the creation and implementation of a SM designed to model the impacts of land management on nutrient-rich drained organic soils in the Baltic States. The tool integrates spatial information, socio-economic indicators (employment, profit), and greenhouse gas (GHG) emissions to project the impacts of 15 different management scenarios developed within the C1 and C2 Actions: with and without CCM measures. The C5/2 report explains the

structure of the SM, methodologies used to build the model, including the collection of spatial data on agricultural and forest lands and overview of 15 management scenarios. Deliverable C5/6 "Final report on development of Simulation tool" (**Action 5: Task 1**) explains the impacts of land management scenarios on nutrient-rich drained organic soils in the Baltic States. It details the integration of spatial data, socio-economic indicators, and GHG emissions to simulate various land use scenarios. The report also explains the methodologies for collecting and synchronizing spatial data across Estonia, Latvia, and Lithuania, while analyzing the effects of different land management options on climate and socio-economic outcomes, such as employment and profit. The report provides detailed insights into how data on land use, soil type, and GHG emissions is used to Project scenario impacts. These projections help policymakers and stakeholders assess the long-term socio-economic and environmental benefits of adopting specific land management practices. The deliverable was streamlined by the collaborative efforts of LBTU, BaltCoasts, and SILAVA. The data used in the modeling tools are summarized in the data tables which include parameters for calculating GHG emissions, carbon stock changes, and biomass estimates for various forest and non-forest management scenarios. They also provide coefficients for carbon inputs, forest growth, and the economic impact of forestry operations, along with factors for modeling emissions in different soil conditions (deliverable C5/7 "Tables with default parameters for calculations of efficiency of the climate change mitigation measures" (**Action 5: Task 2**).

Deliverable C 5/4 "Data utilized in the model published in 2 peer-reviewed articles by Luke, SILAVA, UT, and LAMMC and presented at least 2 international scientific conferences" (**Action 5: Task 2**) was completed by the revised deadline of 30/06/2024. The report lists the papers and presentations that support the main objective of the work package ("Replicability tools," C5), which aims to ensure the replicability and transferability of the Project results as scientific work in the temperate cool moist climate region of Europe, particularly in the Baltic States, Finland, and Germany. The report summarizes the core of the developed support tools, including the SM (developed by LBTU), PPC model (developed by BaltCoasts) and the application developed in the SUSI simulator, which was created in collaboration with the University of Helsinki. Substantial work towards making SUSI more generally applicable was done in the Project, but due to resource constraints it was eventually decided that SUSI will only be used in the Finnish context, while another solution was used for the Baltic conditions (more explanation under activity C2 of this report).

The **milestone** "Simulation model tool elaborated" was achieved by the revised deadline of 31/03/2024. Training sessions and stakeholder engagement initiatives were conducted. Results from scenario analyses are stored and visualized within the application, accessible via the following link: https://bioekonomika.lbtu.lv/orgbalt/. The SM supports policymakers in evaluating long-term management strategies, and its refinement (upon the availability of new information from other projects about management scenarios not included in LIFE OrgBalt – especially rewetting and water retention and fire risk reduction aspects) is planned to be continued beyond the Project timeline as part of After-LIFEt activities.

All trainings were implemented till August 2024 (**milestone** "Two-level training sessions organised and held" - completed). In total, there were held 11 training workshops (remotely and face to face, organized in 2023-2024) aimed at transferring the knowledge and support tools developed in the Project to the target groups. In total, there were 260 participants. 4 training workshops were combined with National workshops (NW) for practical purposes. Evaluation of the workshops was done through a survey of participants. Two types of surveys are prepared. One focuses on participants' opinions on the suitability of different CCM measures. The other survey was prepared to assess the Project event and to receive feedback on the contents and presentations of each event. For **milestone** "Developed tools applied at end users' level at least 10 times" the relevant report is prepared (C5/8) and submitted on August, 2024. For **milestone**

"Developed tools applied at end users' level at least 10 times" the relevant report is prepared (C5/8) and submitted on August, 2024. Project proposal envisioned that application of the developed model(s) will be done through enabling end users to put the developed tool(s) in practical use through specially targeted training sessions provided by consulting and advisory organizations. There were also individual meetings concerning these models and their application with the Latvian Forest Owners' Association, farmers' associations, Latvian Rural Advisory and Training Center, Forest Advisory Services Center, The Institute of Agricultural Resources and Economics and other organizations. Both models (PPC model and SM) were disseminated to various organizations for testing and application. Specifically, the models were sent to stakeholders including governmental agencies, research institutions, advisory or consultation services, and universities across all partner countries. Additionally, models were made accessible online.

Milestones "Ministry of Agriculture of Latvia has taken over and applied implementation measures for CCM" and "Proposed CCM measures integrated in Rural Development Programmes for the post 2020 planning" were achieved by integration of the CCM measures in the (Latvian) NECP instead of RDP, as at the time the CAP SP was being prepared, the Project results were not available yet, however, they were done in time for the NECP development. This planning document is even more relevant for the Project results, as it is the main document for reaching the targets of the LULUCF Regulation. The Latvian NECP, which was submitted to the European Commission in the summer of 2024, included these measures that are based on the Project results 1) use of wood ash for soil enrichment/fertilization in drained organic soil forests; 2) rewetting/paludiculture in cropland/grassland organic soils - afforestation with black alder together with rewetting; 3) trees, hedges along ditches; 4) group of trees in pastures (0.09 ha per 1 ha of pasture) – agroforestry; 5) afforestation where rewetting is not possible. Other Project partner country representatives were informed on the Project results in each countries NWs but each country has to consider their national position and choose to incorporate the results in their respective documents or not.

Regarding the **deviations** from the Project proposal, Finland and Germany were excluded from the SM development. It was done due to several factors: 1) challenges with data availability and compatibility, including differences in data collection methods and formats; 2) resource constraints such as time, expertise, and funding; 3) legal and administrative complexities, along with country-specific regulations. Although the GA proposed building the SM using Spreadsheet format, the decision was made to use R programming language and RStudio. This shift was due to the superior capacity of R to handle large, complex datasets, such as the detailed spatial data required for modelling across three countries. R allows for advanced geospatial analysis, faster data processing, and greater scalability than Spreadsheet format. Additionally, the tool benefits from extensive R statistical and data visualization libraries, which facilitate more accurate and dynamic simulations of GHG emissions, land use changes, and socio-economic impacts. The ability to automate data updates and expand the model further enhances the long-term utility of the tool, making R the more efficient and sustainable choice.

D.1: Monitoring of the implementation of project activities

Status:	**Foreseen start date:**	**01/01/2020**	**Actual start date:**	**01/02/2020**
Completed	Foreseen end date:	31/08/2024	Actual end date:	31/08/2024

Deliverable name	Deadline	Status
Initial monitoring report (D 1/1)	01/01/2021	Completed (submitted with the MTR)
Midterm monitoring report (D 1/2)	01/01/2022	Completed (submitted in BUTLER)

Final monitoring report (D 1/3)	01/07/2024	Completed (submitted in BUTLER)
Milestone name	**Deadline**	**Status**
Monitoring of the Project impacts implemented	01/07/2024	Completed

TWG "Monitoring" (led by UT) worked on monitoring of the impacts of implementation of the Project activities in demonstration and reference sites. UT led the work on the activity in collaboration with SILAVA, Luke, LAMMC and BaltCoasts. The results of the work were summarized in initial, midterm and final monitoring reports. Work was concluded within the set (initial or revised) deadlines thus reaching D1 **milestone** "Monitoring of the Project impacts implemented".

The deliverable D 1/1 "Initial monitoring report" (**Action D1: Task 1, Task 2**) established methodology to compare the future effects of CCM measures implemented in demonstration and reference sites across the Baltic States and Finland. The following deliverables - the deliverable D 1/2 "Midterm monitoring report" (**Action D1: Task 1, Task 2**) and the deliverable D 1/3 "Final monitoring report" (**Action D1: Task 1, Task 2**) continued development of the methodological approach and summed up measurement work on assessment of the impact of these measures on GHG emissions, with a focus on CO_2, CH_4, and N_2O fluxes. Reports emphasize the need for long-term monitoring to validate the effectiveness of CCM measures over time. Deliverables D 1/2 and D1/3 highlight the progress made in assessing the impact of CCM measures in 53 monitoring sites across the Baltic States and Finland. Key activities include GHG flux monitoring using static and dynamic chamber methods to measure CO_2, CH_4, and N_2O emissions from soil. Biomass measurements involve quantifying both aboveground and belowground biomass to assess carbon inputs. Carbon inputs from litter, deadwood, and root turnover were tracked to determine net soil carbon balance. Decomposition rates allowed estimation of carbon losses through soil respiration. Soil and water analyses focused on evaluating soil properties (like pH, carbon, and nutrient levels) and monitoring groundwater levels. Project included also the characterization of soil microbial communities using DNA sequencing to understand the impact on GHG emissions; and infrared spectroscopy for rapid assessment of soil nutrient concentrations. Continuous monitoring of groundwater levels helped assess the impact of controlled drainage systems on reducing methane emissions. All these measurements were crucial for assessing the effectiveness of CCM measures and refining EFs for GHG inventories. Project impact monitoring data were used as input to GHG impact and projections modelling by using Action`s C2 modelling tool ("SEG modelis").

D.2: Monitoring of the socio-economic impact of the Project actions

Status:	**Foreseen start date:**	**01/01/2020**	**Actual start date:**	**01/02/2020**
Completed	Foreseen end date:	31/08/2024	Actual end date:	31/08/2024
Deliverable name			Deadline	Status
Initial monitoring report on socio-economic impact of project actions (D 2/1)			01/07/2021	Completed (submitted with the MTR)
Final monitoring report on socio-economic impact of project actions (D 2/2)			01/07/2024	Completed (submitted in BUTLER)
Milestone name			**Deadline**	**Status**
Monitoring of project's socio-economic impact implemented			01/07/2024	Completed

BaltCoasts carried out the socio-economic monitoring tasks with support from all partners involved in TWG "Monitoring". Monitoring focused on 1) evaluation of the socio-economic effects of implemented CCM measures in demo sites and 2) assessing socio-economic effects of the Project outcomes in policy planning. The deliverable D 2/1, "Initial monitoring report on the socio-economic impact of project actions" (**Action D2: Task 1, Task 2**), was developed, outlining the methodology for the assessment of socio-economic effects of implemented CCM measures in demo sites and the socio-economic effects of the Project outcomes in policy planning, as well as providing an overview on the demo sites and CCM scenarios implemented therein. Based on the research and results obtained within the Project, BaltCoasts carried out monitoring and assessment of the socio-economic impacts of the Project actions and summarized the findings in deliverable D 2/2 "Final monitoring report on the socio-economic impact of project actions" **(Action D2: Task 1, Task 2**), which was finalized by the reviewed deadline of 01/07/2024. The monitoring activities were carried out by incorporating results and data of Actions C1, C2, C3, C4, C5, and D1, as well as communication activities.

