

REPORT

ON IMPLEMENTATION OF THE PROJECT

DEMONSTRATION OF CLIMATE CHANGE MITIGATION MEASURES IN NUTRIENTS RICH DRAINED ORGANIC SOILS IN BALTIC STATES AND FINLAND

WORK PACKAGE

INFORMATION AND DISSEMINATION

(D1)

ACTIONS

Deliverable title **Production and distribution of e-Newsletters**

Deliverable No. E1/9

Agreement No. LIFE18 CCM/LV/001158

Organizations Latvian State Forest Research Institute "Silava"

2024

Disclaimer to avoid potential misinterpretation of the project results:

"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."

Dear readers, we prepared this e-newsletter to provide the first insight to an innovative international project regarding climate change mitigation potential of organic soils – LIFE OrgBalt.

We truly hope that you will find here useful information on the project scope, objectives and expected outcomes. Besides, we already have some deliverables to share with you, here you can find interesting quotes regarding climate change mitigation potential of nutrient rich organic soils in Baltic States and Finland.

With kind regards, OrgBalt team

An innovative international project "**Demonstration of climate change mitigation potential of nutrient rich organic soils in Baltic States and Finland**" (LIFE OrgBalt) has been launched in 2019 to demonstrate the potential of climate change mitigation in organic soils.

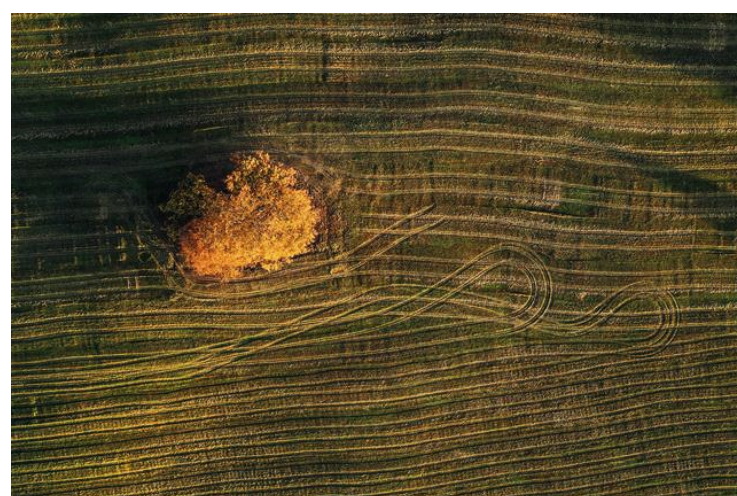


Content

- [1. Climate change mitigation potential of nutrient rich organic soils](#)
- [2. Interesting facts](#)
- [3. An insight in the LIFE Orgbalt project](#)
- [4. Main project outcomes](#)
- [5. An introduction with the project partners](#)
- [6. Events](#)
- [7. Project deliverables developed in 2019](#)
- [8. Project in brief](#)

1. Climate change mitigation potential of nutrient rich organic soils

Climate change is one of the greatest environmental, social and economic challenges of our days and the warming of the climate system is unequivocal. Greenhouse gases (GHG) emissions caused by human activities are the most significant driver of the observed climate changes since the mid-20th century.



Managed nutrient rich organic soils are one of the largest key sources of GHG emissions in Boreal and Temperate cool and moist (TCM) climate regions in Europe. In these regions, organic soils are usually previously drained peatlands that when efficiently drained can cause very high GHG emissions. Such soils need to be treated differently from mineral soils to sustain their carbon storage function. Therefore, low emission management of organic soils should become the key priority in national climate policies for this region.

In order to fulfil EU's commitment to the Paris agreement and its aims in the EU 2050 long term strategy to reach a climate neutral European economy (Link: https://ec.europa.eu/clima/policies/strategies/2050_en) the low emission land use and management practices of organic soils must play an important role in EU member states' climate change mitigation efforts.

LIFE OrgBalt **focuses** on exploring and demonstrating the potential of GHG emission reduction and carbon sequestration in nutrient rich organic soil management, as well as developing a framework for assessment and implementation of climate change mitigation measures and promoting of scientifically sound approach for land use and climate policy planning documents in the Baltic States (Estonia, Latvia and Lithuania), Finland and Germany.

As already emphasized, organic soils can have high GHG emission as well as carbon storage potential depending on chosen management strategies. The general idea of LIFE OrgBalt project is to suggest innovative measures for low emission management practices by demonstrating how these important territories can be managed also in economically, socially and climate friendly balanced way.



Just to give some initial examples, analyzed low emission measures include such practices as introduction of paludicultures (black alder for construction materials, furniture, energy), conversion of cropland to grassland, controlled drainage, agroforestry, continuous forest cover, wood ash application.

The Project will promote decision making approach that adopts land use management practices based not solely on their climate change mitigation benefits but rather based on whole "production systems analysis" that comprehensively assesses the productivity, resource use, and environmental load of the system including climate benefits.

2. Interesting facts

- Total area of **managed organic soils in EU is 34.5 mill. ha** (7% of the EU area).
- **GHG emissions** from organic soils in the project countries is **80 mill. tons CO2 eq./year** (61% of GHG emissions from organic soils in EU).
- Share of organic soil emissions in the project countries GHG emissions profiles varies from **5%** of the net GHG emissions including LULUCF in **Germany to 59% in Latvia**
- **Managed nutrient rich organic soils are one of the largest key sources of GHG emissions** in Boreal and TCM climate regions in Europe.
- In the agricultural sector in Europe **organic soils/drained peatlands make only 3 % of the total agricultural area but are responsible for 25% of all agricultural GHG emissions.**
- **Land use, land use change and forestry (LULUCF) sector has a potential to make an important contribution to climate change mitigation**, that is not yet fully explored.

3. An insight in the LIFE Orgbalt project

The aim of the project is implementation of innovative climate change mitigation measures in nutrient rich organic soils in Temperate cool and moist climate region to contribute to the EU policies by reduction of GHG emissions from croplands, grasslands and forest lands on nutrient rich organic soils.

The EU 2020 [Climate and Energy Package](#) introduced an approach to achieving a 20% GHG emission reduction target to compare with 1990 levels.
Link- https://ec.europa.eu/clima/policies/strategies/2020_en

European Green Deal aims to reach EU's climate neutrality by 2050 becoming the world's first climate neutral continent.
Link https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

LIFE OrgBalt project contributes to climate goal achievement by sharing scientific based knowledge of sustainable and climate-smart land management.

Project aim will be reached by demonstrating the climate change mitigation management approaches, offering solutions, developing practical tools, making them publicly available and providing information.

4. Main project outcomes

Aims of the project:

1. Improved activity data and GHG inventory methods used in assessment and projections of GHG emissions and carbon sequestration in relation to the management of nutrient rich organic soils. Improved GHG accounting methods **to support the futher elaboration of national LULUCF policy documents** in the project partner countries.



2. Established demonstration sites in the Baltic States and Finland to demonstrate in practice climate change mitigation measures for the management of nutrient rich organic soils in croplands, grasslands and forest lands, to stimulate their preservation while maintaining profitability.

3. Created tools (simulation model for modelling socio-economic and climate impacts of climate change mitigation) and proposals for incorporating identified measures into agricultural, forestry and climate policy planning documents.

Based on the implemented project activities, it is expected to:

1. Improve the knowledge base for the assessment, monitoring, projection and implementation of effective climate change mitigation measures in the management of nutrient rich organic soils;

2. Enhance the capacity of national and local authorities to apply the obtained knowledge in practice in the TCM climate zone;

3. Contribute to the **demonstration of innovative climate change mitigation technologies, systems, methods and instruments** that are suitable for being replicated, transferred or mainstreamed for management of nutrient rich organic soils in TCM climate zone in Europe and beyond its borders;

4. Contribute to sustainable land use, agriculture and forestry by creation of tools and guidelinesfor implementation of climate change mitigation measures in nutrient rich organic soils, as well as socio-economic analysis of the initiated actions.

5. An introduction with the project partners

The project unites public administration institutions, scientific and non-governmental organisations.

Leading partner – Latvian State Forest Research Institute "Silava" - implements the project in cooperation with the Ministry of Agriculture of the Republic of Latvia, Latvia University of Life Sciences and Technologies, Association "Baltic Coasts" (Latvia), University of Tartu (Estonia), Lithuanian Research Centre for Agriculture and Forestry, Natural Resources Institute Finland and Michael Succow Foundation – Partner in the Greifswald Mire Centre (Germany).

More information about the project partners and their fields of research is presented in the following.

Latvian State Forest Research Institute (LSFRI)
"Silava" (Latvia)

Latvian State Forest Research Institute "Silava" is one of the core forest research centers in the Baltic States. The goal of "Silava" is obtaining new knowledge, based on scientific methods, and developing the innovative technologies to promote sustainable development and competitiveness of the forest sector.



Web page

Ministry of Agriculture of the Republic of Latvia
(Latvia)



Ministry of Agriculture of the Republic of Latvia is the leading state administration institution of Latvia in the agriculture, forestry and fishing sectors.

Its functions are to develop and organise the implementation of the policy of agriculture, forestry and fisheries, as well as to ensure international cooperation.

Ministry of Agriculture is involved in quality assessment of National GHG emission inventory and projection reports of LULUCF and agriculture sectors as well as is responsible for development of all policy planning documents regards these sectors.

Role in project

Ministry is responsible for development of the LIFE OrgBalt project strategies and action plans as well as integration of project outcomes in policy planning and decision making.

Web page

Latvia University of Life Sciences and Technologies
(LLU) (Latvia)



Latvia University of Life Sciences and Technologies is specializing in agricultural science, forestry, food technology and related areas.

Priority research areas include climate change mitigation and environmental technologies, hydrology and agricultural research, as well as land and property management studies and research on soil and land as core agricultural resources.

University prepares an annual inventory and projections of GHG emissions for the sector of agriculture in Latvia.

Role in project

LLU is responsible for implementation of CCM measures in the project LIFE OrgBalt selected demo sites and development of replicability tools.

Web page

Association "Baltic Coasts"
(Latvia)



Association "Baltic Coasts" is a non-governmental organisation, founded in 2007.

The main fields of "Baltic Coasts" experience are related to ecosystem services, economic evaluation of natural resources, biological diversity, climate and resource policies, coastal erosion and integrated coastal planning and support for policy makers in decision making and public education and awareness rising on environmental issues.

Role in project

Association is responsible for the project LIFE OrgBalt socio-economic analysis and impact monitoring, private and public partnership development and is leading actions of communication, dissemination and awareness raising.

Web page

University of Tartu
(Estonia)



The University, founded in 1632 is one of the leading scientific and research institutions in Estonia in several fields, including environmental sciences and ecology, plant and animal sciences, biology, social sciences etc.

University of Tartu has the richest experience among the Baltic States in researching and modelling GHG emissions from organic soils. National emission factors developed by University of Tartu are used to calculate GHG emissions from wetland management in Estonia.

Role in project

University is providing scientific support for the measurment and calculation of GHG emissions and is responsible for monitoring of the impact of the project actions.

Web page

Lithuanian Research Centre for Agriculture and Forestry
(LAMMC) (Lithuania)



The Lithuanian Research Centre for Agriculture and Forestry (LAMMC) is a State Research institute.

Mission of the LAMMC is to conduct research and development relevant for science, national economic development, horticulture, agronomy, forestry, ecology, biology, biophysics, botany, zoology, sustainable use of land and environmental resources, as well as dissemination of new scientific knowledge to the public and promotion of sustainable land use development of forest economy and rural development.

Role in project

LAMMC responsibility in the LIFE OrgBalt project is linked to the development of tools for modelling of impact of climate change on GHG emissions.

Web page

Natural Resources Institute Finland
(Luke) (Finland)

Luke is an independent governmental research organisation under the Ministry of Agriculture and Forestry. Luke was launched in 2015 and works to advance bioeconomy and sustainable use of natural resources, being one of the biggest clusters of bioeconomy



expertise in Europe. One of Luke's strategic objectives is climate smart carbon cycle, with focus on soil carbon sequestration and emission reduction, carbon neutral primary production and value networks, and means of control and incentive schemes to combat climate change.

Luke also carries out statutory government work. We monitor natural resources, certify plant production, inspect control agents, store genetic resources, produce data on greenhouse gases, support natural resource policies and produce Finland's official food and natural resource statistics.

Role in project

LUKE's responsibility in the LIFE OrgBalt project is to provide support and expertise as well as coordinate networking and fill the knowledge gaps on GHG emissions.

Web page

Michael Succow Foundation (MSF) – Partner in the Greifswalds Mire Centre (Germany).



Michael Succow Foundation is a German nature conservation NGO established in 1999.

MSF uses a science based landscape-ecology approach for developing and implementing ecosystem based conservation, restoration, and sustainable landuse projects.

Amongst MSF focus areas are: Development of international conservation areas (following the Biosphere reserve approach); Conservation, restoration and paludiculture (low emission wet utilisation) of peatlands.

MSF is partner in the *Greifswald Mire Centre* (GMC), an internationally renowned institution dealing with peatlands on research, conservation, paludiculture, and consultancy level.

MSF conducted with partners from Estonia, Latvia, and Lithuania a feasibility study for the implementation of paludiculture in the Baltic States in a current project in the European climate initiative (EUKI) of the German Ministry for Environment (BMU).

Role in project

MSF role in the LIFE OrgBalt project is to provide support and expertise, coordinate development of demonstration sites and provide expertise in implementation of paludiculture measures.

MSF Web page

GMC Web page



6. Events

Kick-off meeting



On 24 October, 2019 the kick-off meeting of the project gathered all 8 partners from 5 countries to discuss in detail the implementation of the project. The venue of kick-off meeting was Ministry of Agriculture of Latvia.

At the first part of meeting the project coordinator – Mrs. Ieva Licite introduced participants with the project scope and main objectives. Further information about LIFE program was given by the NEEMO EIG-ELLE representative.

Project partners discussed the project management and preparatory actions, communication and dissemination activities, establishment of demo sites, GHG measurements and monitoring of the impact of the project actions. Ideas on development of the proposals for national strategies and action

plans, as well as creation of simulation model for projections of GHG emissions and socio-economic outputs were discussed as well.