As a **deviation** from the initial plan, it was determined that changes in the monitoring methodology and data collection approach are required for a more consistent analysis of the effects of implemented measures. Instead of initially planned data collection through separate questionnaires, the final assessment was based on data obtained through modelling tools developed within the Project (PPC model (Action C4) and SM (Action C5)) – quantitative and qualitative information provided by site owners and Project partners responsible for the activities in the demonstration sites, other input data based on previous researches and output data of the model estimations and calculations regarding the feasibility of the investments.

Within Action D2, the socio-economic effects of implemented CCM measures in demonstration sites were measured according to investment criteria, profitability and expected returns, employment, territory establishment and maintenance costs, GHG reduction and ecosystem services. To assess the socio-economic effects of the Project outcomes in policy planning, two categories of indicators were defined: 1) **policy indicators**: recommendations developed based on Project results, advisory and support for policy planning, contribution to the achievement of EU and national CCM goals, and 2) **stakeholder and society involvement**: stakeholder engagement and participation, capacity building and increase of knowledge, collaboration and experience exchange, information and awareness rising. Action D2 provided information on the quantitative assessment of the CCM effect, which is mandatory for implementing the measures within the scope of CAP and LULUCF action plans.

D.3: Monitoring and measuring the LIFE key performance indicators

Status:	**Foreseen start date:**	**01/01/2020**	**Actual start date:**	**01/02/2020**
Completed	Foreseen end date:	31/08/2024	Actual end date:	31/08/2024
Deliverable name			Deadline	Status
Report on progress regarding LIFE key performance indicators (D 3/1)			31/08/2020	Completed (submitted with the MTR)
Report on progress regarding LIFE key performance indicators (D 3/2)			31/08/2021	Completed (submitted in BUTLER)
Report on progress regarding LIFE key performance indicators (D 3/3)			31/08/2022	Completed (submitted in BUTLER)
Report on progress regarding LIFE key performance indicators (D 3/4)			31/08/2024	Completed (submitted in BUTLER)
Milestone name			**Deadline**	**Status**

Information on progress regarding LIFE key performance indicators submitted along with the Progress, Mid-term and Final reports	30/11/2024	Completed

All deliverables of Action D3 were prepared within the initial or revised deadlines. The structure of all 4 deliverables was kept the same; information was updated according to the status of the Project implementation. Deliverables describe monitoring indicators related to environmental and climate performance, sustainable land-use, economic performance and replication, communication, dissemination and awareness rising evaluation. The evaluation methodology and data-gathering process are characterized for each indicator. The summary table shows the progress achieved and planned for each indicator evaluation by the end of the Project. SILAVA led the D3 monitoring activity with the support of TWG "Monitoring" experts (UT, LAMMC, LBTU, BaltCoasts). Main contributing experts are listed in the title pages of the deliverable. Deliverable D 3/4, "Report on progress regarding LIFE key performance indicators," summarizes the end of the Project results. The estimated impact GHG reduction in the Project demonstration sites (based on the Project data) was smaller for all gases (CO_2, CH_4 and N_2O) to compare with the amount in the proposal (based on the literature studies). A detailed explanation is provided in Chapter 7, "Key project-level Indicators", of this report. The end of the Project target values were not reached also for some dissemination indicators (Project film broadcasts (viewed 976 times, target 10 000 views), distribution of manual copies (distributed >534 (many online meetings complicated the reach of this indicator), target - 2000 individuals reached) and behavioral change (262 individuals instead of 300). For all other indicators, the end of the Project target values were reached or overreached.

E.1: Information and dissemination

Status:	**Foreseen start date:**	**01/08/2019**	**Actual start date:**	**01/08/2019**
Completed	Foreseen end date:	31/08/2024	Actual end date:	31/08/2024
Deliverable name			Deadline	Status
Notice boards (E 1/1)			31/12/2019	Completed (submitted with the MTR)
Scientific publication on impact of climate change on GHG emissions from organic soils (E 1/2)			30/06/2021	Completed (submitted with the MTR)
Short documentary about demo sites and climate change mitigation measures (E 1/3)			01/07/2021	Completed (submitted with the MTR)
Scientific publication on carbon inputs and soil carbon stock changes in forests on drained nutrient-rich organic soils (E 1/4)			30/04/2024	Completed (submitted in BUTLER)
Printed booklet on GHG emissions' mitigation measures (E 1/5)			31/03/2024	Completed (submitted in BUTLER)
Printed project booklet with summaries of main results (E 1/6)			31/03/2024	Completed (submitted in BUTLER)
Scientific publication on GHG emission factors for nutrient-rich organic soils in temperate and hemi-boreal climate zone (E 1/7)			30/04/2024	Completed (submitted in BUTLER)
Layman`s report (E 1/8)			31/08/2024	Completed (submitted in BUTLER)
Production and distribution of e-Newsletters (E 1/9)			31/08/2024	Completed (submitted in BUTLER)
Milestone name			**Deadline**	**Status**

Corporate design and visual identity of the Project developed	31/12/2019	Completed
Notice boards installed	31/12/2019	Completed
Project website and social media accounts developed and published	31/12/2019	Completed
Documentary shot, broadcasted and distributed	31/03/2024	Completed
Scientific publications produced and published	30/04/2024	Completed
Articles, publications, e-newsletters published	31/08/2024	Completed
Project printed materials produced and distributed	31/08/2024	Completed

In the proposal, the set goal was to produce 8 scientific publications in peer-reviewed journals and proceedings as a result of the Project activities (**Action E1: Task 2**). These publications should also be indexed in Scopus or Web of Science databases, with at least two publications in journals that have a citation index above 50% of the sectoral average. The defined content structure for the discussions in the publications was intended to address the demands of NGGI, specifically to verify methodological improvements.

Three specifically named scientific publications were designated as deliverables (E1/2, E1/4, and E1/7). Deliverable E 1/2: Scientific Publication on the Impact of Climate Change on GHG Emissions from Organic Soils (**Action E1: Task 2**). This deliverable was coordinated by Luke, where experts conducted data collection and analysis, ultimately editing the results into a publication. The best available experts from the Baltic-Nordic region were consulted during this process and were included in the publication as co-authors. The expertise from the Project is represented by the following listed authors: J. Jauhiainen, A. Lazdins, K. Soosaar, Ü. Mander, A. Butlers, V. Kazanavičiūtė, J. Heikkinen, A. Lehtonen, and R. Laiho. The final manuscript version was submitted with MTR. The manuscript was subsequently submitted to the open-access journal *Biogeosciences* (European Geosciences Union, impact factor: 3.9 as of 2023) on May 29, 2023, and was published on 07/12/2023. The reference for the publication is as follows: Jauhiainen et al. (2023). "Reviews and Syntheses: Greenhouse Gas Emissions from Drained Organic Forest Soils – Synthesizing Data for Site-Specific Emission Factors for Boreal and Cool Temperate Regions," *Biogeosciences*, 20, 4819-4839. https://doi.org/10.5194/bg-20-4819-2023. The study compiled published, peer-reviewed data on CO_2, CH_4, and N_2O emissions from drained organic forest soils in boreal and temperate zones. It aims to revisit the current Tier 1 default EF provided in the IPCC (2014) Wetlands Supplement to assess whether their uncertainty can be reduced, evaluate the possibility of breaking the broad categories used for the IPCC EFs into more site-type-specific ones, and examine the potential relevance of various environmental variables for predicting annual soil GHG balances, on which the EFs are based.

The deliverable E1/4 “Scientific publication on carbon inputs and soil carbon stock changes in forests on drained nutrient-rich organic soils” **(Action E1: Task 2**) was accepted for publication 12/12/2023 in journal Silva Fennica. Reference is: Lazdiņš et al., (2024); ‘Carbon stock changes of drained nutrient-rich organic forest soils in Latvia’, Silva Fennica 58(1): 22017 (https://doi.org/10.14214/sf.22017). The study aimed to improve knowledge about long-term impact of drainage on nutrient-rich organic soils in hemiboreal forests by including 50 research sites representing drained conditions (*Oxalidosa turf.* mel. (Kp) and *Myrtillosa turf.* mel. (Ks) forest site types) and undrained conditions as control areas (*Caricoso-phragmitosa*, *Dryopterioso-caricosa* and *Filipendulosa* forest site types). Soil carbon stock changes after drainage were evaluated by comparing the current carbon stock in drained organic soils to the theoretical carbon stock before drainage, taking into account the impact of soil subsidence. The study found significant soil subsidence after drainage in both forest site types examined. In the moderate nutrient-rich forest site type, it was concluded that the primary driver of peat layer

subsidence is physical compaction processes, rather than CO_2 emissions from the soil. In contrast, for the nutrient-rich forest site type, CO_2 emissions from the soil significantly contributed to the subsidence of the peat layer.

The deliverable E1/7 "Scientific publication on GHG emission factors for nutrient-rich organic soils in temperate and hemi-boreal climate zone" (**Action E1: Task 2**) is based on Project monitoring data collection and subsequent sample analyses in laboratory, which were started with delay explained earlier. Analysed data was refined publication submitted into Biogeosciences on 11/5/2024. Citation is: Butlers et al., (2024): 'Soil and forest floor carbon balance in drained and undrained hemiboreal peatland forests', EGUsphere [preprint], https://doi.org/10.5194/egusphere-2024-1397, which indicate status of open review process in this journal. Based on received referee comments (received by 7/8/2024) manuscript is modified for resubmission is in due November 2024. The study focuses on examining the soil and forest floor (including ground vegetation) C balance in drained and undrained hemiboreal forests to evaluate drainage impact on C balance. A two-year study was conducted in 26 drained and undrained forest stands with nutrient-rich organic soil in the Baltic states. To assess the C balance, measurements of soil heterotrophic and total respiration were carried out, along with the evaluation of C influx into the soil through litter, including fine foliar litterfall, herbaceous ground vegetation, and fine roots of trees.

Deviations in delivery deadline dates for listed scientific publications:

- For deliverable E1/4 "Scientific publication on carbon inputs and soil carbon stock changes in forests on drained nutrient-rich organic soils" (original deadline 01/09/2022, reviewed deadline 30/04/2024). Due to delays with start of data collection, the set deadline for this deliverable became unrealistic. Some of the intensive laboratory work necessitating biomass sample processing were not available for processing before autumn 2022. Extension of the Project time was considered to allow data collection, processing, and producing the intended scientific publication.
- Deliverable E 1/7 "Scientific publication on GHG emission factors for nutrient-rich organic soils in temperate and hemi-boreal climate zone" (original DL 31/12/2022, new set deadline 30/04/2024). Due to delays with start of data collection, the set deadline for this deliverable became unrealistic. Field data collection includes both GHG data collection and mass-based C-transfer data collection studies. Data analysis and refinement into publication could be started only in autumn 2023. The manuscript was submitted into Biogeosciences, on 11.5.2024 (see: https://doi.org/10.5194/egusphere-2024-1397).