Kick-off meeting presentations

Steering group meeting

On 29 January, 2020 the first project Steering group was held, with the involvement of specialists, scientists and policy makers from the participating countries. The members of Steering group were introduced with the project aims, objectives, expected results and prepared reports.



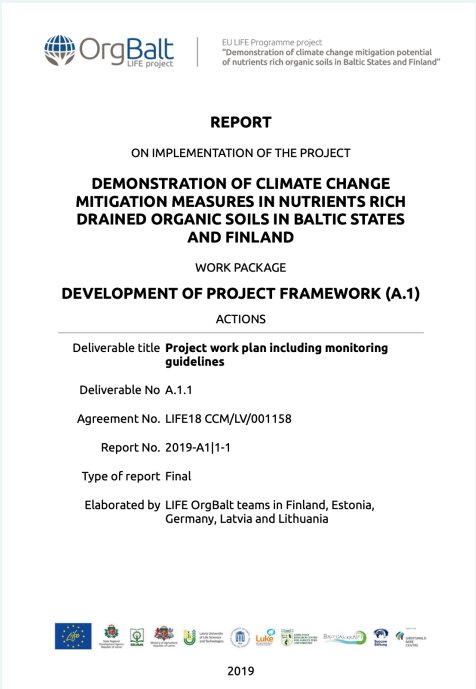
An insight into the project scope, work plan, objectives, deliverables, monitoring guidelines and plan for awareness rising and stakeholder engagement was given. Furthermore such topics as recent climate policy developments as well as agriculture and forestry policies within the framework of climate policy were discussed.

The project team will share its progress and results with the international Steering group twice a year to facilitate impact on national climate policy planning documents. Next Steering group meeting will take place by July 2020.

Steering group consists of representatives of Ministry of Agriculture of Lithuania, Ministry of Environment of Lithuania, Estonian Ministry of Rural Affairs, Estonian Environmental Agency, Ministry of Environmental Protection and Regional Development of Latvia, Rural Support Service of Latvia, Latvian Environment, Geology and Meteorology Center, State Plant Protection Service of Latvia, Latvian State Regional Development Agency and Ministry of Agriculture and Forestry of Finland.

All presentations from the Steering group meeting are available here

7. Project deliverables developed in 2019



Project work plan including monitoring guidelines

Project work plan provides an insight into the planned work process to successfully implement project activities and to avoid any risks. Within the work plan project activities, responsibilities and time schedule have been described.

Paper also includes monitoring guidelines for the project activities implementation, socio-economic monitoring and monitoring the LIFE program key performance indicators.

To plan actions that could measure the successes of the project implementation, monitoring methods for each monitoring action have been described as well as indicators and criteria have been set.

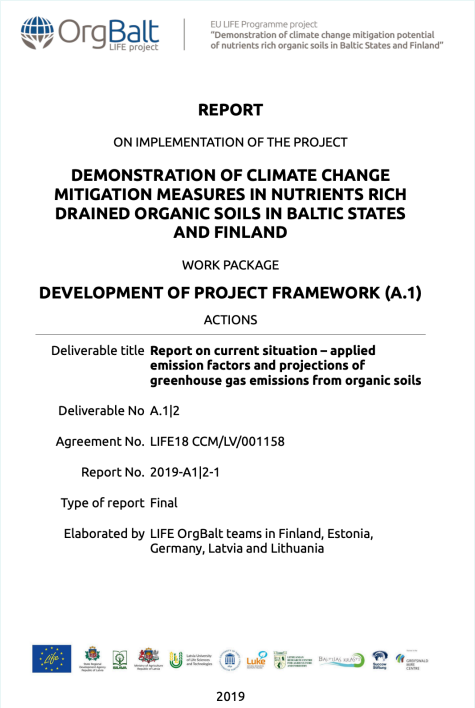
Project work plan is available here

Report on current situation – applied emission factors and projections of greenhouse gas emissions from organic soils

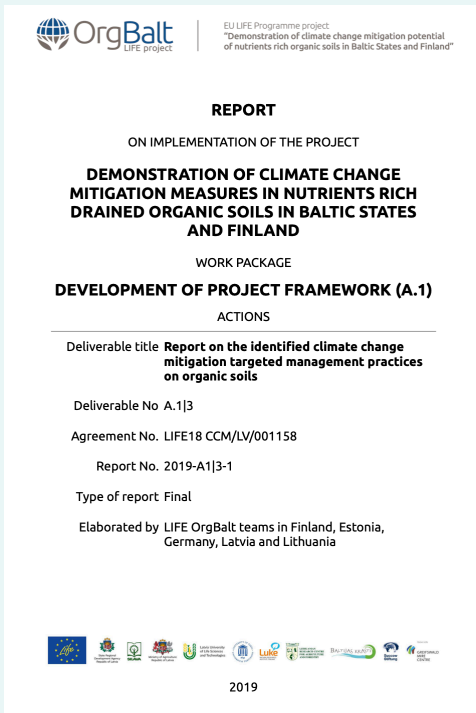
The paper gives overview of organic soil management in Northern regions, paying special attention to the organic soils in the Baltic States and Finland.

Detailed information on current situation, including GHG emission data, management practices and applied GHG emission factors in the Baltic States and Finland is available as well as insight to ways forward.

In spite of similar climate conditions GHG emission factors in the project countries differs up to 10 times for the same land uses.



Report can be found here



Report on the identified climate change mitigation targeted management practices on organic soils

The report underlines that organic soils are a significant source of GHG emissions in the TCM climate and may contribute up to 100% of the GHG emissions from cropland and grassland in the LULUCF sector.

According to the report, national policies recognize the role of organic soils in GHG emission reduction, however, only few measures are considered yet.

Policies lack knowledge on the exact impact on GHG emissions that can be achieved by changes in organic soil management practices, and there is insufficient monitoring and reporting ability.

The study highlights the demand for urgent research actions and informs on a wide array of identified climate change mitigation measures that potentially can be applied to organic soils.

Ziņojums pieejams šeit

Plan for awareness rising and stakeholder engagement plan

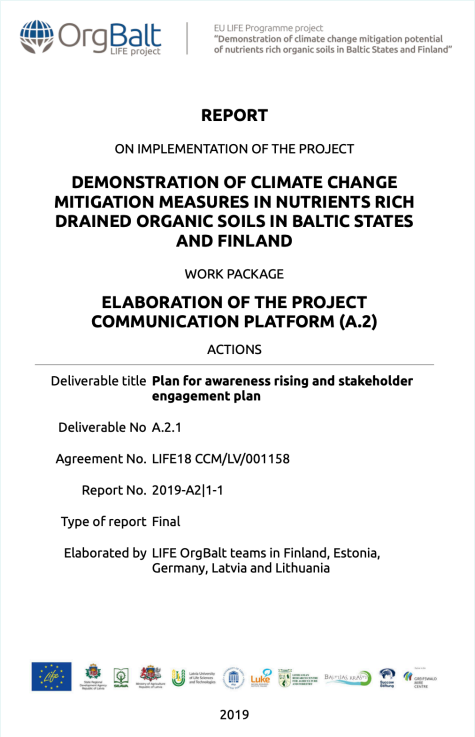
The plan outlines stakeholder involvement activities and communication channels that will be used throughout the different phases of the project.

Stakeholders have been divided into three main groups according to their level of influence and interest – primary stakeholders, secondary stakeholders and third parties. Priorities, problems, needs, constraints and benefits have been analysed for each stakeholder group.

In order to achieve project goals, representatives from the LULUCF and agricultural sectors, both from public and private sectors, will be involved.

A great focus is given to education, training and awareness raising to increase public attention on climate change mitigation potential within the project results.

Several activities will be dedicated to networking opportunities to create tighter connections between the different interest groups involved.



Report is available here

8. Project in brief

- LIFE Climate Action sub-programme project
- Project partners – Latvian State Forest Research Institute "Silava"; Ministry of Agriculture of the Republic of Latvia; Latvia University of Life Sciences and Technologies; Association "Baltic Coasts", University of Tartu; Lithuanian Research Centre for Agriculture and Forestry; Natural Resources Institute Finland; Michael Succow Foundation
- Funding provided by EU LIFE programme and State Regional Development Agency of the Republic of Latvia.
- Budget – 3 360 948 EUR, including EU financial contribution 1 844 004 EUR
- Duration – August 1, 2019 until August 31, 2023
- Website: www.orgbalt.eu

Project "Demonstration of climate change mitigation potential of nutrient rich organic soils in Baltic States and Finland" (LIFE OrgBalt, LIFE18 CCM/LV/001158) is implemented with financial support from the LIFE Programme of the European Union and State Regional Development Agency of the Republic of Latvia. www.orgbalt.eu

The information reflects only the LIFE OrgBalt project beneficiaries view and the European Commission's Executive Agency for Small and Medium-sized Enterprises is not responsible for any use that may be made of the information contained therein.



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LIFE ORGBALT NEWSLETTER



“Demonstration of climate change mitigation potential of nutrients rich organic soils in Baltic States and Finland”



IN THIS ISSUE

WHERE DO WE STAND?

DELIVERABLES: STATE OF ART

LATEST EVENTS

DISSEMINATION ACTIVITIES

THE PROJECT IN BRIEF

LIFE OrgBalt Project

Dear reader,

Welcome to the second edition of the LIFE OrgBalt Project newsletter.

Over one year passed by since the beginning of the project and we would like to continue sharing with you our progresses. In the following pages you will find information on the latest developed and ongoing actions and on the latest events, as well as an insight on the upcoming activities. While waiting for our next issue we shall keep you informed about our activities and key outcomes through the project website and social media.



THE LIFE ORGBALT PROJECT TEAM



ABBREVIATIONS

EU - EUROPEAN UNION

GHG - Greenhouse gas

LULUCF - Land use, land use change and forestry

WHERE DO WE STAND?

During this first year, LIFE OrgBalt experts worked on the foundation of the project paving the way to the development of the implementation actions, the core of LIFE OrgBalt research activity and objectives. Data on the current situation of GHG inventories were collected, and current knowledge and experience in the evaluation of the potential of climate change mitigation measures were assessed. A thematic work group on activity data for GHG emission calculations and projections was established and regularly meets to discuss the methodology to be applied for activity data modelling. The thematic work group on scientific writing started its work as well.



Scientific articles development is discussed in two work streams – GHG flux monitoring and evaluation of climate change mitigation. Protocols for the setup of the project measurement sites and the procedures to be followed were finalised to give a consistent scientific base to the planned measuring activities in demo and reference sites. The LIFE OrgBalt experts are currently working on the establishment of the project reference and demonstration sites.

During the second semester project managers completed the project communication plan. The LIFE OrgBalt objectives and on-going results have been shared through information, dissemination and training activities. More details about the specific activities carried out are given in the following pages. Networking activities with similar projects also started to strengthen international cooperation and build-up on already obtained results toward a common understanding of climate-smart management practices in nutrient-rich organic soils in forest land, cropland and grassland.

The project experts have started working on a socio-economic analysis of the proposed measures and on the development of a simulation model to calculate the socio-economic and climate change impacts of climate change mitigation measures. These activities aim at supporting local and regional stakeholders in making projections of GHG emissions and socio-economic consequences given a set of initial conditions and selected management options.

Finally, analysis of policy documents and cooperation activities for the development of a public and private sector cooperation model started to facilitate the adoption of the Project results in relevant policy documents.



DELIVERABLES: STATE OF ART

The Communication activities planned within the LIFE OrgBalt project lie on a multilevel communication platform which has been developed during the first and the second semester of the Project. The first pillar is represented by the development of the "Plan for awareness rising and stakeholder engagement", which was presented in the first issue of the LIFE OrgBalt newsletter, followed by the development of the project communication strategy.

Communication strategy

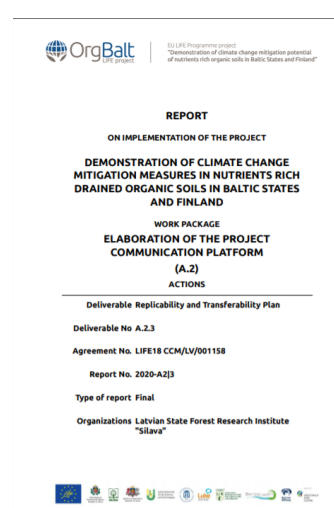
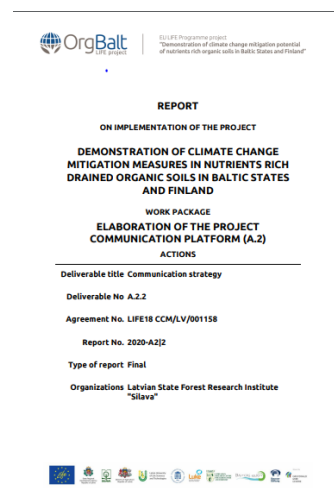
The second pillar of the project communication platform is the Communication strategy, developed to provide qualitative information to all identified stakeholders. A set of communication activities and channels has been identified and analysed taking in consideration the different stakeholder groups and the specific communication objectives that could better address each one of them. These includes leaflets, booklets, scientific publications, 45 information and education materials (articles, press releases, newsletters, etc.), 4 short films, over 30 training and dissemination events and networking activities.

[View the full communication strategy](#)

Replicability and Transferability Plan

The third and last pillar of the Project communication platform is the replicability and transferability plan of the project whose goal is to multiply the impact of the Project results during its implementation and to replicate and transfer its findings after its end, in the countries involved in the Project, and in other Temperate climate zone regions in Europe. A simulation model will be developed to support local and regional stakeholders in making projections of GHG emissions and socio-economic consequences given a set of initial conditions and selected management options. Targeted training sessions will be organized toward the end of the project to present and explain the model and its tools. The simulation model will also be proposed as an evaluation tool for the development and the evaluation of climate change mitigation measures related projects in the context of the Common Agricultural Policy.

[View the full Replicability and Transferability Plan](#)



LATEST EVENTS

LIFE OrgBalt national workshops



The first round of National Workshops of the LIFE OrgBalt project took place in 2020 - from the end of April until the beginning of July. All partner countries' main stakeholders were introduced to the project and expected results, as well as updated on the implemented, on-going and planned activities. All together the 5 organized events gathered over 200 stakeholders internationally.