The **milestone** "Scientific publications produced and published" (**Action E1: Task 2**) included total of 8 scientific publications to be produced as a result of Project actions. For quality measures we applied Journal Citation Indicator representing the relative citation impact of a given paper as the ratio of citations compared to a global baseline. A value of 1.0 represents world average, with values higher than 1.0 denoting higher-than-average citation impact (https://mjl.clarivate.com/home). The publishing activity in the Project was run by individual researchers (lead authors) with support from co-author team in the data interpretation and manuscript writing processes. As joint support to support the scientific publishing work TWG "Scientific publications", led by Luke, met in regular meetings in 2 weeks to 2-month intervals for reviewing progress in data processing and development of manuscripts. Publishing of Project scientific results has resulted several publications, and the process of LIFE OrgBalt data results publication continues. Published reporting is listed thematically in "Joint Baltic and Finnish Climate Change Mitigation Action Program" (Deliverable E3). Both the set quantity and quality-based measures have been met in scientific publishing.

The scientific publications status by the Monitoring meeting 27/8/2024 in Riga, can be summarized as: 1) LIFE OrgBalt network-based reports published (15 reports, in; Agricultural and Forest Meteorology (1), Biogeosciences (1), Forest Ecology and Management (1), Forests

(4), Frontiers in Forests and Global Change (2), Iforest (1), Land (2), Rural Development (1), Science of The Total Environment (1), Silva Fennica (1); 14 reports in: Web of Science, JCI score 0.58 – 1.91, average JCI score 1.08, 7 reports in JCI score >1); 2) LIFE OrgBalt initiated reports published (5 reports, in; Civil Engineering Journal (1), Engineering for Rural Development (1), Journal of Environmental Management (1), Land (1), Plants (1); 4 reports in Web of Science, JCI score 0.79 – 1.49, average JCI score 1.05, 2 reports in JCI score >1); 3) LIFE OrgBalt initiated reports submitted (4 reports submitted, to; Biogeosciences (2), Forest Ecology and Management (1), Soil Biology and Biochemistry (1)). All Journals in Web of Science: 2 reports in preparation phase).

The **milestones** "Corporate design and visual identity of the Project developed", "Notice boards installed" (with relevant deliverable E1/1, (**Action E1: Task 5**)) and "Project website and social media accounts developed and published" (**Action E1: Task 1**) were reached and reported within MTR. The **milestone** "Documentary shot, broadcasted and distributed" (deliverable E1/3, (**Action E1: Task 3**)) was reached by developing and publishing 4 **short documentaries** by 26/08/2024. All documentaries are in English with subtitles in all partners' languages (Estonian, Finnish, German, Latvian and Lithuanian), providing expert interviews and informative info-graphics. All Project documentaries are available on the Project webpage, YouTube channel, Facebook page and X page. **The 1st documentary** was released in February 2021, introducing the Project, its activities and its general topic: research and improved organic soil management can reduce GHG. **The 2nd documentary** about GHG emission measurements was released in 2022, focusing on the topic of GHG emissions from nutrient-rich organic soils: what do we know about it, and why do we need to do something? **The 3rd documentary** was completed by the end of 2023, focusing on the main CCM measures implemented in the Project, the role of forest and agriculture land management on organic soils in CCM, including practical management examples, interviews with the Project experts as well as images from some of the Project demonstration sites. **The 4th documentary** was released at the end of the Project in 2024, focusing on the Project results, achievements, and future opportunities. Altogether, the number of views of the documentaries and video materials on digital channels reached 835 views. Furthermore, **2 additional video materials** have been developed within the Project: 1) a short video about the installation of the Project notice boards at the Project demonstration sites (51 views on digital channels) and 2) short retrospective video about the Opening event of the demonstration sites with the visit to demonstration of controlled drainage and conversion of cropland to grassland in Vecauce (Latvia) parish on 19/05/2022 (31 views in digital channels).
In addition to digital channels, documentaries and video materials have been demonstrated at several Project events. Project partners participated in the Project dissemination activities – 3 events with a total participant number of 61 persons as well as on the first day of the Project's final conference with 77 participants. The popular national TV broadcast "Environmental Facts" ("Vides fakti") produced a story about the Project, which was broadcast on 11/06/2022 along with the 2nd Project documentary (source: https://ltv.lsm.lv/lv/raksts/11.06.2022-vides-fakti.id264066). The audience of each broadcast series is 50,000 people. Altogether, by 22/08/2024, the Project video materials, including the broadcast of ''Environmental facts'' (''Vides fakti''), had been viewed 51012 times.

The reach of the **milestone** "Project printed materials produced and distributed" was measured by the number of printed materials distributed to the Project` stakeholders` audience. The first printed material, the **leaflet** (deliverable E1/5), has been printed in all Project languages in 1500 printed copies. The digital version is available on the Project webpage and has been downloaded over 1200 times. BaltCoasts developed the leaflet in cooperation with TWG "Communication". Additionally, the **booklet** (deliverables E1/5 and E1/6) - summary of the main results and booklet on GHG emissions- has been printed in 1200 copies in English and has been developed and published in June 2024. As the main results also include information on GHG

emissions calculations and mitigation measures, the Project consortium combined these booklets into one printed booklet to avoid overlapping or repetition of information. A total number of pages – 8; a digital copy was also prepared. The booklet has been distributed at the Project's events – final conference and in-person national and training workshops, and delivered to partners for distribution after the Project. The Project disclaimer is also provided in the printed version of the booklet. The **Layman's Report** (deliverable E1/8, (**Action E1: Task 4**)) was prepared in 700 printed copies, 200 in English, and 500 in Project partners' languages (100 copies per each, respectively). The printed materials (3400 copies) have been distributed among Project partners and at various Project events, such as the final conference and external events after the conference, as well as digitally distributed on the Project's website and social media accounts.

The **milestone** "Articles, publications, e-newsletters published" (the deliverable E 1/9 "Production and distribution of e-Newsletters", (**Action E1: Task 3**)) was reached by publishing 8 **newsletters** (by 14/08/2024) in the Project webpage. In addition to publishing, all newsletters are e-mailed to stakeholders and interested parties. Newsletters have been sent to 1312 e-mail addresses. By 22/08/2024, in total, **26 articles** were published on the Project website and distributed via social media: 1) 6 technical articles (focus on scientists or practitioners); 2) 10 articles for the general public (focus on society in common); 3) 10 popular articles (focus on society in common). The number of digital reaches of published popular articles, technical articles, articles for the general public, press releases and leaflets on the Project webpage is 6457 downloads (01/08/2021 – 14/08/2024) and 9685 downloads from the beginning of the Project by 14/08/2024, . The number of page views of published popular articles, technical articles, articles for the general public, press releases and leaflets on the Project's webpage, is 4388 pageviews (from the beginning of the Project to 14/08/2024). Altogether, the reach, evaluated by the number of downloads of articles and newsletters from the website, e-updates from the newsletters sent out from the start of the Project by 14/08/2024 is over 15385 (including pageviews) or 10176 (excluding pageviews), which exceeds the planned value of the indicator in Project proposal. In total, till August 2024 there are developed **10 press releases**, distributed to media and posted on social media/websites. In total, **5 Policy briefs** were created (1 per partner country in EN, DE, EE, FI, LT, LV) and distributed to stakeholders at the political level and posted on the website. Policy briefs are country-different and summarise key aspects of the Project and offer decision-makers an overview of the main issues and potential solutions; they include recommendations for policy and decision-makers.

E.2: Dissemination and training events

Status:	**Foreseen start date:**	**01/04/2020**	**Actual start date:**	**01/04/2020**
Completed	Foreseen end date:	31/08/2024	Actual end date:	31/08/2024
Deliverable name			Deadline	Status
Presentations and participants lists of the events (published in the Project website) (E 2/1)			31/08/2024	Completed (submitted in BUTLER)
Milestone name			**Deadline**	**Status**
First National workshops on climate change mitigation measures for nutrient-rich organic soils held			30/06/2020	Completed
Presentation of the project results in relevant international and local events performed			31/08/2024	Completed
Second National workshops on climate change mitigation measures for nutrient-rich organic soils held			30/06/2024	Completed
Educational events for students of universities held			31/05/2024	Completed

Framework for training sessions for individual stakeholders elaborated and first training sessions organised	30/06/2024	Completed
Final international conference held	31/07/2024	Completed

The deliverable E2/1, "Presentations and participants lists of the events", was prepared within the reviewed deadline of 31/08/2024. The deliverable includes a list of events and links to presentations. The **milestones** of activity E2 were reached by organizing and participating in the Project through multiple events and activities. Presentation of the Project and its results in external events were carried out throughout the Project duration (2020-2024), aimed to enhance knowledge transfer, shared understanding and networking on Project results and insights - milestone "Presentation of the Project results in relevant international and local events performed". In total activities under this **milestone** gathered around 1500 participants, more information on events, agendas, presentations and number of participants is provided in deliverable E2/1. The **milestone** "Educational events for students of universities held" was reached by organizing educational events (2021 – 2024) to inform university students about the Project themes, activities, and results. Educational events where the Project information was shared gathered at least 316 participants. More details on events and the number of participants is provided in deliverable E2/1. The **milestone** "Framework for training sessions for individual stakeholders elaborated and first training sessions organised" was reached by elaboration of the training framework (Action C5, deliverables C5/1 and C5/5) and organizing in total 9 training workshops (remotely and face to face) in 2023-2024, gathering in total 260 participants. Training workshops were aimed to transfer the knowledge and support tools developed in the Project to the target groups – land owners and managers, farmers' and foresters' NGOs, rural and forestry advisors. More details on events and the number of participants are provided in deliverable E2/1. The **milestone** "Final international conference held" was reached by organizing an international conference of the Project "Climate Change Mitigation in Organic Soils in Agricultural and Forest Lands" on 13.-14.06.2024 at the Academic Centre of the University of Latvia. The conference spanned 2 days and was held in person in Riga, Latvia, with the option for attendees to participate through the online streaming of the first day. 77 participants joined in person on the first day of the conference, and 116 joined online. The conference showed high engagement rates: engaged participants scored 84% (100 out of 119 Slido participants engaged with pools or Q&A), Q&A engagement score was 49% (58 out of 119 Slido participants asked a question or voted in Q&A), poll engagement score was 71% (85 out of 119 Slido participants voted in a poll). On the conference's 2nd day, 39 participants joined the Project's demonstration site visits. Altogether, the conference gathered 232 participants. Information on the conference, agenda and presentations are provided on the Project webpage.