[View OrgBalt National workshops presentations](#)

Field work calibration seminars

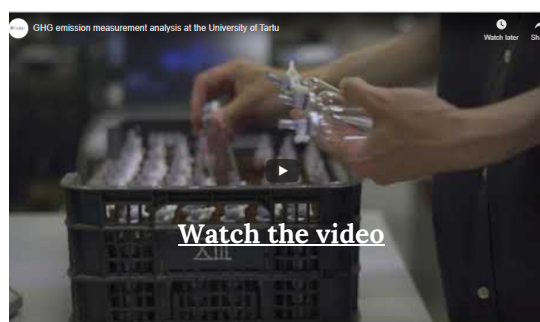
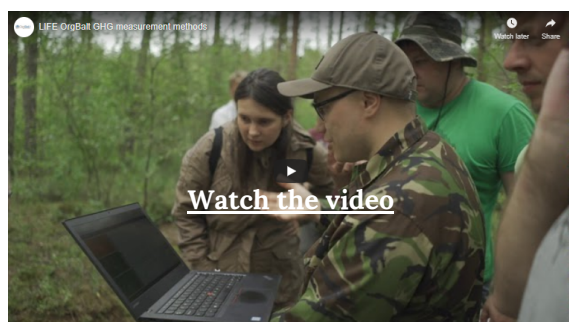
Two calibration seminars took place during summer 2020, ensuring highly valuable capacity building and knowledge exchange experience to the project partners. Both seminars included a theoretical part, during which the methodologies for greenhouse gas emissions and environmental parameters measurements were discussed, and a practical training of the Project measurement teams in Estonian and Lithuanian reference sites. The main aims of the seminars were to agree on harmonised measuring methodologies and data collecting approaches as well as ensure practical calibration before the beginning of measurements.



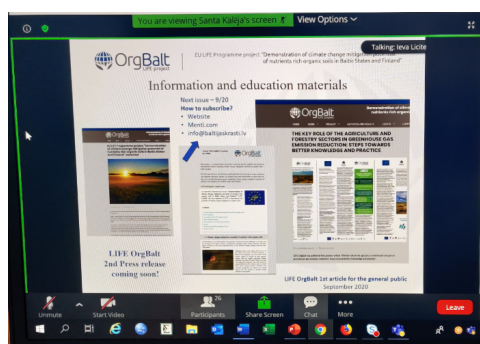
The first field work Calibration seminar took place in Estonia, on 29 and 30 June, and was organized by the project partner University of Tartu, while the second, took place in Lithuania on 25 and 26 August and was organized by the project partner Lithuanian Research Centre for Agriculture and Forestry.

The following clip shows the different measuring tools presented by the project experts during the first calibration seminar. The second clip gives an overview of the laboratories activities that take place, once the measuring samples are taken to the laboratory.





LIFE OrgBalt 2nd Steering Group meeting



On 15 July, 2020 the second project Steering group was held, with the involvement of specialists, scientists and policy makers from the participating countries. The members of the Steering group were updated on the project follow up through an overview of the completed and implemented activities since the first steering group meeting, which took place on January 2020.

The project team will share its progress and results with the international Steering group twice a year to facilitate the impact on national climate policy planning documents. The next Steering group meeting will take place in January 2021.

[View the 2nd steering group meeting presentations](#)

DISSEMINATION ACTIVITIES

“The key role of the agriculture and forestry sectors in greenhouse gas emission reduction: steps towards better knowledge and practice”

LIFE OrgBalt 1st popular article

The first LIFE OrgBalt popular article focuses on EU's commitment to the reduction of greenhouse gas emissions, the central role of the agriculture and LULUCF sectors in the climate change mitigation, and the contribution of the LIFE OrgBalt project in improving GHG reporting data and providing modelling tools.

[View the full article](#)

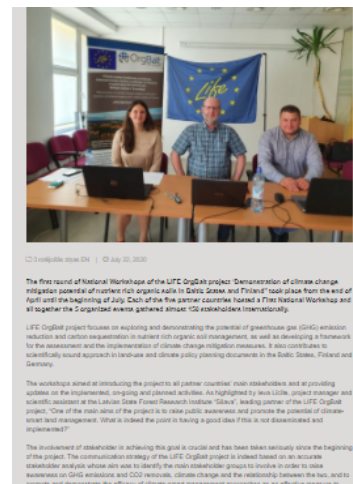


“Involving stakeholders: first round of the National Workshops of the LIFE OrgBalt project successfully concluded”

LIFE OrgBalt 2nd press release

The press release was published in July 2020 to disseminate information on the first round of the project National Workshops. Sectoral decision and policy makers in charge of planning and implementing policies at regional and national level in the field of forestry, agriculture and other related fields were involved, as well as farmers' and foresters' organizations and landowners. Participants had the chance to know more about the project's aims, to have an overview of its implemented, on-going and planned activities and to share feedbacks and concerns directly with the project's experts.

[View the full press release](#)



THE PROJECT IN BRIEF

Duration: 08/2019 - 08/2023

Project code: LIFE18 CCM/LV/001158

Total PROJECT budget: 3 360 948 EUR

EU LIFE funding: 1 844 004 EUR



The LIFE OrgBalt project aims to improve GHG reporting data (activity data and emission factors) available for nutrient-rich organic soils. Furthermore, the project aims to identify and to demonstrate sustainable, resilient, and cost-effective climate change mitigation measures applicable in nutrient-rich organic soils and to provide tools and guidance for the elaboration, implementation, and verification of the results of climate change mitigation policies. The project is implemented by eight partners from five EU Member States – Latvia, Lithuania, Estonia, Finland and Germany and unites representatives from public administration institutions, and scientific and non-governmental organizations.

FIND OUT MORE!

Follow us



To receive our newsletter send us an email or submit a request on our project [website](#)



info@baltijaskrasti.lv

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IN THIS ISSUE

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Abbreviations

EU - EUROPEAN UNION

GHG - Greenhouse gas

LULUCF - Land use, land use change and forestry

Dear reader,

welcome to the third edition of LIFE OrgBalt project newsletter that highlights the project's first feasible achievements. We are proud of the endorsement of the project at the annual ceremony “LIFE AWARD 2020” on December 1, 2020. The project received an award in the category “The most significant contribution to solving climate change”.

We would like to keep you updated on activities, significant developments and latest events by offering information on the following pages and links to explore the project and project achievements.



THE LIFE ORGBALT PROJECT TEAM



WHERE DO WE STAND?

We are in the stage of the OrgBalt project when the first results are showing. One of the project specialities is to have a demonstration element. All planned measurement installations on project demonstration sites are completed and monitoring activities of measuring GHG, environmental parameters, etc. are now fully operating. Visibility is important, therefore informative boards have been installed in all 16 demonstration sites.

In addition to already existing landscape data, complete depth-to-water maps for the entire territory of the Baltic States have been created.

This is the single source of information that gives the opportunity to model the water accumulation sites and is a practical tool for planning soil management activities both in forestry and agriculture.

We have released our first short video that provides an overview of the project objectives and expected results explained by the project experts. This visual material helps to spread our message of trust in research and improved organic soil management as tools for GHG reduction.

We have produced several informative materials for different target groups. Besides the leaflet covering the project in brief, the first technical article for audience familiar with the nutrients rich organic soil management on modelling of distribution of organic soils and wet areas has been published. A publication directed at the general public on the relation of land use and climate change from the forestry perspective is also now available on our website.

Many project activities are in the implementation stage. Work continues on socio-economic analysis of the proposed measures and on the development of a simulation model to calculate the socio-economic and climate change impacts of climate change mitigation measures. Significant work has been done to develop the functional land management model as a tool for climate change mitigation and sustainable soil management. As the initial steps, the structure of the model and first three scenarios have been developed. To help navigate the model, a set of guidelines have been developed. Work continues on the extensive testing activities of the model.

To reach the long-term sustainable results, there is ongoing work on activities on the adoption of the project results in policy documents. Several meetings among project partners and stakeholders on the Baltic level have already been held. A discussion is ongoing on the implementation of the project results in relevant policies, strategies and plans, as well as on the first proposal for the adoption of the project's results in relevant policies.



LATEST EVENTS

European Soil Partnership Plenary Assembly



In September, the Ministry of Agriculture of Latvia presented LIFE OrgBalt project at 7th European Soil Partnership Plenary Assembly emphasizing to the international audience of the assembly the projects' geographically wide scope and importance – LIFE OrgBalt research results on nutrient-rich organic soils will be relevant and applicable in all of Europe.

[Access the Plenary Assembly presentations](#)

LIFE OrgBalt receives LIFE award 2020

At the annual ceremony “LIFE AWARD 2020” the project LIFE OrgBalt received the award “The most significant contribution to solving climate change”, as well as was nominated in the categories “Highest rated new project” and “Most financially voluminous project”.



3rd Steering Group Meeting

The 3rd Steering Group meeting of the LIFE OrgBalt project gathered international stakeholders – 35 scientists and policy makers from the Baltic States, Finland and Germany.

[Access the Steering Group Meeting presentations](#)



LIFE OrgBalt represented at the International Peatland Congress

The International Peatland Congress took place on May 3-6, 2021. LIFE OrgBalt leading partner Silava took part in the congress with a presentation on the evaluation of GHG emissions from organic soils. LIFE OrgBalt was mentioned within the context of the ongoing research activities, with an emphasis on the international scope of the project and the applicability of results in the planning of mitigation measures.



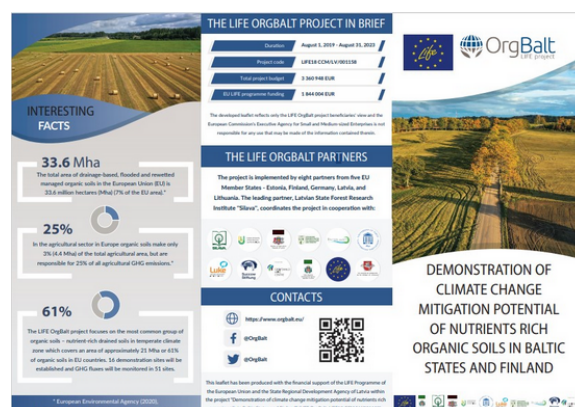
DISSEMINATION ACTIVITIES

LIFE OrgBalt Project Leaflet

The key information on the project has been summarised in the Project Leaflet, which is available in all partner languages.

Land and Climate change: how do they relate to one another? A forest sector perspective

1st article for the general public



The article explains how the soils can act as both carbon sinks and emitters, featuring expert knowledge from all project partner countries, with a focus on the forest sector.

[Read the full article](#)

1st Documentary about the project

The first LIFE OrgBalt documentary introduces the project objectives and partners. It is available in all project partner languages.



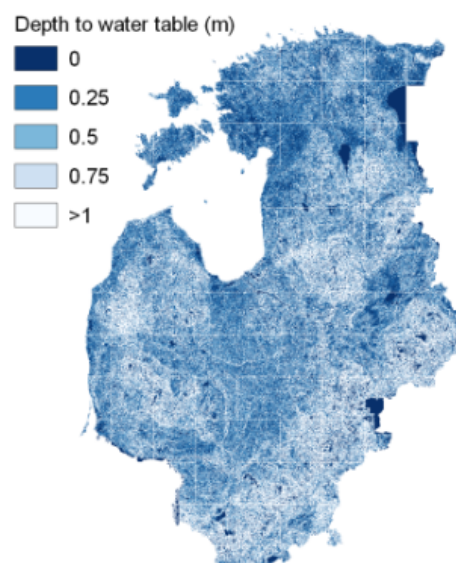
Depth-to-water maps for the Baltics: modelling of distribution of organic soils and wet areas

1st technical article

3rd press release

The technical article explains how the depth-to-water maps can help improve land management practices, to avoid financial losses, as well as reduce the risks of forestry and agronomic activities.

[Read the press release](#)



THE PROJECT IN BRIEF

Duration: 08/2019 - 08/2023

Project code: LIFE18 CCM/LV/001158

Total PROJECT budget: 3 360 948 EUR

EU LIFE funding: 1 844 004 EUR




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LIFE ORGBALT NEWSLETTER



“Demonstration of climate change mitigation potential of nutrients rich organic soils in Baltic States and Finland”



IN THIS ISSUE

WHERE DO WE STAND?

LATEST EVENTS

DISSEMINATION ACTIVITIES

THE PROJECT IN BRIEF

Abbreviations

EU - EUROPEAN UNION

GHG - Greenhouse gas

LULUCF - Land use, land use change and forestry

Welcome to the fourth edition of the LIFE OrgBalt project newsletter that highlights the project's progress so far. We are proud to see that the development of demonstration sites is finished and the first results from data collection can already be drawn. We are also happy that the project is reaching an even wider audience, for instance participation in United Nations COP26 with our own side event and explanation of depth-to-water maps broadcasted on TV in Latvia.

Interested in what else the LIFE OrgBalt has achieved this far? Read further to get the latest updates on the LIFE OrgBalt activities, developments and events!



THE LIFE ORGBALT PROJECT TEAM



WHERE DO WE STAND?

It has already been more than a year of active implementation of the LIFE OrgBalt project. All demonstration sites have been developed, with regular greenhouse gas (GHG) fluxes and other environmental data collection g. At this point, with full year of measurements the work on data analysis can begin, to contribute to ongoing work with development and testing climate change mitigation methods adapted in the demonstration sites and contributing to improve of GHG inventory system.



Collecting the data of GHG fluxes and other environmental variables in the demonstration and reference sites is a complex task, which is executed with state-of-art methodology. A deeper look into the measuring process will be provided in informative materials to be released soon. For example, a short documentary on the measuring process is in the making, describing the importance of on-site data collection for improving the calculations of GHG fluxes.

Moreover, active work continues in the field of socio-economic analysis of the project activities and adoption of the project results in policy documents. To execute the socio-economic analysis, costs regarding demonstration site development and maintenance are calculated and information that regards other socio-economic indicators is being gathered.

LATEST EVENTS

LIFE OrgBalt organized side event at the COP26 widely attended



On November 8, 2021, LIFE OrgBalt partners – Michael Succow Foundation and Latvian State Forest Research Institute Silava – organized the side event at the UN Climate Change Conference COP26 Peatland Pavilion “Organic soils and peatlands in the Baltic countries: Mitigation measures & monitoring, paludiculture and Carbon farming approaches”. [Access the OrgBalt presentation](https://globalpeatlands.online/PeatlandPavilionCOP26Registration)



LIFE OrgBalt scientists take part in the technology and innovation festival in Latvia

On September 4, 2021, at the Technology and innovation festival Mehatrons 2021 in Jelgava, Latvia, the LIFE OrgBalt experts – researchers from the Latvia University of Life Sciences and Technologies – presented the LIFE OrgBalt project and presented one of the project's demonstration sites.



LIFE OrgBalt scientists participated CAR-ES forest network seminar in Iceland

OrgBalt scientists joined meeting and seminar organized by Nordic-Baltic network of forest research organizations (CAR-ES network) in the most forest-rich part of Iceland October 5-7, 2021. Latest research findings and ongoing research in the Org Balt were presented in the online seminar, and excellent field excursions on-site were true learning experience on trees, forests and forestry in Iceland made in the past and current work made for the future.



New national project initiated in Estonia to assess GHG fluxes

LIFE OrgBalt scientists from University of Tartu have initiated a new national research project (2021-2023) to assess GHG fluxes from ditches of peatland drainage systems with different land uses. Some of the studied ditches are located at OrgBalt study sites and thus perform as value-added supplement to increase our understanding of full carbon cycle and its dependence of climatic conditions in drained peatlands.

Depth-to-water maps explained on the Latvian TV channel RĪGA TV24

On July 3, 2021, on Latvian television channel RĪGA TV24 program “Would Have Know” Jānis Ivanovs, LIFE OrgBalt expert and scientific assistant at the Latvian State Forest Research Institute “Silava”, talks about the depth-to-water maps developed in the project, how they were elaborated and where they can be used.

[Watch the interview here](#)



Project achievements discussed at the 4th LIFE OrgBalt Steering Group meeting

On June 29, 2021, the 4th Steering Group meeting of the LIFE OrgBalt project was held to introduce international stakeholders with the project progress during the first half of 2021.

[Access the presentations here](#)

DISSEMINATION ACTIVITIES

Information for practitioners: Peatland simulator SUSI

The Peatland simulator SUSI created by the Natural Resource Institute Finland (Luke) uses a hydrological model which requires inputs of weather and forest stand data to estimate water table levels and create projections of GHG fluxes from organic soils. In this technical article, the key principles of the simulator are explained.

[Read the full article](#)



PEATLAND SIMULATOR SUSI – A TOOL FOR ESTIMATING WATER TABLE LEVELS AND GREENHOUSE GAS EMISSIONS IN ORGANIC SOILS

LIFE OrgBalt contributes to improving the national greenhouse gas (GHG) inventories in the project regions by both establishing demonstration sites where GHG emissions are measured and using tools for estimating GHG emissions where actual measurements are not available. The Peatland simulator SUSI created by the Natural Resource Institute Finland (Luke) uses a hydrological model which requires inputs of weather and stand data to estimate water table levels and create projections of GHG emission levels in organic soils. In this technical article, the key principles of the simulator are explained.



Peatland soils and drainage

The peatland simulator SUSI is a software package for modelling the forested peatland ecosystem hydrology, stand growth and nutrient availability under different management, site types and weather

growth. Drained peatlands are important for agricultural and forest biomass production in humid boreal, temperate and tropical areas. The utilisation of managed peatlands has been recently questioned due to notable

profoundly affects the biogeochemical and microbiological functioning of the soil. Long-term efficacy of drainage measures are often reduced because of organic material accumulation to the ditches and top soil compaction between the

Climate change mitigation and adaptation: two different, yet inseparable strategies to tackle climate change

In the light of the current human made climate crisis, it is crucial to employ several approaches to adjust to the impacts of climate change and to reduce the causes of climate change. Within the LIFE OrgBalt project, experts and practitioners explore various practices for adaptation and mitigation in the agriculture and forestry sectors in the project regions. The article explains the meaning of both strategies and their implementation within LIFE OrgBalt.

[Read the full article](#)

Climate change: why should we care?

Climate change is partly driven by human activities and affects our live and that of future generations. It is up to us to make a change for a liveable future on earth. In this article climate change is explained from a LIFE OrgBalt project view.

[Read the full article](#)

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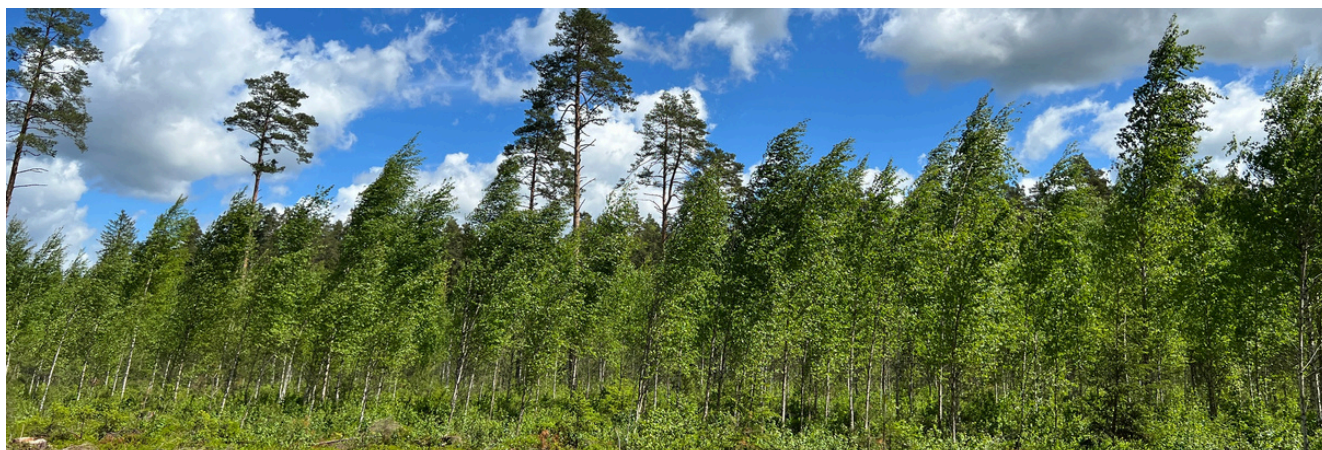




LIFE ORGBALT NEWSLETTER



“Demonstration of climate change mitigation potential of nutrients rich organic soils in Baltic States and Finland”



IN THIS ISSUE

WHERE DO WE STAND?

LATEST EVENTS

DISSEMINATION ACTIVITIES

THE PROJECT IN BRIEF

Abbreviations

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GHG - Greenhouse gas

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Welcome to the 5th edition of the LIFE OrgBalt project newsletter, which updates and highlights the project's progress. In 2022 measurements from demonstration sites were continued; by the end of 2022, the 2nd year of data collection will be over. Continuous data analysis has also been done and important results will soon come out. The activities and practices of the project were communicated in media, articles, and events, reaching new levels of interest from both the general public and stakeholders. We were proud to demonstrate the measuring and data-gathering procedures at the demonstration sites of OrgBalt in a short documentary, which was also aired on the public TV network in Latvia. Moreover, we were excited to welcome a group of stakeholders to an event dedicated to showcasing the project demonstration sites and informing them about the general progress of LIFE OrgBalt activities.

Read more to get the latest updates on the LIFE OrgBalt activities, developments and events!

THE LIFE ORGBALT PROJECT TEAM



Latvia University
of Life Sciences
and Technologies





WHERE DO WE STAND?

More than two years of active implementation work of LIFE OrgBalt project is bringing results, and the public interest about the project activities is growing equally.

The scientific outputs of the project can be seen in more than 12 articles, 4 video materials, and 3 scientific publications. The project partners participated in various events and conferences and engaged in networking with stakeholders and other projects.

In one of the 17 demonstration sites, "Scattering of wood ash in the forest after maintenance felling", in Mežole, Smiltene County, the geocaching site of the Life-IP LatViaNature project of the Nature Protection Board is located. As part of the geocaching series "Geocaching for LIFE", 16 caches have been placed in the locations of LIFE program projects in cooperation with the LIFE integrated project "Optimisation of the Governance and Management of Natura 2000 Protected Areas Network in Latvia" LIFE19 IPE/LV/000010 or LIFE-IP LatViaNature.

In year 2022 remarkably wider audiences are getting to know about the project and climate change mitigation scenarios tested on nutrient-rich organic soils via articles, videos and events. The project monitors and measures its key performance indicators (KPI) every year. The latest report on the LIFE OrgBalt project KPI shows that the interest of the stakeholders and public is high and increasing, already exceeding the initial target values. For instance, the official website has more than 25 000 unique visits registered. The articles published on the website are downloaded more than 3200 times and the short documentaries and other projects video materials has been viewed more than 39 000 times.

Moreover, active work continues in the field of socio-economic analysis of the project activities and creation and testing of the tools for the elaboration, implementation and verification of the efficiency of CCM policies.

- A set of maps as a practical tool for planning sustainable soil management activities, both in the forestry and agricultural sectors, are completed. Firstly, depth-to-water maps for the entire territory of the Baltic States, which is the single source of

- information, allow modelling of the water accumulation sites by showing water table depth in meters. And secondly: the wet area maps for the territory of the Baltic States were created. The wet area maps are generated in 5 m horizontal resolution and show the surface of water objects, areas and possible accumulation areas of surface water (as the initial input the wet area maps for Latvia where created in frame of the Interreg BSR WAMBAF Tool Box.
- The public and private sector cooperation model (PPC model) is created to examine the benefits and costs of proposed CCM practices, financing opportunities, institutional arrangements and enabling conditions that could motivate the implementation of CCM measures. This model is a support tool for estimations of the economic benefits of the CCM land-management measures on multiple levels – national and individual farm levels. The PPC model is in the testing stage, and the tool implementation and training sessions for stakeholders and landowners will take place starting in 2023.
- The simulation model for regional-level projections of GHG emissions and socio-economic outputs is developed as a policy planning support tool for the application at a local or regional level for estimation of GHG emissions and socio-economic benefits of various land-management approaches.
- Another digital tool elaborated within another project but successfully tested for the project needs and adapted to the circumstances of Baltic states is the peatland simulator SUSI created originally in the Natural Resource Institute Finland (Luke). The simulator uses a hydrological model that uses weather and stands data inputs to estimate water table levels and forms projections of GHG emission levels in organic soils. The model's value is in producing these estimates for sites for which actual GHG measurements are unavailable.

In year 2023 more information about the measurements gathered in the demonstration sites will be published, revealing the impacts of climate change mitigation measures implemented in the 17 demonstration sites on agricultural and forestry land.

LATEST EVENTS

“Geocaching for LIFE” places a geocache in one of the demonstration sites of OrgBalt



As part of the geocaching series "Geocaching for LIFE", 16 caches have been placed in the locations of LIFE program projects. The cache can be found in one of the 17 demonstration sites for LIFE OrgBalt "Scattering of wood ash in the forest after maintenance felling" in Mežole, Smiltene County.

LIFE OrgBalt presents the demonstration sites and tells about project progress in a live event

On May 19, 2022, the LIFE OrgBalt team organised the opening event of LIFE OrgBalt demonstration sites – a practical demonstration of climate change mitigation measures for the management of drained nutrient-rich organic soils and an interactive demonstration of GHG and environmental data measuring technologies used in the project.



OrgBalt featured in a presentation in an international conference, BIOGEOMON 2022: 10th International Symposium on Ecosystem Behavior

On June 26–30, 2022, the 10th International Symposium on Ecosystem Behavior took place at the University of Tartu. OrgBalt was represented within the Symposium with the presentation “Drainage impact on N₂O & CH₄ fluxes from grassland on drained nutrient-rich organic soils – sites, steps and preliminary results” by Hanna Vahter, Muhammad Kamil Sardar Ali, Thomas Schindler, Andis Lazdiņš, Ain Kull, Ieva Līcīte, Aldis Butlers, Kaido Soosaar.

OrgBalt takes part in The Baltic Peat Producers Forum 2022 : Peat through ages

On September 15, 2022, Andis Lazdiņš, Senior researcher at Latvian State Forest Research Institute “Silava”, gave a presentation “Wetland GHG emissions inventory and research” including the practices developed and implemented within LIFE OrgBalt.

DISSEMINATION ACTIVITIES

Scientific publications

Leppä, K. et al. 2020. Vegetation controls of water and energy balance of a drained peatland forest: Responses to alternative harvesting practices. Agricultural and Forest Meteorology 295, 108198. <https://doi.org/10.1016/j.agrformet.2020.108198>

[Access the publication here](#)



Upenieks, E.M. & Rudusāne, A. 2021. Afforestation as a type of peatland recultivation and assessment of its affecting factors in the reduction of GHG emissions. Rural Development 2021: 295-300.

<https://doi.org/10.15544/RD.2021.052>

[Access the publication here](#)

Butlers, A.; Lazdiņš, A.; Kaleja, S.; Bārdule, A. Carbon Budget of Undrained and Drained Nutrient-Rich Organic Forest Soil. Forests 2022, 13, 1790.

<https://doi.org/10.3390/f13111790>

[Access the publication here](#)

Bārdule, A., Butlers, A., Lazdiņš, A., Līcīte, I., Zvirbulis, U., Putniņš, R., Jansons, A., Adamovičš, A., & Razma, Ģ. Evaluation of Soil Organic Layers Thickness and Soil Organic Carbon Stock in Hemiboreal Forests in Latvia. Forests, 2021, 12(7), 1-15.