The National workshops (NWs) related **milestones** were reached by organizing 2 rounds or workshops. MA organized the first round of workshops in all Project partner countries from April 2020 until the beginning of July 2020. Events gathered almost 150 stakeholders internationally. More in-depth information was provided within the Mid-term report. The second round of NWs was held in all Project partner countries from April 2024 until May 2024. These workshops (all except the Latvian NW) were organized in combination with one of the training workshops. At the end of the Project, 3 workshops/seminars were planned in all partner countries. In order have better engagement, MA, together with Project partners, decided to combine the NWs with one of the Training workshops. To provide an aspect of the Project partner country knowledge exchange, each NW included a presentation by a representative (not involved in the Project) from the partner country. In all workshops MA expert provided a presentation on how organic soil management is integrated into national and EU policy. The NW in **Estonia took place on the 8th of April** (27 participants). For knowledge exchange, the workshop was joined by Dr. Ivo Vinogradovs, lead researcher at Latvia University, who gave an insight into peatlands mapping in Latvia. Workshop was combined with a Training workshop on

the SM. **On the 10th of April** MA organized a **NW in Latvia** (63 participants): representatives of public administration institutions, NGOs, nature protection and scientific organizations. For knowledge exchange, the workshop was joined by Dr Almut Mrotzek from Peatland Agency Mecklenburg-Vorpommern. Dr Mrotzek informed on Peatland Agency activities, ongoing and planned projects. This was a separate event; Training workshops were organized separately. NW in **Germany took place on the 12th of April** with focus on knowledge exchange on peatland management in Germany and Latvia. The participants (27) were mainly from ministries and agencies in the German federal states in charge of agriculture and the environment. For knowledge exchange, the workshop was joined by Dr. Ivo Vinogradovs, lead researcher at Latvia University who gave an insight into peatlands mapping in Latvia. This was a combined workshop – with both Training workshops. Therefore, both models (PPC and SM) were presented. NW in **Lithuania took place on the 19th of April**. The attendees (43) represented policymakers, researchers and NGOs. The workshop was joined by Anna Salminen, Chief Specialist at the Ministry of Agriculture and Forestry of Finland. She presented the Finnish approach to the sustainable use of peatlands. This workshop was combined with a Training workshop on the SM. NW in **Finland took place on the 30th of May** (23 participants). For knowledge exchange, the workshop was joined by Dr Almut Mrotzek from Peatland Agency Mecklenburg-Vorpommern. Dr Mrotzek informed on Peatland Agency activities, ongoing and planned projects. This workshop was combined with a Training workshop on the PPC model.

E.3: Networking

Status:	**Foreseen start date:**	**01/08/2019**	**Actual start date:**	**01/08/2019**
Completed	Foreseen end date:	31/08/2024	Actual end date:	31/08/2024
Deliverable name		Deadline		Status
Joint Baltic and Finnish Climate Change Mitigation Action Program (E 3/1)		31/07/2024		Completed (submitted in BUTLER)
Milestone name		**Deadline**		**Status**
Joint Baltic and Finnish Climate Change Mitigation Action Program established		31/08/2024		Completed
Experience exchange meetings held		31/03/2024		Completed

Networking was mainly built on cooperation with similar international projects and actions to promote a common understanding of the climate-smart management practices. Networking possibilities were mapped in 2019, and the first meetings with parallelly running projects and participating events were held (**Action E3: Task 1, Task 2**). COVID-19 changed situation (meetings cancelled/postponed, data collection challenges) and the recovery of networking by use of virtual networking/meetings was not easy. In 2023, on-site networking activities in Europe were reinitiated in a larger scale. Spring 2023 represents the period of ceasing field activities in the Project and main data processing and analysis period started in autumn, which set limited possibilities to bring in results from the Project in networking events. The major meetings, conferences and external networking events (more than 30) participated are described in more detail (information on events, agendas, presentations and number of participants) within the deliverable E2/1 "Presentations and participants lists of the events". Planning 'After OrgBalt' spin-off research started in partner organizations during the Project. Multiple consortium proposals aiming for continued measurements and complementary data collection were developed (data not available). New projects with partners originated from LIFE OrgBalt consortium have initiated thematically continued complementary research activities: 1) "Wetland restoration for the future", Horizon AlfaWetlands, EU-funded (HORIZ-CL5-2021-D1-01) with partners from Luke, UT, SILAVA, activity from year 2022 onwards,

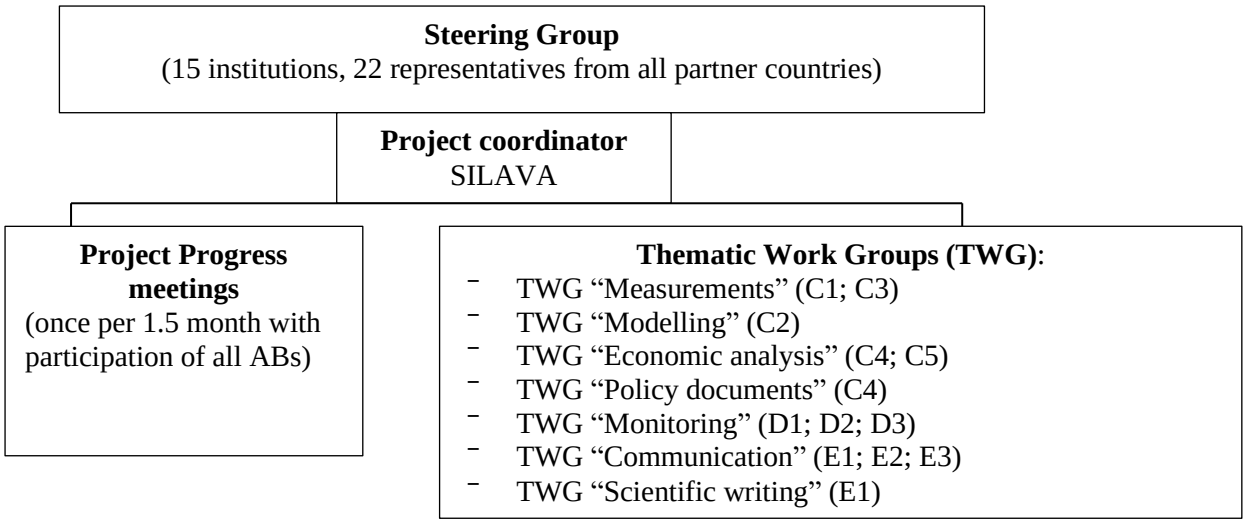
complementary data; 2) “Do shrubs destroy or maintain peat soil carbon pools?” funded by Research Council of Finland (former Academy of Finland), Luke, 2022-2026, complementary data.

The deliverable E 3/1“Joint Baltic and Finnish climate change mitigation action program” (**Action E3: Task 2**) was completed by the revised deadline of 31/07/2024. The document summrizes the current state of data available for estimating soil GHG exchange and EFs for drained peatlands used in agriculture and forestry, while acknowledging the contributions of the Project. Short sections address paludiculture as a specific and novel land use with significant potential for reducing GHG from organic soils, and rewetting for ecosystem restoration, which presents a potential after-use for drained agricultural and forest lands. A brief examination of the state of models and decision support tools for comparing different land management options is also included. Next, the document explores the societal and political challenges associated with CCM actions on drained organic soils and an action plan for advancing the After-LIFE of the Project is outlined, identifying the most critical remaining knowledge gaps. The document preparation was led by Luke, with support from SILAVA, MSF, and LAMMC. Further comments, referrable literature, and suggestions on the document was provided by the Project Steering committee member Bärbel Tiemeyer from the Johann Heinrich von Thünen Institute. **Milestone**: “Joint Baltic and Finnish Climate Change Mitigation Action Program Established” with a deadline of 31/08/2024 includes two main tasks: 1) identification of relevant projects and networks, and 2) dissemination actions targeting competent European Comission authorities. In the early Project phase, meetings were held to identify potentially relevant Projects and networks for exchanging experiences and organizing joint events. Depending on the characteristics of the events (advisory, expert discussions, planning, scientific, etc.), their scale (local, national, international), and content (e.g., policies, data retrieval, results dissemination), participation varied from individual partner teams to presentations involving all partners. Joint participation was always discussed beforehand concerning matters relevant to the larger consortium. Despite difficulties caused by COVID-19, this approach resulted in a quite active and relevant list of participated events, ranging from grassroots-level meetings to scientific conferences and policy-maker summits. Much of the Project's early networking efforts (during data collection) were facilitated by previously established scientific collaborations, where the Project members contributed to result publishing and dissemination. Data collection in the Project promoted the establishment of new connections and opportunities for seeking additional research funding. Complementary research established during the Project has enabled the continuation and even expansion of monitoring at several sites included in the Project activities in Finland, Estonia, and Latvia. Participation from various stakeholder groups (e.g., farmers, farmer organizations, industry, and administration) was active in the organized training events (**Action C5: Task 1**) and seminars developed during the Project. During the development of the Joint Action Program, it became apparent that knowledge regarding GHG emissions is still based on a relatively small number of studies; often, results can be conflicting, leaving stakeholders uncertain about which actions to implement—understandably so. Consequently, stakeholders should be more deeply involved as a target group for disseminating any Project results while simultaneously addressing the uncertainties that remain in the state-of-the-art knowledge. Societal questions and the economic viability of policy actions should always be considered. The program provided a research roadmap with listed themes that are essential for advancing climate-smart management practices and fostering collaboration among stakeholders to address climate change challenges effectively and in a more socially and economically just manner.

F.1: Project management

Status:	**Foreseen start date:**	**01/08/2019**	**Actual start date:**	**01/08/2019**
Completed	Foreseen end date:	30/11/2024	Actual end date:	30/11/2024
Deliverable name			Deadline	Status
List of demo sites in the partner countries including location and driving distances (included in the Progress Report) (F 1/1)			31/08/2020	Completed (submitted with the MTR)
After-LIFE Plan (F 1/2)			31/08/2024	Completed (submitted in BUTLER)
Audit report (F 1/3)			31/08/2023	Cancelled with CINEA Letter Amendment Nr 1 to Grant Agreement
Milestone name			**Deadline**	**Status**
All project actions are implemented, expected project results and objectives reached			31/08/2024	Completed

The general Project management approach applied is described in the section 1 "Administrative part" of this report. The Project hierarchy and management structure were set as follows (**Action F1: Task 1**):



All ABs were involved in Project management by participating in regular Project Progress meetings and steering activities, as well as by leading the particular TWGs. TWG "Measurements" was led by UT, TWG "Modelling" - by LAMMC, the lead of TWG "Economic analysis" was shared by LBTU and BaltCoasts, the TWG "Policy documents" was coordinated by MA, TWG "Monitoring" leadership was shared among UT, BaltCoasts and SILAVA, TWG "Communication" activities were coordinated by BaltCoasts and TWG "Scientific writing" was led by Luke.

As a **deviation** from the Project proposal was the shift from the Project Management Group (where not all ABs were included) to the Project Progress meetings (all ABs involved). In total, 12 Project Management Group meetings (at the initial Project implementation phase), 28 Project Progress meetings and multiple operational ad hoc TWGs` meetings were held during the Project implementation – to coordinate day-to-day activities, track the progress and organize work on technical matters (**Action F1: Task 1, Task 2, Task 3**). The Project Steering group was formed from representatives (22) from all Project countries and relevant institutions (15) – ministries, agencies, state services, and research institutions. Representatives from the nature

protection competence institutions (Ministry of Smart Administration and Regional Development of the Republic of Latvia (Nature Protection Department) and Nature Conservation Agency of the Republic of Latvia) were involved in the Steering Group work following the note given by CINEA (letter of 16 July 2021). In total, 9 Steering Group meetings were held during the Project implementation. Apart from meetings - one of the Project's core deliverables, the "Joint Baltic and Finnish Climate Change Mitigation Action Program" (Action E3, deliverable E 3/1), was especially agreed upon (electronically) with Steering Group members.

Deliverable F 1/1, "List of demo sites in the partner countries including location and driving distances", was submitted with the MTR; it indicates the precise locations of the demo sites in Latvia and Finland. The deliverable F 1/2 "After-LIFE Plan" is submitted in BUTLER (**Action F1: Task 4**). The main After-LIFE actions planned (period 2025 – 2029) are: 1) monitoring, maintenance and continuous updating actions including continuation of the intensive GHG and environmental data measurement campaigns in the Project demonstration sites for additional 3 years (600 000 EUR), maintenance and management of the Project demonstration sites in Latvia and Finland (16 000 EUR), maintenance and updates (upon availability of new information from other Projects about management scenarios not included in LIFE OrgBalt – especially rewetting and water retention and fire risk reduction aspects) of Simulation and PPC tools (27 500 EUR), implementing of CCM measures in additional territories in Latvia (in total 73 ha - 56 ha forest land related measures, 17 ha agriculture related measures) (365 000 EUR, ~5000 EUR/ha) and other activities; 2) research publishing continuity actions – up to 8 additional scientific articles based on the Project data (50 000 EUR); 3) dissemination and communication actions including Project website management, participation in international events, educational events and dissemination (4 750 EUR). The deliverable F 1/3 "Audit report" was cancelled by CINEA Letter Amendment Nr 1 to Grant Agreement (GA). **Milestone** of Action F1 "All project actions are implemented, expected project results and objectives reached" is reached as described through this report.

6.2. Main deviations, problems and corrective actions implemented

The main difficulties encountered during the Project are associated with the COVID-19 outbreak and related consequences and restrictions. The most significant impact on Project implementation is caused by the delayed start by about 1 year of the field data gathering (GHG emissions and environmental data measurements in demonstration and reference sites). This was caused by 1) delays in getting analyzers and some other materials because of more complicated procurement procedures as usual and delayed deliveries, and 2) it made direct communication and setting up sites complicated because of local/international travel restrictions. The third reason that slowed down the beginning of measurements was that not all responsible beneficiaries had the same experience level in these kinds of field data measurements, and the harmonizing process took time as well. Data collection in the Baltic States started in January 2021 (in Finland 2020), and according to GA, it should have lasted for 2 years.

Considering the above-mentioned circumstances, the Project asked for its prolongation by one year, and the GA was amended (approved by the Letter Amendment Nr.1) to extend the duration of the Project (Art I.2.2. of the GA) by setting the Project run from 01/08/2019 to 31/08/2024. All other provisions of the GA remained unchanged and in full force. The deadlines of the deliverable products of the Project were reviewed (attachment "Revised forms" to the Letter Amendment Nr.1). All Project activities were completed, and deliverable products were prepared by the extended reviewed deadlines.

Additional difficulty encountered during the Project implementation was the closed number of CCM measures analyzed (following the attachment to the proposal "TABLE C3.1

Description of demo sites)". Measures designed to permanently raise groundwater levels (such as rewetting and restoration of peatlands) were not part of the initial Project proposal and, consequently, were not analyzed using the developed tools and models. This omission raised concerns that excluding these CCM measures might result in models and proposals that lack sufficient inclusivity. To address potential misconceptions, all the Project deliverables, printed materials and the Project website are updated with the disclaimer (the text of which is provided in the Executive Summary of this report) that clearly conveys the Project's limitations. Disclaimer is added to the beginning of the Project documents and emphasized by enclosing it within the box to ensure that everyone interested in the Project results is informed about the limitations encountered.

6.3. Evaluation of Project Implementation

The successes and failures of the Project implementation, lessons learned, the results of the actions and their evaluation against the objectives (assessment on whether objectives are met) are described in the table below.

Action	Foreseen in the revised proposal	Achieved	Evaluation
A1: Development of the project framework	Objectives: The action aims to establish a Project implementation and monitoring framework, evaluate pre-project legal acts and existing management practices, and elaborate the Project results monitoring plan. Expected results: - established framework for implementation and monitoring of the progress and impact of the Project Actions; - the current status including analysis of legal acts and existing management practices for nutrient-rich organic soils evaluated; - monitoring plan to ensure the implementation of the Project results elaborated.	The objectives set in the proposal were achieved: the Project framework (including a detailed work plan) is established, Project impact monitoring guidelines and a set of indicators are developed, and the status quo situation regarding currently used GHG EFs and CCM measures implemented is evaluated.	The proposal envisaged holding a joint international partner meeting in Finland to develop the Project implementation framework. For time and funding savings, this in-person meeting was substituted with multiple online meetings. External assistance was anticipated for MSF for expert services on applied EFs and projections of GHG from organic soils, but it was not carried out because of the good expertise in the field among the Project partners, especially Luke experts who lead status quo information evaluation about applied GHG EFs. The implementation of Action A1 was timely and successful. It set a good starting point for the whole Project's implementation.
A2: Elaboration of the project communication platform	Objectives: The action aims to elaborate a framework for communication, dissemination, replicability and transferability of the Project results.	The objectives of Action A2 were met. The main 3 tasks—the Project Communication Strategy, the stakeholder network identification, and the Replicable and Transferable Plan—were finished in the planned time. To support partners in the communication activities, an internal document, “Communication guidelines,” was prepared, a TWG, “Communication” (led by BaltCoasts),	Establishing the thematic WG “Communication” strongly supported achieving the A2 objectives. The ABs were involved in developing the Project communication platform and regularly provided data on

	Expected results: Framework elaborated for communication, dissemination, replicability and transferability of the project results and outcomes to identified target groups.	was established, and regular coordination and gathering of the communication data were ensured (by BaltCoasts).	communication/dissemination-related indicators via the data collection structure set in the respective MS Teams folders system.
C1: Filling knowledge gaps on GHG emissions from organic soils	Objectives: The main objective of the action is to provide knowledge and activity data for accounting of GHG emissions from nutrient-rich organic soils. Expected results: Knowledge and activity data for accounting of GHG emissions from nutrient-rich organic soils under conventional management scenarios and for evaluation of the long-term effect of the CCM measures provided. The GHG EFs elaborated using measurement data from 50+ sampling sites in the Baltic States and Finland.	Field data (the richest data set ever collected about nutrient-rich soils in the Baltic region) were collected from 53 monitoring sites (demonstration and reference sites) across the Baltic States and Finland. The data collection protocols were developed in close collaboration among ABs. These protocols can be evaluated as achievements by themselves since this is the first time such comprehensive, regionally applicable field manuals are prepared for the methodologies used in the Project. The Project After-LIFE plan plans to publish the refinement of the LIFE OrgBalt data collection protocols into a scientific publication during 2027. GHG EFs (for carbon turnover, CO2, CH4, N2O emissions for cropland, grassland, and forest land categories) are elaborated, and scientific manuscripts to publish them are prepared. Still, as of the end of November 2024, the scientific peer review process (customary part of scientific publishing) is still ongoing.	Thematic WG "Measurements" (led by UT) (with 11 sub-groups) frequently (~ once per month meetings) monitored the fieldwork progress and data collection quality. Two in-person training/calibration seminars were held in Estonia and Lithuania to harmonize the data collection approach, train experts according to the best available guidelines, and alleviate differences in fieldwork understandings detected among ABs. As already described in this report (Executive Summary), measurements started with a one-year delay to compare with anticipated but ran for a full 24 months (as anticipated). All promised data sets (GHG flux monitoring, tree stand biomass measurements, ground vegetation measurements, carbon

			inputs with dead biomass and carbon loss rates, soil microbial communities' data, soil screening (IRS, Fourier Transform Infrared Spectroscopy) data, soil and water analysis) were collected by October 2023. The Project has been requested (CINEA letter of 1 October 2024) to prolong the data collection in measurement sites for additional years to ensure better data quality. It is planned as a separate activity (an additional 3 years of data collection, with an approximate funding needed of 600 000 EUR) within the After-LIFE plan.
C2: Tools for modelling of impact of climate change on GHG emissions	Objectives: The aim of the action is to integrate CCM scenarios and GHG EFs elaborated in action C1. Expected results: Different CCM scenarios for the Baltic States and GHG EFs elaborated in C1 integrated - to cover the whole spectrum of organic soils and climate conditions in TCM climate zone in GHG emission projections.	As the most important results reached under C2 activity, the developed activity data sets and tools (for Baltic States) to be used for reporting and projections of GHG emissions and integrating climate scenarios and projections should be mentioned 1) depth-to-Water (DTW) and wet area maps; 2) a set of equations and a spreadsheet model ("SEG modelis"); 3) a harmonized methodology using infrared spectroscopy to characterize peat properties in nutrient-rich organic soils. By using the developed activity data sets/tools and GHG EFs (developed under C1 and default IPCC 2006 values), the GHG emissions from organic soils were estimated considering climate change – climate projections from the CORDEX database (RCP4.5 scenario), thus integrating climate scenarios and projections of GHG emissions from organic soils. A	The C2 objective is met by developing the activity data sets defined in the proposal and integrating climate scenarios and projections of GHG emissions from organic soils (deliverable C 2/4). The deviation from the planned is the switch from the SUSI-simulator (tested for implementation in Baltic conditions) to using the "SEG modelis" tool developed under activity C2. Initial results using the SUSI simulator showed