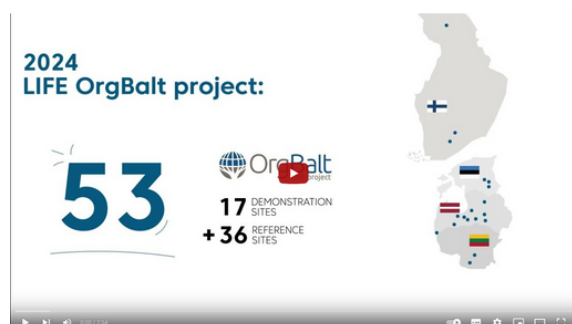
<https://doi.org/10.3390/f12070840>

Valujeva K., Freed, E.K., Nipers, A., Jauhiainen, J., Schulte, R.P.O. (2023). Pathways For Governance Opportunities: Social Network Analysis to Create Targeted and Effective Policies for Agricultural and Environmental Development. Journal of Environmental Management 325: 116563. <https://doi.org/10.1016/j.jenvman.2022.116563>

Līcīte, I., Popluga, D., Rivža, P., Lazdiņš, A., & Meļņiks, R. Nutrient-Rich Organic Soil Management Patterns in Light of Climate Change Policy. Civil Engineering Journal, 2022, 10(8), 2290-2304. <https://doi.org/10.28991/CEJ-2022-08-10-017>

Video

WATCH IT HERE



The second documentary about LIFE OrgBalt has been published in the LIFE OrgBalt website. In addition on June 11 2022, this documentary was featured on the Latvian national TV broadcast “Vides Fakti” (“Environmental facts”). The documentary discusses the importance of the project in providing the data needed to correctly calculate GHG emissions and carbon sequestration in the soil and the need for the data to improve the properly functioning inventory system as the main tool to tackle the progress of GHG reductions and assessment the effectiveness of the GHG emission reduction measures. The documentary also discusses the process of performing GHG fluxes measurements and other environmental data sampling.



Articles

17 sites for demonstrating climate change mitigation approaches within LIFE OrgBalt project

Demonstration of climate change mitigation (CCM) practices in nutrient-rich organic soils is one of the key elements of the LIFE OrgBalt project. The article describes the measures implemented in the 17 demonstration sites established in Latvia and Finland.

GHG emissions measurement and sampling in forest lands: a variety of methods for assessing the effectiveness of climate change adaptation measures

Discover the measuring and sampling procedures of LIFE OrgBalt in forest lands in the article.



GHG EMISSIONS MEASUREMENT AND SAMPLING IN FOREST LANDS: A VARIETY OF METHODS FOR ASSESSING THE EFFECTIVENESS OF CLIMATE CHANGE ADAPTATION MEASURES

Within the project LIFE OrgBalt, measures for mitigating climate change impacts on nutrient-rich organic soils in agricultural and forestry lands are demonstrated and tested. Climate change mitigation (CCM) measures selected for testing to be implemented in forest land can be divided into three groups: (1) measures related to afforestation and forest restoration, (2) measures that target increasing of tree cover through agroforestry and (3) measures that aim at increase in forest carbon stocks (in soil and biomass) through the modification of forest management practices.



Figure 1. Ring for the SEG fluxes collecting chambers.

GHG emissions measurement and sampling in agricultural lands: towards data-driven decision making for managing carbon rich organic soils

Discover the measuring and sampling procedures of LIFE OrgBalt in agricultural lands in the article.



GHG EMISSIONS MEASUREMENT AND SAMPLING IN AGRICULTURAL LANDS: TOWARDS DATA-DRIVEN DECISION MAKING FOR MANAGING CARBON RICH ORGANIC SOILS

The lack of data on greenhouse gas (GHG) emissions in carbon-rich organic soils in the Baltics and Finland is one of the main motives for implementing the project LIFE OrgBalt. During the project, demonstration sites on agricultural lands are used for testing and evaluation various climate change mitigation measures (CCM). These measures include agroforestry, land use change (from cropland to grassland), riparian buffer zones management, controlled water level and crop change (introduction of legumes) related activities whose CCM potential is based either on decrease of soil emissions, reduced leaching of nutrients or increase of CO₂ removals in living biomass on other carbon pools.

In this article, we review the key measurements taken in the project demonstration plots on agricultural land. The measurements of GHG emissions are not only crucial for evaluating CCM measures in agricultural lands, but also contributing to the development of national GHG inventory systems and to the implementation of national and global



Mitigating climate change impacts in nutrient-rich organic soils with the application of wood ash after commercial thinning in spruce stands

One of the climate change mitigation measures applied in the project LIFE OrgBalt relates to the application of ash on soils. Read more about the expected effects of the measure in the article.

Wet area maps for the Baltics: improved understanding of the spatial distribution of soil moisture

Within the framework of the LIFE OrgBalt project, we have created wet area maps for the entire territory of the Baltic States with a 5m horizontal resolution. Wet area mapping methodology was developed by scientists J.Ivanovs and A. Lupikis, 2018. Read more about the maps in the article.



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LIFE ORGBALT NEWSLETTER



“Demonstration of climate change mitigation potential of nutrients rich organic soils in Baltic States and Finland”



IN THIS ISSUE

WHERE DO WE STAND?

LATEST EVENTS

DISSEMINATION ACTIVITIES

THE PROJECT IN BRIEF

Abbreviations

EGU - European Geosciences Union
GHG - Greenhouse gas
ICOS - Integrated Carbon Observation System
PPC - Public and private sector cooperation



Dear reader,

Welcome to the 6th edition of the LIFE OrgBalt project newsletter. We have one year ahead of us before the culmination of the extraordinary journey of the LIFE OrgBalt project. This last year have signed the return to on-site events, which allowed the project's partners to meet in person and discuss the work of the last four years in person. Given the availability of new results, the scientific work of our Scientific team took off with six scientific articles published in the last year. The project was presented at important international conferences, which allowed our experts to share and gain knowledge on the project-related topics. This and much more have been on the LIFE OrgBalt working table since the last edition of our newsletter. Continue reading for the latest updates on the LIFE OrgBalt activities, developments, and events!

THE LIFE ORGBALT PROJECT TEAM



Latvia University
of Life Sciences
and Technologies





WHERE DO WE STAND?

As known, the COVID-19 outbreak brought unexpected challenges, which heavily impacted the project, causing a one-year delay in measurement activities. In this view, the project has been granted a one-year extension, which postponed the project's deadline to August 2024. This extension allowed experts to establish all 17 project demo sites and the scientific team to complete GHG emissions measurements and to work on data collection accurately. We are proud to have finished this phase, overcoming all challenges, and quickly moving on to the next, which concerns data processing and scientific publications' editing. Researchers have published their research results in six scientific articles providing updated data and insights on greenhouse gas emissions fluxes in different types of lands and different conditions (please see the publications below). Continuous attention has also been given to networking and educational activities, with our experts participating in various events and conferences and engaging in networking with stakeholders and other projects (please see the "Latest events" section). Modeling activities also actively continue, and our experts are about to finalize the projections of data from the project's demo sites. Parallely, our experts continue testing projected climate data to simulate future GHG emissions. An initial report on proposals for the improvement of sectorial strategies and action plans to reduce GHG emissions from organic soils has been prepared and shared with regional ministries. The analyses of GHG emissions from the project demo sites based on the cross-analysis with data from the project over thirty reference sites will also contribute to a more updated analysis of the socio-economic impact of the implementation of the project proposed and studied Climate Change Mitigation measures. As explained in the previous editions, a public and private sector cooperation model (PPC model) has been created in this respect. The model has been completed and our experts are currently working on the last data revision and integration. In addition, a simulation model for regional-level projections of GHG emissions and socio-economic outputs is developed as a policy planning support tool to be implemented at the regional/national level to estimate GHG emissions and socio-economic benefits of various land-management approaches. Training events will be planned until spring 2024 to present both models to interested stakeholders, landowners, and train final users to learn about their contents and functioning. The models will be publicly available to provide trained users with different financial and socio-economic indicators to evaluate the impact of the proposed measures on specific land plots on the one hand and at the national/regional level on the other. Finally, our communication team is actively working on dissemination activities to inform the public about the project's achievements and future planned activities, including the shooting of a new documentary, which will be released by the end of 2023. After a long, keen work on measurements and theoretical aspects, the project team is moving toward the practical part of the project, where the results of a four-year work period are becoming known, giving a boost to the whole team looking forward to presenting the project's outcome.

LATEST EVENTS

LIFE platform meeting on the benefits of peatland restoration for Europe



On April 26-28, 2023, in Berlin, Germany, top peatlands experts and representatives of 25 LIFE projects and two INTERREG projects working on peatlands met. Best practices and future policy developments for peatlands restoration were discussed. Over 90 participants physically attended the event, while 800 people followed an online event organized on the first day. LIFE OrgBalt experts – Latvian State Forest Research Institute Silava research assistant, LIFE OrgBalt project manager Ieva Līcīte, together with the researcher of the Finnish Institute of Natural Resources LUKE Jyrki Jauhiainen –

had the chance to be one of the protagonists of the event leading the third round of the workgroup “Peatland restoration and climate change mitigation” where they presented the report “LIFE OrgBalt and LIFE Restore projects GHG sequestration effects, the methods of GHG flux measurements and modelling, lessons learned and results”. An additional presentation, “LIFE OrgBalt project’s presentation,” was given by the same speakers to introduce the LIFE OrgBalt project, its objectives and share the lessons learned from the project’s research and field activities.

LIFE OrgBalt and JustFood Joint Webinar



On April 12, 2023, LIFE OrgBalt experts facilitated a joint project webinar for LIFE OrgBalt and JustFood. Moderation and lead of the webinar was done Ellen Huan-Niemi, Luke, who is involved in both projects. During the event, the LIFE OrgBalt project’s experience in working with agriculture organic soils and part of the activities under a living lab currently being set up for the JustFood project, were discussed. One of the LIFE OrgBalt project’s aims is to study the climate and socio-economic impacts of different agricultural organic soil management types. JustFood agroecosystem living lab aims to co-create policy measures to reduce greenhouse gas (GHG) emissions from agricultural peatlands in Finland. One of the main objectives of the living lab is to develop a shared understanding between relevant actors in the food system for creating actions and related policy measures to significantly reduce GHG emissions from agricultural peatlands in Finland. Researchers from Silava (Ieva Līcīte, research assistant and project manager) and LUKE (Raija Laiho, research professor, and Teea Kortetmäki, postdoctoral researcher) gave the following three presentations:

- The complexity of climate change mitigation in agricultural peatlands, Ieva Līcīte LIFE OrgBalt manager, Latvian State Forest Research Institute SILAVA
- Just food system transition the question of peatland use for food production, Teea Kortetmäki, University of Jyväskylä, Finland
- Functioning of peatlands – implications for land-use impacts, Raija Laiho, Research Professor, Natural Resources Institute Finland (Luke)

BIOGEOMON 2022 - 10th International Symposium on Ecosystem Behavior



BIOGEOMON – Symposium on ecosystem behavior is a regular international forum and meeting point for ecologists and environmental scientists on various topics. The tradition started in 1987 when the first symposium (that time titled GEOMON, as in geologic monitoring) was organized in Prague, Czechoslovakia. It was motivated by a desire to understand the processes governing watershed chemistry. Five years later, the meeting was retitled BIOGEOMON and its focus broadened towards ecosystem manipulations at various scales, applied biogeochemical research, ecological modeling, and other interdisciplinary sciences. The 10th BIOGEOMON symposium was organized by the University of Tartu, Estonia, and the Czech Geological Survey, and took place in Tartu, Estonia on 26–30 June 2022. The focus of BIOGEOMON 2022 was on the biogeochemistry of various ecosystems as influenced by anthropogenic and environmental factors. Empirical and modeling studies on fluxes and processes related to the turnover of major and trace elements at the ecosystem, watershed, landscape, and global scale were considered. We are proud to highlight that several of our LIFE OrgBalt experts and members were involved in the event as organizers (Ülo Mander, Hanna Vahter), as part of the scientific committee (Ülo Mander, Kaido Soosaar) as session convener (Kaido Soosaar). The researchers Hanna Vahter and Muhammad Kamil Sardar Ali also held two poster presentations to give insights on their latest research projects. The following studies involving LIFE OrgBalt experts were presented:

- GREENHOUSE GAS EMISSIONS FROM DRAINED HEMIBOREAL PEATLAND FOREST SOILS IN ESTONIA, Muhammad Kamil Sardar Ali, Thomas Schindler, Hanna Vahter, Ain Kull, Ülo Mander and Kaido Soosaar
- DRAINAGE IMPACT ON N₂O & CH₄ FLUXES FROM GRASSLAND ON A DRAINED NUTRIENT-RICH ORGANIC SOILS – SITES, STEPS AND PRELIMINARY RESULTS, Hanna Vahter, Muhammad Kamil Sardar Ali, Thomas Schindler, Andis Lazdiņš, Ain Kull, Ieva Līcīte, Ülo Mander, Aldis Butlers and Kaido Soosaar

ICOS Science Conference 2022

The Integrated Carbon Observation System, ICOS is a distributed European-wide research infrastructure producing high-precision data on greenhouse gas concentrations in the atmosphere and carbon fluxes between the atmosphere, land, and oceans. This is important because globally, the amount of greenhouse gases in the atmosphere is rising continuously, causing the climate to change. ICOS provides standardized and open data from 149 measurement stations across 14 European countries. ICOS data is used by scientists who seek to understand this Earth System and by various governmental bodies and international organizations that need science-based and relevant information on greenhouse gases in their decision-making and in efforts to mitigate the consequences of climate change. The biennial ICOS Science Conference gathers close to 400 scientists to discuss scientific topics around greenhouse gas measurements and climate change. The themes of the conference vary from purely scientific sessions to ones related to policy-making, education and new developments in instrument manufacturing.



The 5th ICOS Science Conference took place in Utrecht and online worldwide from the 13th to the 15th of September 2022. The overarching theme of the conference was "Tracking progress to carbon neutrality".

The researcher, Hanna Vahter, held a poster presentation to give insights on her latest research project

- DRAINAGE IMPACT ON GREENHOUSE GAS FLUXES FROM DRAINED NUTRIENT-RICH ORGANIC SOILS UNDER GRASSLANDS IN THE HEMIBOREAL ZONE

Hanna Vahter, Muhammad Kamil Sardar Ali, Thomas Schindler, Andis Lazdiņš, Ain Kull, Ieva Līcīte, Ūlo Mander, Aldis Butlers and Kaido Soosaar

EGU General Assembly 2023



The European Geosciences Union (EGU) General Assembly 2023 brought together geoscientists from all over the world to one meeting covering all disciplines of the Earth, planetary, and space sciences. The EGU aims to provide a forum where scientists, especially early career researchers, can present their work and discuss their ideas with experts in all fields of geoscience.