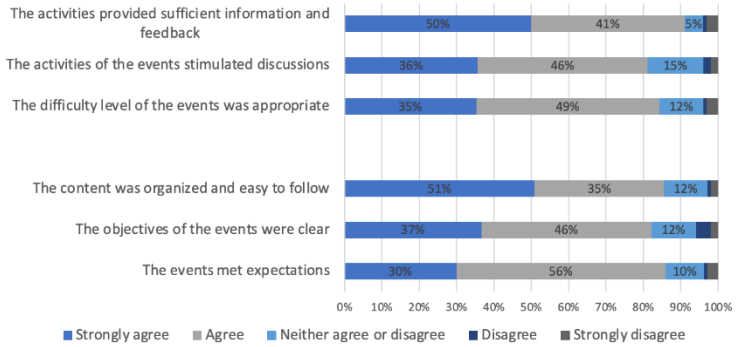
		comparison of total GHG emissions from the drainage of organic soils, applying different EF sets available (IPCC 2006 Guidelines, IPCC 2013 Wetlands Supplement, LIFE REstore results, LIFE Peat Restore results, SNS-120 project results) was made.	significant discrepancies in groundwater level projections compared to actual measurements, leading to the discontinuation of SUSI development for this action. Instead, efforts focused on the "SEG modelis" tool, which was created to estimate GHG emissions and carbon stock changes for different land uses and climate scenarios, using regional EFs and incorporating projections from the CORDEX database.
C3: Implementation of CCM measures in selected demo sites	Objectives: The action is aimed on implementation of selected CCM measures in demonstration areas (demo sites). Expected results: Demonstration sites (and their dissemination facilities for training and education of the target groups) on nutrient-rich organic soils in forest land, cropland and grassland in Latvia established so that they characterize conditions in all Baltic States and Finland.	All demonstration sites are established in Latvia (14 sites) and Finland (3 sites), as well as 36 reference sites (related to each demo site) in Latvia, Lithuania, and Estonia. Each demo site is equipped with an informative notice board. The maintenance of the notice boards after the Project ends is planned within the Project's After-LIFE plan.	The objective of Action C3 is reached by establishing the demonstration sites and installing notice boards along each site to provide brief information about the Project and the particular CCM measure demonstrated. There was a short-term delay in establishing one of the sites (controlled drainage site LVC305), but it was overcome without any impact on the Project data collection, dissemination, or training activities held in the demo sites.

C4: Strategies and action plans	Objectives: Replicability and transferability of the Project results by integration them in relevant policies, strategies and action plans, thus delivering both the replicable outcomes and replication mechanisms. Expected results: Project results integrated in relevant policies, strategies and action plans.	The most significant achievements of Action C4 are the development of the PPC model (all project CCM measures included) and the preparation of proposals for the inclusion of the Project results in policy documents. PPC model is developed, tested (with stakeholders) and publicly available (https://www.orgbalt.eu/?page_id=2761) as well as available for further improvements upon the availability of new information from other Projects about the valuation of biodiversity aspects, water retention and fire risk reduction and management scenarios not included in LIFE OrgBalt project (especially rewetting). The later activity is planned within the project After-LIFE plan. Proposals for improvements of sectoral policy documents are prepared based on the end of the Project results (deliverable C 4/5), but it is planned to update the relevant policy documents by mirroring the continuous Project updating (e.g. inclusion of the new management scenarios, especially ones related to rewetting and peatland restoration) during its After-LIFE period.	The objective of Action C4 is reached by timely concluding the work on the PPC model and proposals for improvement of the policy documents. Still, the lesson learned from this activity is the need for indeed a broad perspective regarding the CCM strategies analyzed. The CCM measures identified for analysis within the Project were defined in 2018 when there was no intensive discussion about rewetting-related measures as one of the most promising CCM strategies; thus, these measures were not included in the Project scope. This shortage is planned to be mitigated by continuing work on updates based on the availability of new information from other Projects (on rewetting-related measures impacts) and respective updating of the Project modelling tools (PPC model and Simulation model) and proposals (actions included in the Project After-LIFE plan).
C5: Replicability tools	Objectives: The main objective of the action is to ensure the replicability and	Developing the Simulation model and carrying out the training activities (for both models – PPC and Simulation) are the most significant achievements under Action C5. The Simulation model has been developed and is available	The objective of Action C5 is reached by timely developing country-level modelling tool (Simulation model) and

	transferability of the Project results in Baltic States, Finland, Germany and the whole TCM climate region in Europe. Expected results: The replicability and transferability of the Project results in Baltic States, Finland, Germany and the whole TCM climate region in Europe ensured by providing applicable support tools and enabling their application on regulatory, as well as end-user level.	(https://bioekonomika.lbtu.lv/orgbalt/) and ready for use in modelling nutrient-rich organic soil management in the Baltic States. A comprehensive training and informative campaign was organized to promote transferability and replicability of the Project results in the partner countries. Altogether, 524 persons participated in the National and training workshops on CCM measures for nutrient-rich organic soils in partner countries (Finland 78 participants, Germany 75 participants, Lithuania 100 participants, Estonia 77 participants, Latvia 194 participants).	effectively organizing training (replicability and transferability) activities. Likely, as in the case of the PPC model, rewetting and peatland restoration-related scenarios are not included in the scope of the Simulation tool and, consequently, were not discussed within the training activities. This issue (the scope of the CCM measures was too narrow, and there was a lack of rewetting and restoration-related scenarios) was raised during the training workshop (12/04/2024) for German stakeholders. Because of time and funding constraints, updating the scope of the CCM measures within the LIFE OrgBalt project was impossible. Still, the updates to widen the scope of CCM measures (especially by including rewetting-related measures if relevant information is available from other research projects) are planned within the Project's After-LIFE plan.
D1: Monitoring of the implementation	Objectives: The aim of the action is to evaluate impact of implemented CCM measures	The monitoring framework was set based on the methodology agreed upon and used for the project data collection. Consequently, the monitoring data was gathered and analyzed (> 30 000 GHG samples, > 1 000	Action D1's objective is reached by providing the initial, midterm, and final monitoring of the GHG emissions in the demo sites. The

of project activities	on GHG emissions in demo sites. Expected results: The impact of implemented measures on GHG emissions in demo sites evaluated and identified impacts compared against the target indicators.	water samples, > 1 100 soil samples, ~ 2 000 biomass/litter samples), and the analysis results provided the basis for the evaluation of the impacts of the implemented measures – summarized in catalogue of the CCM actions (deliverable C 1/2) and used for calculation of the GHG related key project indicators.	lessons learned include understanding that data collection based on the chosen methodology is effective but highly labor-intensive. Collated data needs to be and will be further elaborated and published (there is significant potential—already touched upon within the Project`s After-LIFE plan). The data collection methods (tech. developments) should be adjusted to improve the impact assessment of various strategies further.
D2: Monitoring of the socio-economic impact of the Project actions	Objectives: The action aims to monitor and evaluate the socio-economic impacts of the Project actions. Expected results: - monitoring of the socio-economic impacts of the Project actions done for assessment of the success of the Project implementation; - the identified socio-economic impacts of the Project actions evaluated in order to determine how their implementation has	Under Action D2 the socio-economic monitoring to evaluate the impacts of implemented CCM measures and their influence on policy planning was successfully conducted. The results are summarized in two key deliverables: the initial and final socio-economic impact reports, which outline the assessment methodology and provide a comprehensive analysis of demo site implementations.	The adjustments were made to the data collection approach, shifting from separate questionnaires to using modeling tools (PPC and Simulation models) based assessments, leading to more consistent and reliable data. The Project achieved a thorough assessment of investment profitability, employment effects, GHG reduction, and ecosystem services, while also contributing to policy recommendations

	contributed to the Project objectives; - timely identification of the risks related to separate actions or project in general provided.		
D3: Monitoring and measuring the LIFE key performance indicators (KPI)	Objectives: The action aims to monitor the Project progress based on set indicators. Expected results: Compilation of required information for completion of the indicator tables (quantitative and qualitative) done and monitoring of the Project progress ensured.	The KPI monitoring approach was set timely, and yearly KPI reports were prepared to monitor all identified indicators. KPI indicators were initially (at the beginning of the Project implementation) added to the KPI database web tool and updated (in the KPI database web tool) at the end of the Project. Most KPIs were reached or overreached at the end of the Project, and proper justifications were provided (description under activity D3 in the technical part of this report) for those – not reached (GHG emission reduction and particular communication/dissemination indicators.	The work was processed relatively smoothly and in accordance with the proposed schedule—it was supported by effective collaboration among the Project TWGs.
E1: Information and dissemination	Objectives: The objective of this action is to provide Project visual identity and information as well as dissemination deliverables within the Project. Expected results: Project visual identity created and dissemination deliverables prepared and disseminated.	Project visual identity and information and dissemination deliverables were prepared and disseminated within E1 activity. In quantitative numbers, the developed information and dissemination materials include 1) 3 specifically named scientific publications (as the Project deliverables E1/2, E1/4 and E1/7) and 38 LIFE OrgBalt network-based or initiated scientific reports published. As well as 6 manuscripts submitted for publishing (as of the end of November 2024); 2) 4 short documentaries and 2 additional video materials; 3) the Project leaflet and booklet; 4) the Layman`s report; 5) 8 newsletters; 6) 26 articles (technical, popular, for general public); 7) 10 press releases; 8) 5 policy briefs (1 per country).	The objective of activity E1 was reached by developing and distributing all planned information and dissemination deliverables. No significant deviations from the planned were encountered. All relevant dissemination materials were updated with the Project disclaimer (as soon as it was elaborated in its final text version and where it was possible).
E2: Dissemination	Objectives:	All planned dissemination and training events were organized following the initial schedule. Altogether, by	The objectives of the activity E2 are reached, communication,

and training events	The objectives of this action are communication and information exchange, raise of the public awareness and promotion of the benefits provided by climate smart land management. <u>Expected results:</u> - communication and information exchange on the Project topics, process and results ensured with stakeholders, target groups and general public; - the public awareness raised by organization of the training events; - benefits provided by climate smart land management promoted by organization of NWs to the specified target groups.	22/08/2024, the number of participants in Project events, external networking events, and e-mails sent to stakeholders reached 3965 persons, which exceeds the planned value of the indicator in the Project proposal. The surveys carried out from the beginning of the Project until 19.08.2024 were responded to by 291 respondents, and below, you can see the common evaluation of events. 	information exchange, awareness rising and training events for different target groups are hold in accordance with the planned. The total respondent number exceeds planned and overall evaluation (by participants) of the organized events is positive.
E3: Networking	<u>Objectives:</u> The objective of this action is to create a networking structure for joint actions aimed for CCM. <u>Expected results:</u> Networking with the organizations and Projects for further experience exchange and know-how transfer done.	Within the activity, E3 knowledge, experience exchange and networking activities occurred with more than 15 other Projects and partners operating in similar or related fields in Germany, Denmark, Great Britain, Iceland, Finland, Belgium, Lithuania, Estonia and Norway. In total, Project partners participated in more than 20 external events, with 1950 participants in person and at least 1600 remotely.	The COVID-19 outbreak initially slowed down the networking activities, but networking objectives were met towards the last two years of the Project implementation (although the funding left was restricted during 2023 because the Project was prolonged by one year).

F1: Project management by SILAVA	Objectives: The aim of this action is to perform Project management. Expected results: Project management performed to achieve the Project aims. A clear Project hierarchy and administrative and financial management structure established to ensure successful Project implementation from kick-off meeting through implementation of actions.	The Project administrative (including international steering (9 Steering Group meetings)) and financial management structure (with internal guidelines) were set. Regular progress meetings (28 meetings in total during the Project run) were organized to coordinate the Project and track its progress. Seven thematic WGs (with ad-hoc subgroups) were set to enhance effectiveness and support good progress of the Project implementation in all its activities.	Overall, the Project management work went well. No major obstacles or failures were encountered. Flexible solutions were found for day-to-day problems faced, Project ABs were supportive and open to collaboration.

To indicate which Project results have been immediately visible, we would emphasize the results which are already actively used by the Project stakeholders, and these are 1) depth-to-water and wet area maps for all three Baltic States (Action C2) where the Project experts have been approached by state companies and individual land owners by requests to support (by advice) the usage of the developed data sets in practice; 2) PPC model and Simulation model which are ready to use either at land parcel level or country level (respectively) to do initial analysis of management possibilities and outcomes (economic and climate-related) in case of nutrient-rich organic soil used in forestry or agriculture. The Project disclaimer is added to both models (tools) to avoid misinterpreting their results. Among the results, which will only become apparent after a certain time period, the elaborated first GHG EFs (Action C1) can be mentioned since, as of November 2024, the scientific manuscripts publishing these results are still going through the customary scientific peer-review process. The results are ready based on the Project data and are not expected to change significantly during the peer review but will be available for consideration to include them in national GHG inventories (upon the intention of the respective national NGGI team and policy planners) after the scientific publishing process is concluded.

The replication efforts were based on the Replicability and Transferability Plan (deliverable A 2/3). The development and communication of the PPC model (Action C4) and Simulation model (action C5) represent the main replication efforts—11 training sessions (including 4 training workshops combined with NWs) with the participation of 260 national stakeholders from all partner countries (Actions E2 and E3). Replication sessions provided insight into the Project results and the developed models suggested to be considered for replication in the Project partner countries and overall, in the Temperate Cool Moist Climate Zone. To avoid misinterpretation, both tools at their final versions are provided with a disclaimer on their limitations in substance and usage. After-LIFE plan includes a description of further work planned on maintenance and updates (upon the availability of new information from other projects about management scenarios not included in LIFE OrgBalt – especially rewetting and water retention and fire risk reduction aspects) of Simulation and PPC tools. Thus, replication of the best available results will be ensured.

The effectiveness of the dissemination activities can be characterized by events organized and, thus, stakeholders reached to disseminate Project work and results. The total number of events participated or organized to spread the word on the Project exceeds 30, overall auditory reached – more than 1300 individuals (not to count written and video materials). We did not identify any major drawbacks in disseminating the Project results.

As for policy impact evaluation, policy makers were reached within 2 rounds of NWs (April/July 2020 and April/May 2024) in total gathering more than 330 participants. By the end time of the Project, integration the Project results (analyzed CCM measures) in policy documents is done by Latvia – in Latvian NECP. Other Project partner country representatives were informed through NWs but the decision on incorporated CCM measures is up to countries in accordance with the respective national positions. The same refers to implementing the elaborated first GHG EFs for nutrient-rich organic soil. The main barrier to the policy impact achievement was the closed scope of the analyzed CCM measures (set in the Project proposal) which did not include measures related to a permanent increase of ground water level (like peatland rewetting or restoration), which are considered as one of most potent peatland CCM strategies at the end time of the Project. The barrier was overcome at the best possible way – by including disclaimer describing these limitations in all Project deliverables and planning of expansion of the CCM measures examined by using results from other projects (within LIFE OrgBalt After-LIFE plan). As the EU added value to the Project and its actions, the Project contributed to the implementation of EU policy on CCM by (1) demonstrating climate-smart land management approaches in 17 demonstration sites, (2) improving GHG impact assessment

knowledge base (GHG impact assessment related activity data improvements (Action C2, depth-to-water and wet area maps for Baltic States), modelling tools (Action C2, "SEG modelis") and compiling first regional Baltic/Finnish GHG EFs for managed nutrient-rich organic soils (Action C1). If used by countries, Simulation and PPC tools facilitate the implementation of CCM strategies in policy planning, although their limitations are described in the LIFE OrgBalt project disclaimer.

6.4. Analysis of benefits

The direct environmental benefits reached within the Project are 1) sustainable land management in agriculture and forestry in the Project demonstration sites - 28 ha of forest land and 17 ha of agriculture land, which are final actual values of sustainable land use management indicator (Key Project-level Indicator, KPI); 2) climate performance – where the initial values of "Environmental and climate" indicators in the Project proposal were reviewed by using actual data from GHG measurements in the Project demonstration sites – resulting in significantly smaller GHG reduction comparing with the initial calculations (based on literature studies). The actual (measured) GHG emission reduction effect after Project implementation in demonstration sites is assessed to be 85.2 tons CO2 eq./year (420 tons of CO2 eq./year initially assessed based on literature studies). The significantly smaller climate performance values compared with the initial are explained in more detail in deliverable D 3/4, "Report on progress regarding LIFE key performance indicators," and chapters 6.1/D.3 and 7. of this report. Qualitative environment benefits are represented by better policy planning and behavioural change indicator. Better policy planning possibilities are ensured by the improvement of data availability (Action C1 (first regional Baltic/Finnish GHG EFs), Action 2 outcomes on knowledge gaps filling) and two models (PPC (C4) and Simulation model (C5)) developed to support land owners and policymakers in their decision making. Limitations of usage of both models are described and emphasized in the LIFE OrgBalt project disclaimer text added to them and all deliverables. The final actual value of the indicator "Behavioral change" is slightly lower (262 individuals/entities encouraged to change their behaviour) compared with the initially estimated value (300 individuals/entities). The final behavioural change value is estimated by assessing the number of individuals who attended the Project's national and training workshops on CCM and assuming that the information received could impact the behaviour of at least half of the trained individuals.

Analysis of reached economic and social benefits shows a direct impact by full-time equivalent (FTE) jobs created exceed planned and is 12.4 FTE (public bodies and NGOs, additional and non-additional). All Project staff is qualified (at least higher or incomplete higher (for some technicians who are students) education). The Project`s replication is policy-dependent (implementation of the proposed/analyzed CCM measures proposals in policy documents). At the end of the Project period, several CCM measures examined in the Project are included in Latvian NECP (more detailed information in chapter 6.1/C4 of this report), but the inclusion in other partner countries' policy documents and GHG inventories/projections depends on national climate change policy positions. The final actual value of the KPI indicator "Replication/transfer" (24 organizations) exceeds the initially set number of 15 organizations - being part of the Project Steering Group and an additional number of NGOs from all partner countries were also involved in replication and transfer efforts (participants to National and Training seminars). To report on the best practices learned, 1) the as broad as possible scope of the measures analyzed should be emphasized, as well as 2) the necessity to consider a longer minimum (2 years according to IPCC guidelines) GHG and environmental data measuring period to detect the climate change impacts of particular CCM practices as precise as possible. Both lessons learned (necessity of continuation Project measurements for an additional 3 years

and inclusion of rewetting/restoration practices in PPC and Simulation tools) are planned to be covered by activities included in the After–LIFE plan Activity F1) of the Project.

To report on innovation and demonstration value, the Project improves the knowledge, enhances the capacity to apply the CCM measures, and demonstrates the climate-smart management approaches in the Baltic States and Finland. The scarcity of GHG accounting data from the Temperate climate region (https://www.ipcc-nggip.iges.or.jp/public/wetlands/index.html) has been an obvious obstacle for evaluating GHG emissions and CCM potential in organic soils. The Project partnership focused on data collection in the Baltic region's major organic soil areas (nutrient-rich organic soils). For GHG accounting, the status quo situation in the Baltic States was assessed (Activity A1, deliverables A1/2, A1/3). The work was continued by the planning of monitoring actions (fieldwork), which (a) formed a representable set of monitoring sites data on nutrient-rich organic soils under various management conditions, (b) resulted in a harmonized set of modern monitoring methods and monitoring equipment, and (c) formed upgraded harmonized monitoring plan improving typically applied data collection. The developed and on-need basis revised protocols on data collection were implemented (and planned in the Project After-LIFE plan to be published as a scientifically peer-reviewed article). The Project has successfully contributed to developing innovative and replicable environment data collection methods contributing to the identification, verification and demonstration of CCM strategies. The Project has also strengthened the capacity of national NGGI teams by developing a regional collaboration network and contributed to the awareness among landowners and local inhabitants through regular outreach activities. To indicate policy implications, there is such at the national level at the end of the Project phase (integration of several of the CCM measures in the Latvian NECP), but since the NGGI and projections data are used for binding climate change policy targets planning any changes in data usage is politically sensitive and further inclusion of the Project results in policy planning is solely dependent on countries national positions on climate, forestry and agriculture policy planning. Further policy implications are projected when the first GHG EFs elaborated within the Project are published in peer-reviewed publications and thus available for consideration to integrate into national GHG inventories and used for modelling GHG projections.

7. Key Project-level Indicators

To assess the Project’s progress towards achieving the KPI targets the regular monitoring of indicators was done within the activity D3. Yearly assessment reports (deliverables D 3/1, D 3/2, D3/3, D3/4)) were prepared and submitted. The final actual values of the KPIs (final snapshot) for the Project are entered in the online KPI database. The values provided in the online KPI database and the ones included in the Project proposal (in the deliverables of Action D3 (D 3/1, D 3/2, D3/3, D3/4)) differ by structure (not absolute values) because the data structure difference is embedded in the requested data structure of both datasets. The analytical comparison with the targets at the beginning of the Project is provided in the table below – where the KPIs data structure provided by the Project proposal (GA) is used.