The EGU23 General Assembly took place in Vienna and online around the world, 23rd to 28th of April 2023 and welcomed 18,831 registered attendees, of which 15,453 made their way to Vienna from 107 countries and 3,378 joined online from 105 countries. Six thousand three hundred fifty-seven presentations were given in 938 sessions. The researcher, Hanna Vahter, held a poster presentation to give insights on her latest research project.

- DRAINAGE IMPACT ON GREENHOUSE GAS EMISSIONS FROM GRASSLANDS AND CROPLANDS ON NUTRIENT-RICH ORGANIC SOILS IN BALTIC COUNTRIES

Hanna Vahter, Muhammad Kamil Sardar Ali, Thomas Schindler, Andis Lazdiņš, Ain Kull, Ieva Līcīte, Ūlo Mander, Aldis Butlers, Jyrki Jauhiainen, Dovile Ciuldiene, and Kaido Soosaar

Nordic-Baltic Workshop on Greenhouse Gas Exchanges and Carbon Cycling in Managed Peatlands



The workshop took place in Vindeln, Sweden, from the 12th to the 15th of June, 2023. The two main set goals were:

- 1) Gather and synthesize the current knowledge on the climate impact of drained and restored peatlands within the Nordic-Baltic domain;
- 2) Explore the possibilities for synthesis papers and common research proposals.

Despite the extensive efforts undertaken by governmental agencies and forest stakeholders to restore drained boreal peatlands in the Nordic-Baltic countries, empirical knowledge for evaluating the implications on the GHG balance is scarce. As a result, the climate impact of drained and restored peatland areas is currently highly uncertain.

The program included a three-day Scientific Part, including plenary lectures, breakout sessions and field trips to natural, drained, and rewetted peatland sites within the Kulbäcksliden and Trollberget research infrastructures and a final discussion with stakeholders, which took place on the fourth day. The researchers Hanna Vahter, Muhammad Kamil Sardar Ali, Korrensalo Aino, and Paavo Ojanen held a poster/oral presentation to give insights on their latest research project.

- HOW DOES DRAINAGE IMPACT GREENHOUSE GAS FLUX EMISSIONS FROM GRASSLANDS AND CROPLANDS ON DRAINED NUTRIENT-RICH ORGANIC SOILS IN BALTIC COUNTRIES?

Hanna Vahter, Muhammad Kamil Sardar Ali, Thomas Schindler, Andis Lazdiņš, Ain Kull, Ieva Līcīte, Ūlo Mander, Aldis Butlers, Kaido Soosaar

- GREENHOUSE GAS FLUXES FROM NUTRIENT-RICH ORGANIC IN ESTONIA AND LATVIA

Muhammad Kamil Sardar Ali, Kaido Soosaar

- PEAT RESPIRATION IN DRAINED PEATLAND FORESTS UNDER VARYING TREE HARVEST REGIMES

Korrensalo Aino, Mäkiranta Päivi, Ojanen Paavo, Laiho Raija, Anttila Jani, Penttilä Timo, Jauhiainen Jyrki, Salovaara Petri, Lehtonen Aleks, Peltoniemi Mikko, Mäkipää Raisa

- IMPACTS OF PARTIAL HARVEST AND CLEARCUT ON METHANE AND NITROUS OXIDE EMISSIONS OF FORESTRY-DRAINED BOREAL PEATLANDS

Paavo Ojanen, Päivi Mäkiranta, Raija Laiho, Timo Penttilä, Kari Minkkinen, Meeri Pearson, Sakari Sarkkola, Jani Anttila, Raisa Mäkipää

DISSEMINATION ACTIVITIES

Scientific publications

Bardule A, Polmanis K, Krumšteds LL, Bardulis A, Lazdiņš A (2023). Fine root morphological traits and production in coniferous- and deciduous-tree forests with drained and naturally wet nutrient-rich organic soils in hemiboreal Latvia. iForest 16: 165-173. –

doi: <https://doi.org/10.3832/ifor4186-016>

Abstract: Fine root production is one of the key elements of carbon (C) turnover in soil in afforested peatlands and forest lands with organic soils. We estimated variability in fine root morphology traits and annual production in hemiboreal forests dominated by coniferous trees (Norway spruce) and deciduous trees (silver birch and black alder) with nutrient-rich organic soils in Latvia. In total, 23 research sites were established in drained and naturally wet forests of different ages, and ingrowth core techniques were used to sample fine roots and subsequently determine fine root morphology traits and annual production and calculate C input through fine root litter. Significant differences in several fine root morphological traits between coniferous- and deciduous-trees-dominated stands were found. [...] [Read more](#)



Butlers, A. & Lazdins, A. Case study on greenhouse gas (GHG) fluxes from flooded former peat extraction fields in central part of Latvia. Research for Rural Development 2022, Annual 28th International Scientific Conference Proceedings, 2022, Vol 37, 44-49.

doi: <https://doi.org/10.22616/rrd.28.2022.006>

Abstract: Flooded Land is defined as water bodies where human activities have caused changes in the amount of surface area covered by water, typically through water level regulation. Former peat extraction fields are a type of flooded lands which are often mentioned significant source of greenhouse gas (GHG) emissions. In Latvia, the area of flooded lands in former peat extraction fields is 5.3 kha. The aim of the study is to evaluate GHG emissions from flooded former peat extraction fields to define that the flooded lands are the key source of GHG emissions and approve that further studies are necessary to elaborate country specific emission factors. The study is implemented in three areas in the central part of the country, where peat extraction was stopped 25-35 years ago. [...] According to the study results, flooded lands are a significant (one of the largest) source of emissions, and further studies are necessary to improve GHG modelling solutions and activity data. [Read more](#)

Petaja G, Ancāns R, Bārdule A, Spalva G, Meļņiks RN, Purviņa D, Lazdiņš A. Carbon Dioxide, Methane and Nitrous Oxide Fluxes from Tree Stems in Silver Birch and Black Alder Stands with Drained and Naturally Wet Peat Soils. Forests. 2023; 14(3):521.

doi: <https://doi.org/10.3390/f14030521>

Abstract: The aim of this study was to evaluate the impact of groundwater level, soil temperature and general soil chemistry on greenhouse gas (GHG)—carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O)—fluxes from tree stems in deciduous stands with nutrient-rich naturally wet and drained peat soils. In total, nine sample plots were established in the central and north-eastern part of Latvia. [...] Tree stands of different ages and tree dimensions were selected for the study. [...] The study found that CO₂ fluxes from tree stems show a distinct seasonal pattern and a strong positive correlation with soil temperature. Significant differences in CO₂ fluxes were found between temperature ranges below and above 5 °C, indicating that this temperature represents a threshold value. [...] [Read more](#)

Vanags-Duka M, Bārdule A, Butlers A, Upenieks EM, Lazdiņš A, Purviņa D, Licīte I. GHG Emissions from Drainage Ditches in Peat Extraction Sites and Peatland Forests in Hemiboreal Latvia. Land. 2022; 11(12):2233.

doi: <https://doi.org/10.3390/land11122233>



Abstract: We determined the magnitude of instantaneous greenhouse gas (GHG) emissions from drainage ditches in hemiboreal peatlands in Latvia during the frost-free period of 2021 and evaluated the main affecting factors. In total, 10 research sites were established in drained peatlands in Latvia, including active and abandoned peat extraction sites and peatland forests. Results demonstrated that in terms of global warming potential, the contribution of CO₂ emissions to the total budget of GHG emissions from drainage ditches can exceed the CH₄ contribution. The average CO₂ and N₂O emissions from drainage ditches in peatland forests were significantly higher than those from ditches in peat extraction sites, while there was no difference in average CH₄ emissions from ditches between peatland forests and peat extraction sites. Emissions from ditches of all GHGs increased with increasing temperature. In addition, CO₂ and N₂O emissions from drainage ditches increased with decreasing groundwater (GW) level. [Read more](#)

Samariks V, Lazdiņš A, Bārdule A, Kalēja S, Butlers A, Spalva G, Jansons Ā. Impact of Former Peat Extraction Field Afforestation on Soil Greenhouse Gas Emissions in Hemiboreal Region. *Forests*. 2023; 14(2):184.

doi: <https://doi.org/10.3390/f14020184>

Abstract: The reduction of greenhouse gas (GHG) emissions and climate change mitigation are global issues. Peatlands in Europe are widely distributed in the Nordic-Baltic region, and Baltic countries are some of the largest peat suppliers for horticulture in Europe. However, there is no sustainable substitute for peat in the horticulture industry. Therefore, it is necessary to identify suitable re-cultivation types for former peat extraction fields because knowledge about the effect of re-cultivation on annual carbon and GHG budgets is limited. [...] The aim of the study was to assess the influence of diverse re-cultivation management strategies on the GHG emissions of former peat extraction fields. [Read more](#)

Zaiga Anna Zvaigzne ZA, Butlers A. Application of fourier-transform infrared spectroscopy for quantification of chemical parameters in peat samples. International Scientific Conference Engineering for Rural Development, 2023.

<https://www.tf.lbtu.lv/conference/proceedings2023/Papers/TF097.pdf>

Abstract: The demand for the characterization of soil properties on a wide geographical scale with a high spatial resolution is constantly growing to implement various competitive studies, including climate and ecology studies. However, conventional soil analysis methods are time-consuming and expensive. Fourier-transform infrared spectroscopy (FTIR) has the potential to provide an alternative solution for the rapid and cost-effective determination of soil chemical and physical parameters. In this study, we calibrated a mid-infrared diffuse reflectance Fourier transform spectrometer (MIR-DRIFTS). [Read more](#)



Articles

Climate change mitigation scenarios involving drainage activities in grasslands



Drainage and water level management are crucial processes in agriculture to minimize soil degradation and nutrient leaching. In the context of nutrient-rich organic soils in grasslands, the fluctuations in water level can damage the soil and can potentially cause emissions of greenhouse gases. The article gives insights on how managing the level of water in the soil can be beneficial to even out wet and dry periods, both helping the farmer's productivity and soil quality. It focuses on the project's demonstration site LVC305, located at the Teaching and research farm "Vecauce", which differs from others in terms of drainage activities and is set up to measure the impact of controlled drainage of grassland considering even groundwater level during the whole vegetation period, on GHG emissions and other environmental factors.

THE PROJECT IN BRIEF

Duration: 08/2019 - 08/2024

Project code: LIFE18 CCM/LV/001158

Total PROJECT budget: 3 360 948 EUR

EU LIFE funding: 1 844 004 EUR



The LIFE OrgBalt project aims to improve GHG reporting data (activity data and emission factors) available for nutrient-rich organic soils. Furthermore, the project aims to identify and to demonstrate sustainable, resilient, and cost-effective climate change mitigation measures applicable in nutrient-rich organic soils and to provide tools and guidance for the elaboration, implementation, and verification of the results of climate change mitigation policies. The project is implemented by eight partners from five EU Member States – Latvia, Lithuania, Estonia, Finland and Germany and unites representatives from public administration institutions, and scientific and non-governmental organizations.

FIND OUT MORE!

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To receive our newsletter send us an email or submit a request on our project website

✉ info@baltijaskrasti.lv

The Project "Demonstration of climate change mitigation potential of nutrient rich organic soils in Baltic States and Finland" (LIFE OrgBalt, LIFE18 CCM/LV/001158) is implemented with the financial support of the LIFE Programme of the European Union and of the State Regional Development Agency of the Republic of Latvia. www.orgbalt.eu

The information reflects only the LIFE OrgBalt project beneficiaries view and the European Climate, Infrastructure and Environment Executive Agency is not responsible for any use that may be made of the information contained therein.



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 as 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 an assessment of all environmental impacts. For all these reasons, these models should be used carefully in CCM strategy development for the identification of gaps in climate neutrality transition policy and funding frameworks and need further optimization for broader applicability as decision-making tools.





LIFE ORGBALT NEWSLETTER



“Demonstration of climate change mitigation potential of nutrients rich organic soils in Baltic States and Finland”



IN THIS ISSUE

WHERE DO WE STAND?

LATEST EVENTS

DISSEMINATION ACTIVITIES

SHORT DOCUMENTARY

SCIENTIFIC PUBLICATIONS

THE PROJECT IN BRIEF

Abbreviations

COP28 - United Nations Climate Change Conference

CCM - Climate change mitigation

GHG - Greenhouse gas

PPC - Public and private sector cooperation

Dear reader,

Welcome to the 7th edition of the LIFE OrgBalt project newsletter. The last year of our project just started, and we are looking forward to presenting you the results of this four- year research and teamwork. Over the past few months, our team of researchers has been actively engaged in scientific work, adding five further scientific articles to our already long list of publications, contributing valuable insights to the broader scientific community. Our experts continued presenting the project at important international conferences, including the UN Climate Change Conference (COP28) which recently took place in Dubai, sharing and gaining knowledge on the project-related topics. This and much more have been on the LIFE OrgBalt working table since the last edition of our newsletter. Continue reading for the latest updates on the LIFE OrgBalt activities, developments, and events!



THE LIFE ORGBALT PROJECT TEAM





WHERE DO WE STAND?

Time went fast and the final year of the LIFE OrgBalt project have started. During the last months researchers continued their fruitful scientific work publishing their research results in five new scientific articles providing updated data and insights on greenhouse gas emissions fluxes in different types of lands and different conditions (please see the publications below). Continuous attention has also been given to modelling activities. Different modelling tools were tested, and experts have identified the model which best serves the project's needs. Currently a keen work on current input revision and further data inclusion is on-going and soon our experts will finalize the projections of data from the project's demo sites, which will be calculated also basing on the country-specific draft emission factors (EFs) that were calculated within the LIFE OrgBalt project. Our experts continued participating in various events and conferences, including the UN Climate Change Conference (COP28) which recently took place in Dubai, sharing and gaining knowledge on the project-related topics (please see the "Latest events" section). The analysis on the socio-economic impact of the implementation of the project proposed and studied Climate Change Mitigation measures continued and all data are now included in the project developed PPC model. The model will provide landowners with helpful specific financial and socio-economic indicators for each CCM measure implemented in the project relating them to a specific land plot which will be entered by users basing on the current characteristics of their land. In addition, a simulation model for regional-level projections of GHG emissions and socio-economic outputs is developed as a policy planning support tool to be implemented at the regional/national level to estimate GHG emissions and socio-economic benefits of various land-management approaches. More information in this respect will be given in our final newsletter. Our communication team has been actively working with partners and consultative organizations on the organization of a set of training events which will take place during spring 2024 to present both models to interested stakeholders and to provide practical insights on the models functioning. This last phase is particularly important for our communication team which is also actively working to disseminate and highlight at best the project's obtained results. A new short documentary was completed at the end of 2023 to present the main CCM measures implemented and tested within the project with a particular focus on their benefits. As anticipated in the previous newsletter, the project team is now finally taking advantages of all research and collected results to provide our stakeholders, which range from researchers to experts, to consultants, to landowners, to local communities, with practical tools and theoretical conclusions for a better understanding of CCM measures and a better knowledge of their impact.

LATEST EVENTS

LIFE OrgBalt presents the project's results at the UN Climate Change Conference COP 28 in Dubai

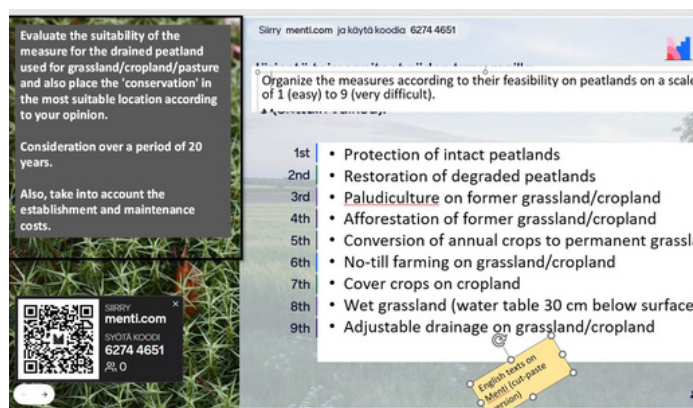


The 28th edition of the Conference of Parties (COP28) took place in Dubai from 30th November to 12th December 2023. LIFE OrgBalt took an active part in the conference, presenting the project's results and their potential contribution to the climate debate during the panel discussion "Contextualized Carbon Sequestration in Agricultural Soils: Potential and Limits" hosted within the Estonia pavilion. The regionally specific drained-nutrient rich organic soils emission factors calculated within the project's framework were officially presented for the first time at COP28.

LIFE OrgBalt experts from all three Baltic States, Finland, and Germany, have been working in close cooperation since the midst of 2019 to calculate regionally specific GHG emission factors for agriculture and forest soils, thus providing locally specific data for GHG inventory improvements. Alar Astover, Professor of Soil Science, Estonian University of Life Sciences, moderated the session on the role of the contribution of agricultural soils in climate change mitigation by sequestration of carbon in mineral soils and reduction of GHG emissions from organic soils. Mineral soils were discussed by Ms Elsa Putku, Soil Science Expert, Centre of Estonian Rural Research and Knowledge, but the role of organic soils and data was presented by the LIFE OrgBalt project. The session focused on the discussion and demonstration of the significance of a locally contextualized approach, to achieve a more carbon-neutral and climate-resilient agriculture. Soils play a crucial role in climate change adaptation and mitigation, being the largest pool of organic carbon in terrestrial ecosystems. However, while it's recognized that sustainable agricultural practices can universally enhance carbon storage in soils, the organic carbon sequestration potential of soils and its impact on climate mitigation varies significantly depending on local climate, soil types, and management practices.

JustFood Living Lab – Vision Workshop

The Vision Workshop for stakeholders' meeting with farmers and local community members in Nurmes, North Karelia was held on Thursday November 9, 2023. This marks the beginning of the LIFE OrgBalt training workshops which has been organized by each partner country until April 2024 to present, show and explain the Public Private Cooperation Model and the Simulation Model to potential users.



A diverse range of stakeholders participated in the workshop which was attended by farmers, local community members and researchers. Several presentations were given. Research Professor Raija Laiho from the Natural Resources Institute Finland started with a detailed presentation on the potential uses of peat fields and their practical implications. Senior Researcher Jyrki Jauhiainen from the Natural Resources Institute Finland then led a discussion to further explore the topics covered in the presentation. The discussion revolved around the relevance of peatlands in various research contexts, the connection between scientific and policy-based information, and how these concepts are understood by farmers, local communities, and NGO representatives. The workshop included also a vision workshop facilitated by University Researcher Ari Paloviita from the University of Jyväskylä and Senior Researcher Jyrki Jauhiainen from the Natural Resources Institute Finland. This interactive session aimed to explore ways to incorporate CCM practices in agriculture, peatland, and forestry in the region. The potential use of the PPC model for planning was also presented, adding a practical element to the discussions. Stakeholders provided important feedback on how to further improve the PPC model. Participants highlighted the benefit of comparing the effects of different land uses and measures side by side provided by the PPC model.

It was suggested to develop further versions in local languages and to provide in addition both an evaluation of the long-term suitability of peatland for different land uses in the model, referring to the changes in the thickness of the organic layer due to the action, and background data based on researched knowledge that is applicable to local conditions.

Presentation:

The impacts of using peatlands for agriculture and possible uses in the future, Jyrki Jauhiainen, LUKE.



Field excursion to Lettosuo: presentations on field methods for estimating soil C-balance in Life OrgBalt



On 1st September 2023 a field excursion was arranged jointly by LifeOrgBalt and Horizon Alfa Wetlands project in conjugation of IBFRA conference 'Climate Resilient and Sustainable Forest Management' in Helsinki. The field excursion brought together about 50 scientists from Life OrgBalt, Horizon Alfa Wetlands and IBFRA conference attendees around the world. During the on-site event LifeOrgBalt scientists explained and demonstrated measurements that are conducted for estimating annual soil C-balance (flux and mass-based measurements) and soil CH₄ and N₂O balance (flux measurements).

DISSEMINATION ACTIVITIES

LIFE OrgBalt short documentary

Implemented climate change mitigation measures within LIFE OrgBalt



Another short documentary was completed by the end of 2023. This third documentaries focuses on a short description of the main Climate Change Mitigation measures implemented in the projects. Interviews with our project's experts are included as well as images from some of the project's demo sites. A final short documentary will be developed by June 2024 to present the project's results. Stay tuned!

Scientific publications

Vigricas, E.; Ciuldiene, D.; Armolaitis, K.; Valujeva, K.; Laiho, R.; Jauhiainen, J.; Schindler, T.; Bardule, A.; Lazdinš, A.; Butlers, A.; et al. **Total Soil CO₂ Efflux from Drained Terric Histosols**. *Plants* 2024, 13, 139.

<https://doi.org/10.3390/plants13010139>

Abstract: Histosols cover about 8–10% of Lithuania's territory and most of this area is covered with nutrient-rich organic soils (Terric Histosols). Greenhouse gas (GHG) emissions from drained Histosols contribute more than 25% of emissions from the Land Use, Land Use Change and Forestry (LULUCF) sector. In this study, as the first step of examining the carbon dioxide (CO₂) fluxes in these soils, total soil CO₂ efflux and several environmental parameters (temperature of air and topsoil, soil chemical composition, soil moisture, and water table level) were measured in drained Terric Histosols under three native forest stands and perennial grasslands in the growing seasons of 2020 and 2021. The drained nutrient-rich organic soils differed in terms of concentrations of soil organic carbon and total nitrogen, as well as soil organic carbon and total nitrogen ratio. The highest rate of total soil CO₂ efflux was found in the summer months. Overall, the rate was statistically significant and strongly correlated only with soil and air temperature. A trend emerged that total soil CO₂ efflux was 30% higher in perennial grassland than in forested land. Additional work is still needed to estimate the net CO₂ balance of these soils. Keywords: total soil CO₂ efflux; drained peatland; Terric Histosols; perennial grassland; Norway spruce; black alder; silver birch



Jauhiainen, J., Heikkinen, J., Clarke, N., He, H., Dalsgaard, L., Minkkinen, K., Ojanen, P., Vesterdal, L., Alm, J., Butlers, A., Callesen, I., Jordan, S., Lohila, A., Mander, Ü., Óskarsson, H., Sigurdsson, B. D., Søgaaard, G., Soosaar, K., Kasimir, Å., Bjarnadottir, B., Lazdins, A., and Laiho, R.: **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, 2023.

<https://doi.org/10.5194/bg-20-4819-2023>

Abstract: We compiled published peer-reviewed CO₂, CH₄, and N₂O data on managed drained organic forest soils in boreal and temperate zones to revisit the current Tier 1 default emission factors (EFs) provided in the IPCC (2014) Wetlands Supplement: to see whether their uncertainty may be reduced; to evaluate possibilities for breaking the broad categories used for the IPCC EFs into more site-type-specific ones; and to inspect the potential relevance of a number of environmental variables for predicting the annual soil greenhouse gas (GHG) balances, on which the EFs are based. Despite a considerable number of publications applicable for compiling EFs being added, only modest changes were found compared to the Tier 1 default EFs. However, the more specific site type categories generated in this study showed narrower confidence intervals compared to the default categories. Overall, the highest CO₂ EFs were found for temperate afforested agricultural lands and boreal forestry-drained sites with very low tree stand productivity. The highest CH₄ EFs in turn prevailed in boreal nutrient-poor forests with very low tree stand productivity and temperate forests irrespective of nutrient status, while the EFs for afforested sites were low or showed a sink function. The highest N₂O EFs were found for afforested agricultural lands and forestry-drained nutrient-rich sites. The occasional wide confidence intervals could be mainly explained by single or a few highly deviating estimates rather than the broadness of the categories applied. Our EFs for the novel categories were further supported by the statistical models connecting the annual soil GHG balances to site-specific soil nutrient status indicators, tree stand characteristics, and temperature-associated weather and climate variables. The results of this synthesis have important implications for EF revisions and national emission reporting, e.g. by the use of different categories for afforested sites and forestry-drained sites, and more specific site productivity categories based on timber production potential. [...] [Read more](#)

Meļņiks RN, Bārdule A, Butlers A, Champion J, Kalēja S, Skranda I, Petaja G, Lazdiņš A. **Carbon Losses from Topsoil in Abandoned Peat Extraction Sites Due to Ground Subsidence and Erosion**. Land. 2023; 12(12):2153.

<https://doi.org/10.3390/land12122153>

Abstract: Peat erosion has a significant impact on soil fertility, agricultural productivity, and climate change dynamics. Through this process, the topsoil rich in organic matter and carbon, (C) is removed and can travel long distances, causing a net C loss.



Additionally, peat undergoes oxidation, resulting in further C loss. In our study, we evaluated C losses from 11 peat extraction fields in two study sites, abandoned for more than 15 years and overgrown by vegetation of different densities. We used high-resolution airborne laser scanning point clouds and multispectral aerial images acquired periodically within a 9-year period, as well as chemical analyses of the topsoil layer. In our study, we found a strong correlation between peat subsidence, C loss, and the vegetation density (NDVI value). NDVI also determines most of the uncertainty in elevation data. We found also that both erosion and peat subsidence are significant sources of C losses from peat extraction sites. At a site monitored for over 9 years, our estimated ground elevation changes ranged from 0.1 cm y⁻¹ to 0.58 cm y⁻¹; however, at a different site monitored over a 4-year period, the values ranged from 2.14 cm y⁻¹ to 5.72 cm y⁻¹. Accordingly, the mean annual C losses varied from 0.06 to 0.22 kg C m⁻² y⁻¹ and from 1.21 to 3.57 kg C m⁻² y⁻¹. [Read more](#)

Mikko Peltoniemi, Qian Li, Pauliina Turunen, Boris Tupek, Päivi Mäkiranta, Kersti Leppä, Mitro Müller, Antti J. Rissanen, Raija Laiho, Jani Anttila, Jyrki Jauhiainen, Markku Koskinen, Aleksi Lehtonen, Paavo Ojanen, Mari Pihlatie, Sakari Sarkkola, Elisa Vainio, Raisa Mäkipää, **Soil GHG dynamics after water level rise – Impacts of selection harvesting in peatland forests**, Science of The Total Environment, Volume 901, 2023, 165421, ISSN 0048-9697
<https://doi.org/10.1016/j.scitotenv.2023.165421>

Abstract: Managed boreal peatlands are widespread and economically important, but they are a large source of greenhouse gases (GHGs). Peatland GHG emissions are related to soil water-table level (WT), which controls the vertical distribution of aerobic and anaerobic processes and, consequently, sinks and sources of GHGs in soils. On forested peatlands, selection harvesting reduces stand evapotranspiration and it has been suggested that the resulting WT rise decreases soil net emissions, while the tree growth is maintained. We monitored soil concentrations of CO₂, CH₄, N₂O and O₂ by depth down to 80 cm, and CO₂ and CH₄ fluxes from soil in two nutrient-rich Norway spruce dominated peatlands in Southern Finland to examine the responses of soil GHG dynamics to WT rise. Selection harvesting raised WT by 14 cm on both sites, on average, mean WTs of the monitoring period being 73 cm for unharvested control and 59 cm for selection harvest. All soil gas concentrations were associated with proximity to WT. Both CH₄ and CO₂ showed remarkable vertical concentration gradients, with high values in the deepest layer, likely due to slow gas transfer in wet peat. CH₄ was efficiently consumed in peat layers near and above WT where it reached sub-atmospheric concentrations, indicating sustained oxidation of CH₄ from both atmospheric and deeper soil origins also after harvesting.



Based on soil gas concentration data, surface peat (top 25/30 cm layer) contributed most to the soil-atmosphere CO₂ fluxes and harvesting slightly increased the CO₂ source in deeper soil (below 45/50 cm), which could explain the small CO₂ flux differences between treatments. N₂O production occurred above WT, and it was unaffected by harvesting. Overall, the WT rise obtained with selection harvesting was not sufficient to reduce soil GHG emissions, but additional hydrological regulation would have been needed. [Read more](#)

Upenieks, E. M. & Rudusāne, A. **Afforestation as a type of peatland recultivation and assessment of its affecting factors in the reduction of GHG emissions**. Rural Development, 2023, 295-300.