KPI indicator	KPI indicator unit	Target values set at the beginning of the Project (end of the Project values)	Final actual target values achieved (end of the Project values)	Comments
Carbon dioxide, CO_2	t CO_2	338	203	Target value (set in GA) of GHG impact (reduction) from the Project demo sites (45 ha) after implementation of CCM measures was projected based on literature studies. The final actual target value is assessed based on GHG measurements and modelling within the Project (Actions C1 (GHG measurements) and C2 (modelling tool "SEG modelis")). Both values (338 t CO_2 and 203 t CO_2) are cumulative values of GHG (4 years) reduction from 45 ha of demo sites (there is a "unit" mistake in GA and deliverable D 3/4 where unit is t CO_2/yr). The actual value is smaller than projected one (target) because the effect of the CCM measures is of long-term impact, but the target value was set as arithmetical average based on IPCC 20 years period (thus exaggerating mitigation effect for the first years after CCM implementation). Additionally, the conservative approach (considering low carbon input in soil with plant residues) is used in the calculation of final actual target value which also results in limited mitigation effect a few years after management changes. In general, the mitigation effect in the first years is more minor but adds up over a more extended period since CCM measures have a long-term impact. Values included in KPI online data base cannot be directly compared with KPI indicator included in this table because of methodological differences. In case of KPI tool – these are yearly GHG emissions (not reduction) values from the total Project territory of 118 ha (45 ha demo sites + territories where CCM measures are to be implemented within 3 years after Project end – 73 ha).
Methane, CH_4	t CH_4 eq.	35	21	Target value (set in GA) of GHG impact (reduction) from the Project demo sites (45 ha) after implementation of CCM measures was projected based on literature studies. The final actual target value is assessed based on GHG measurements and modelling within the Project (Actions C1 (GHG measurements) and C2 (modelling tool "SEG modelis")). Both values (35 t CH_4 eq. and 21 t CH_4 eq.) are cumulative values of GHG (4 years) reduction from 45 ha of demo sites (there is a "unit" mistake in GA and deliverable D 3/4 where unit is t CH_4 eq./yr). The actual value is smaller than projected one (target) because the effect of measures contributing to CH_4 reduction was partly compensated by an increase in CH_4 emissions (in case of the paludiculture and where ground water level was increased in grassland).

				Values included in KPI online data base cannot be directly compared with KPI indicator included in this table because of methodological differences. In case of KPI tool – these are yearly GHG emissions (not reduction) values from the total Project territory of 118 ha (45 ha demo sites + territories where CCM measures are to be implemented within 3 years after Project end – 73 ha).
Nitrous oxide, N_2O	t N_2O eq.	47	28	Target value (set in GA) of GHG impact (reduction) from the Project demo sites (45 ha) after implementation of CCM measures was projected based on literature studies. The final actual target value is assessed based on GHG measurements and modelling within the Project (Actions C1 (GHG measurements) and C2 (modelling tool "SEG modelis")). Both values (47 t N_2O eq. and 28 t N_2O eq.) are cumulative values of GHG (4 years) reduction from 45 ha of demo sites (there is a "unit" mistake in GA and deliverable D 3/4 where unit is t N_2O eq./yr). The actual value is smaller than projected one (target) because the Project results demonstrated significantly smaller N_2O emissions in the reference scenarios; therefore, the mitigation effect was smaller than expected. Only the sowing of legumes instead of continuous rotation of cereals reduced N_2O emissions in the agriculture sector (according to NGGI reporting categories). Values included in KPI online data base cannot be directly compared with KPI indicator included in this table because of methodological differences. In case of KPI tool – these are yearly GHG emissions (not reduction) values from the total Project territory of 118 ha (45 ha demo sites + territories where CCM measures are to be implemented within 3 years after Project end – 73 ha).
Sustainable land use, forestry	ha	28	28	Demonstration territories are established according to planned and target is reached.
Sustainable land use, agriculture	ha	17	17	Demonstration territories are established according to planned and target is reached.
Employment, jobs created	FTE	7	12.4	Full-time equivalent (FTE) jobs created exceeds planned and is 12.4 FTE (public bodies and NGOs, additional and non-additional).
Replication	Organizations	15	24	The number of organizations (the Project Steering Group member organizations and the Project partner organizations) counted towards the replication indicator is 24. The target value was overachieved.
Awareness raising	No. of entities/individuals	500	3965 (cumulative)	Awareness raising indicator value was calculated as the total number of individuals who participated in the Project events, external networking events and e-mails sent to stakeholders. The target value is overachieved.

Website	Total website hits	10 000	41098	During the Project run time, the website was visited by 10031 individual visitors, and total pageviews were 41098. The target value was overachieved.
Behavioral change	No. of individuals	300	262	Behavioral change was calculated by the number of individuals who participated in national and training workshops (524 individuals), assuming that at least half of them (262 individuals) could have been reached by new information that impacts their behavior. The final actual value is slightly below the target value.
Reach, print media, no. of copies	No. of individuals	2 000	3400	The number of individuals reached was counted by counting altogether all printed and distributed copies of leaflet, layman`s report and Project booklet. The target value was overachieved.
Reach e-update, no. of downloads	No. of individuals	2 500	15 385	The number of individuals reached was assessed by summing the downloads of the Project articles and newsletters from the website and the e-updates from the newsletters distributed, which totals over 15385 and well exceeds the target value.
Reach, film, broadcasts	No. of individuals	10 000	976	Project video broadcasts have been viewed 976 times, which is only 9.76% of the total planned number of individuals reached. However, the story about the Project was broadcast in the popular national TV broadcast "Environmental Facts" ("Vides fakti") ((source:https://ltv.lsm.lv/lv/raksts/11.06.2022-vides-fakti.id264066)) for which audience of each series of the broadcast is 50 000 people. Thus, including the "Environmental facts" broadcast, the reach is over 50 000 individuals, which exceeds the planned value.
Reach, manual, no. of copies	No. of individuals	2 000	>534	The overall assessment of the manual training material copies distributed is based on the number of manual and digital copies distributed during in-person and online workshops. The target value was underachieved, but the digital copies of the materials are published on the Project website and available for further reach.
Conference	No. of individuals	150	232	On the first day of the conference, 77 participants joined in person and 116 online, but on the second day, 39 persons joined the Project demonstration site visit, totaling 232 participants for the two days. The target value was overachieved.
Twitter followers	No. of individuals	200	40 973 (cumulative)	The total number of followers (cumulative) is assessed by including the Project partners` accounts that have published information related to the Project. The target value is overachieved.
Facebook followers	No. of individuals	200	83 804 (cumulative)	The total number of followers (cumulative) is assessed by including the Project partners` accounts that have published information related to the Project. The target value is overachieved.

8. Index of deliverables

All Project deliverables are prepared in English and submitted to the BUTLER system. Each has a concise summary part at the beginning. One deliverable (Audit report (F 1/3)) can be found in the BUTLER system as not submitted, but it is one cancelled with CINEA Letter Amendment Nr 1 to GA.

Deliverable No.	Deliverable title
A 1/1	Project work plan including monitoring guidelines
A 1/2	Report on current situation – applied emission factors and projections of greenhouse gas emissions from organic soils
A 1/3	Report on the identified climate change mitigation targeted management practices on organic soils
A 2/1	Plan for awareness rising and stakeholder engagement plan
A 2/2	Communication strategy
A 2/3	Replicability and Transferability Plan
C 1/1	Report on carbon inputs with litter and fine roots in forests on organic soils
C 1/2	Catalogue of climate change mitigation actions
C 1/3	Interim draft report on improved methodologies for GHG inventory reporting and related national reports
C 1/4	Interim draft report on improved GHG emission factors for nutrient-rich managed organic soils in Baltic States
C 1/5	Report on improved GHG emission factors for nutrient-rich managed organic soils in Baltic States
C 1/6	Improved methodologies for GHG inventory reporting and related national reports
C 2/1	Activity data for accounting & Projections of GHG emissions from organic soils
C 2/2	Mathematical equations and tools (spreadsheets and R scripts) for elaboration of projections of GHG emissions from organic soils
C 2/3	Harmonised methodology for characterisation of peat properties using infrared screening method
C 2/4	Report on integration of climate scenarios and projections of GHG emissions from organic soils
C 2/5	Methodology for socio-economic analysis of the proposed measures
C 3/1	Report on implementation of CCM measures in demo sites in Finland
C 3/2	Report on implementation of CCM measures in demo sites in Latvia
C 4/1	Proposal for PPC model and adopting of the Project results in Rural Development Plan
C 4/2	Report on public communication with the main stakeholders' groups
C 4/3	Interim draft report on proposals for improvement of sectoral strategies and action plans to reduce GHG emissions from organic soils
C 4/4	Report on economic benefits of CCM measures for nutrients-rich land management practices on farm level
C 4/5	Report on proposals for improvement of sectoral strategies and action plans to reduce GHG emissions from organic soils
C 5/1	Interim draft report on development of Framework for training sessions for individual stakeholders for application of the developed tool

C 5/2	Interim draft report on development of Simulation model
C 5/3	Interim draft report on development of Tables with default parameters for calculations of efficiency of the climate change mitigation measures
C 5/4	Data utilised in the model published in 2 peer reviewed articles by Luke, SILAVA, UT and LAMMC and presented in at least 2 international scientific conferences
C 5/5	Final framework for training sessions for individual stakeholders for application of the developed tool
C 5/6	Simulation model with spreadsheet interface for a single parcel-based calculations of business-as-usual scenario and different management options
C 5/7	Tables with default parameters for calculations of efficiency of the climate change mitigation measures
C 5/8	Developed Simulation tool applied in real life conditions at least 5 times in partner countries
D 1/1	Initial monitoring report
D 1/2	Midterm monitoring report
D 1/3	Final monitoring report
D 2/1	Initial monitoring report on socio-economic impact of project actions
D 2/2	Final monitoring report on socio-economic impact of project actions
D 3/1	Report on progress regarding LIFE key performance indicators
D 3/2	Report on progress regarding LIFE key performance indicators
D 3/3	Report on progress regarding LIFE key performance indicators
D 3/4	Report on progress regarding LIFE key performance indicators
E 1/1	Notice boards
E 1/2	Scientific publication on impact of climate change on GHG emissions from organic soils
E 1/3	Short documentary about demo sites and climate change mitigation measures
E 1/4	Scientific publication on carbon inputs and soil carbon stock changes in forests on drained nutrient-rich organic soils
E 1/5	Printed booklet on GHG emissions' mitigation measures
E 1/6	Printed project booklet with summaries of main results
E 1/7	Scientific publication on GHG emission factors for nutrient-rich organic soils in temperate and hemi-boreal climate zone
E 1/8	Layman`s report
E 1/9	Production and distribution of e-Newsletters
E 2/1	Presentations and participants lists of the events (published in the Project website)
E 3/1	Joint Baltic and Finnish Climate Change Mitigation Action Program
F 1/1	List of demo sites in the partner countries including location and driving distances (included in the Progress Report)
F 1/2	After-LIFE Plan