<https://doi.org/10.15544/RD.2021.052>

Abstract: Peatlands play a significant role in the regulation of greenhouse gasses (GHG) by sequestering carbon from the atmosphere. Unsustainable peat extraction can lead to an increase in GHG emissions. It is important to recultivate the peatland after the extraction of peat so that it does not become an emitter but remains a carbon sink and sequestrator. One of the most effective and suitable types of recultivation in Latvia that also has a positive effect on GHG circulation is afforestation. The aim of the study is to describe afforestation as a type of recultivation and to evaluate its influencing factors in the reduction of GHG emissions in peatlands. The study analyzed the data obtained in the LIFE REstore project which contains measurements of the three main GHGs (CO₂, CH₄ and N₂O) and the factors affecting them. The results show that in afforested areas the closest correlation with the amount of emitted CO₂ out of all the analyzed factors is formed by soil temperature. As it increases, so do the CO₂ emissions. As the depth of soil increases, the correlation between temperature and CO₂ emissions becomes closer. In the study areas, regularities that would directly explain the relatively low amount of GHG emissions in the afforested areas were not found among the analyzed quantitative factors.

Kristine Valujeva, Elizabeth K. Freed, Aleksejs Nipers, Jyrki Jauhiainen, Rogier P.O. Schulte, **Pathways for governance opportunities: Social network analysis to create targeted and effective policies for agricultural and environmental development**, Journal of Environmental Management, Volume 325, Part B, 2023, 116563, ISSN 0301-4797, <https://doi.org/10.1016/j.jenvman.2022.116563>

Abstract: Participatory techniques are widely recognized as essential in addressing the challenges of agri-environmental policy and decision-making. Furthermore, it is well known that stakeholder analysis and social network analysis are useful methods in the identification of actors that are involved in a system and the connections between them. To identify key stakeholders and improve the transfer of information from national-to farm-level, we compared a stakeholder analysis with farmer-centric networks for primary productivity, carbon regulation and biodiversity through the case study of Latvia. Farmer-centric networks show a higher number of stakeholders communicating on the topic of primary productivity network comparing to other topics.



We found three pathways for improving knowledge transfer in agri-environmental governance: horizontal strengthening of farming community, horizontal strengthening of policy departments, and vertical strengthening between policy departments and farmers. The first step is to ensure that policy-makers have a common understanding of the results that should be achieved. The second step is the transfer of know-how between farmers to develop new solutions. The third step is the training of advisers in the land multifunctionality and the strengthening of communication and knowledge transfer between policy departments and farmers in order to jointly achieve the desired direction at that national level. Long-term cooperation between many stakeholders, including knowledge transfer, the development and implementation of solutions, and monitoring are essential in order to adequately address global societal challenges. The application of our mixed methods approach to elucidate pathways for improved governance of knowledge and information is of direct relevance to other jurisdictions seeking to transition towards multifunctional and sustainable land management. [Read more](#)

THE PROJECT IN BRIEF

Duration: 08/2019 - 08/2024

Project code: LIFE18 CCM/LV/001158

Total PROJECT budget: 3 360 948 EUR

EU LIFE funding: 1 844 004 EUR



The LIFE OrgBalt project aims to improve GHG reporting data (activity data and emission factors) available for nutrient-rich organic soils. Furthermore, the project aims to identify and to demonstrate sustainable, resilient, and cost-effective climate change mitigation measures applicable in nutrient-rich organic soils and to provide tools and guidance for the elaboration, implementation, and verification of the results of climate change mitigation policies. The project is implemented by eight partners from five EU Member States – Latvia, Lithuania, Estonia, Finland and Germany and unites representatives from public administration institutions, and scientific and non-governmental organizations.

FIND OUT MORE!

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request on our project [website](#)

 info@baltijaskrasti.lv

The Project "Demonstration of climate change mitigation potential of nutrient rich organic soils in Baltic States and Finland" (LIFE OrgBalt, LIFE18 CCM/LV/001158) is implemented with the financial support of the LIFE Programme of the European Union and of the State Regional Development Agency of the Republic of Latvia. www.orgbalt.eu

The information reflects only the LIFE OrgBalt project beneficiaries view and the European Climate, Infrastructure and Environment Executive Agency is not responsible for any use that may be made of the information contained therein.



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 as 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 an assessment of all environmental impacts. For all these reasons, these models should be used carefully in CCM strategy development for the identification of gaps in climate neutrality transition policy and funding frameworks and need further optimization for broader applicability as decision-making tools.





LIFE ORGBALT NEWSLETTER



“Demonstration of climate change mitigation potential of nutrients rich organic soils in Baltic States and Finland”



IN THIS ISSUE

WHERE DO WE STAND?

PROJECT RESULTS

LATEST EVENTS

DISSEMINATION ACTIVITIES

THE PROJECT IN BRIEF

DISCLAIMER

Abbreviations

COP28 - United Nations Climate Change Conference

CCM - Climate change mitigation

GHG - Greenhouse gas

PPC - Public and private sector cooperation



Dear reader,

Welcome to the 8th and final newsletter of the project LIFE OrgBalt. As the project is set to conclude in August, we are happy to present the work done and look forward to new collaborations.

In the last months leading up to project conclusion, we worked hard to disseminate project outcomes and recommendations for future actions. We issued another batch of articles for both professionals and the general public, as well as the final documentary describing the key results of the project. We were all happy to meet in the project final conference and present the project results in depth to stakeholders from across Europe. We are grateful for all people involved in the project for the results achieved and we hope that project outcomes will serve well to convert nutrient-rich organics soils from carbon sources to carbon sinks.

Continue reading for the final updates on the LIFE OrgBalt activities, developments, and events!

THE LIFE ORGBALT PROJECT TEAM





WHERE DO WE STAND?

During the project, practices with potential climate change mitigation benefits were introduced in nutrient-rich organic soils across 17 demonstration sites on agricultural and forestry lands, each with unique land use types, drainage conditions, and other characteristics. Data on GHG fluxes and other environmental variables had been collected in the two-year time frame in 53 monitoring sites of the project (17 demonstration sites and 36 reference sites).

The first Baltic/Finnish GHG emission factors for nutrient-rich organic soils had been developed, to improve national GHG inventories and aiding in better climate change mitigation planning in future. Proposals for sectoral strategies aim to balance environmental, climate, and economic benefits. Developed models and tools will support analyses of socio-economic impacts of climate measures in the Baltic States. And provide a functional land management model to inform landowners on implementing climate change mitigation options. Improved cross-sectoral cooperation will foster a deeper understanding of the interplay between land management, climate change, and economic development.

Close to accomplishment of the project work project partners are looking forward to apply and improve the outcomes of the project in new ventures for improvement of climate friendly management of nutrient-rich organic soils.



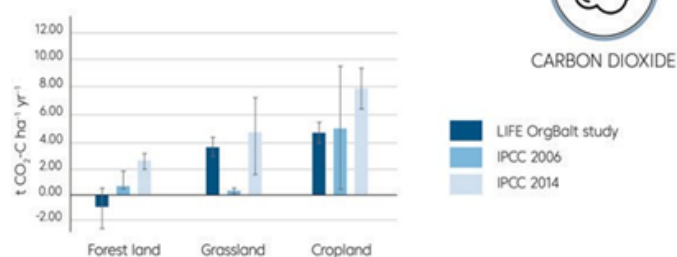
PROJECT RESULTS

As the project comes to an end, we are proud to present to you some of the key outputs from the activities carried out over the last 5 years.

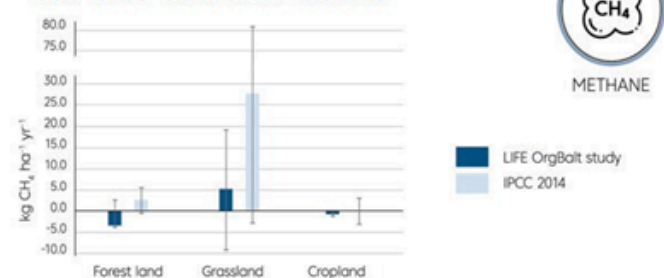
Improving GHG inventory methods

Results of 2-year GHG monitoring reveal that carbon dioxide (CO₂) and nitrous oxide (N₂O) emissions from grasslands and croplands are comparable and significantly higher than those from forests. Forest lands showed no annual net nutrient-rich organic carbon stock loss, resulting in a negative carbon dioxide equivalent factor. Considering uncertainties, the methane (CH₄) emission factors developed for drained, nutrient-rich organic soils are not significantly different from the default ones (IPCC, 2014) across all land use categories.

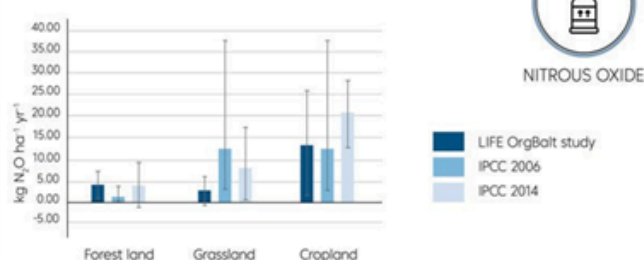
* Annual drained nutrient-rich organic soil GHG emission factors



* Annual drained nutrient-rich organic soil GHG emission factors



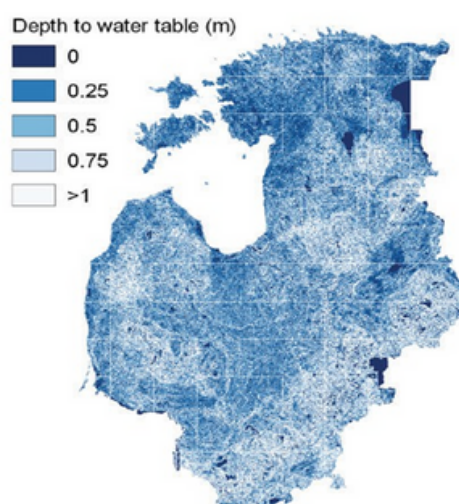
* Annual drained nutrient-rich organic soil GHG emission factors



*results based on scientific manuscripts prepared for or submitted for publishing. Slight changes may occur during the publishing process.

Improving activity data - depth to water and wet area maps developed

Activity data (e.g. land use maps, management practices and conditions) is one of the most important elements of the GHG calculation and projections from organic soils, especially if changing climate conditions are considered in modelling. A set of maps as a practical tool for the planning of sustainable soil management activities, both in the forestry and agricultural sectors was developed. For example, a water table depth maps for the entire territory of the Baltic States - the single source of information that allows modelling of water accumulation sites by showing water table depth in meters (please see the map below).



Water table depth map (see also: Wet area maps for the Baltics: improved understanding of the spatial distribution of soil moisture, J.Ivanovs (LSFRI Silava), https://www.orgbalt.eu/?page_id=4180).

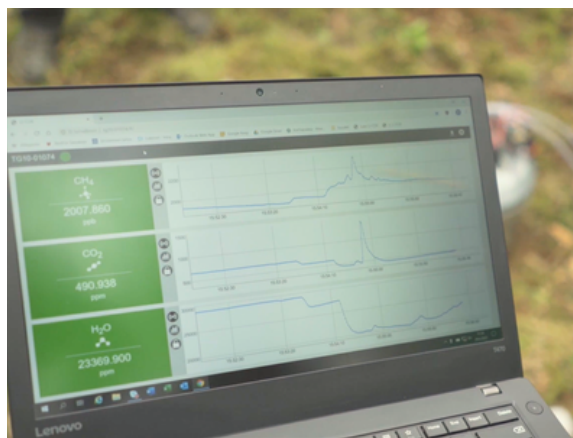
Climate change mitigation measures in demonstration sites

Sustainable, resilient, and cost-effective CCM management practices in selected demonstration sites were implemented. In the table below, measures and their relative climate change mitigation potential assessed in the project are shown.



Agricultural CCM measures	
<u>Conversion of cropland to grassland</u>	The measure with limited efficiency, but also with the smallest investments and low level of risk to reach the mitigation effect. Can be improved by implementation of controlled drainage system.
Afforestation CCM measures	
<u>Conventional afforestation (spruce)</u>	The measure has the best ratio of the GHG emission short- to midterm reduction effect and the potential impact of natural disturbances (the level of risk to reach the mitigation effect). Proper management should be applied during the whole rotation period. The effect can be increased by application of mineral fertilizers and wood ash.
<u>Paludiculture - afforestation of grassland with black alder and birch</u>	The measure can significantly reduce GHG emissions in mid- and long-term. Proper management actions can be remedial drainage system, planting trees on larger mounds. The effect can be increased by application of mineral fertilizers and wood ash.
<u>Agroforestry - fast growing trees and grass</u>	The measure provides the greatest short-term effect of reducing GHG emissions, but additional plant protection measures must be implemented and long-term subsidence effects on deep organic soils must be taken into account. The effect of different species and management techniques needs to be further evaluated. Amendments to the regulatory environment are necessary – permissible duration of rotation should be increasing the 20–25 years or not regulated at all. The effect can be increased by application of mineral fertilizers and wood ash.
<u>Fast growing species in riparian buffer zones</u>	The measure provides the second largest GHG emission reduction effect in short- and midterm, but the potential for the measure's implementation is small if most of the organic soils are afforested. The measure can be recommended for implementation, but additional plant protection measures should be implemented. Selection of “animal tolerant” species will reduce the mitigation effect, but also – the risk.
Forestry CCM measures	
<u>Application of wood ash in spruce stand</u>	The measure with the quickest and at the same time long lasting GHG emission mitigation effect in areas with organic soils. The measure has great potential for implementation, limited only by the availability of wood ash.

Development of proposals for sectoral strategies and action plans to reduce GHG emissions from organic soils



Proposals and reports were developed to provide comprehensive and transparent information on the situation in Latvia and the project partner countries, and in the EU. Organic soil management and GHG accounting improvements are crucial for updating and adapting climate policy. The most important documents where the CCM measures can be implemented are the Common Agriculture Policy and National Climate and Energy Plans.

Tools and guidance

A simulation model was developed as a policy planning/decision support tool to evaluate the projections of GHG emissions and socio-economic outcomes of selected management measures. The simulation model is designed to reflect activity data, emission factors and current socio-economic estimates. It includes geospatial information with data on soil, water and land use related indicators in all target countries.

The public and private sector cooperation model (PPC model) was developed as a tool for climate change mitigation and sustainable soil management for landowners, rural support services, farmers' and foresters' associations. The aim of the model is to suggest innovative land management practices. The model demonstrates how these territories can be managed considering economic, social, and climate mitigation benefits.



Capacity building and public awareness

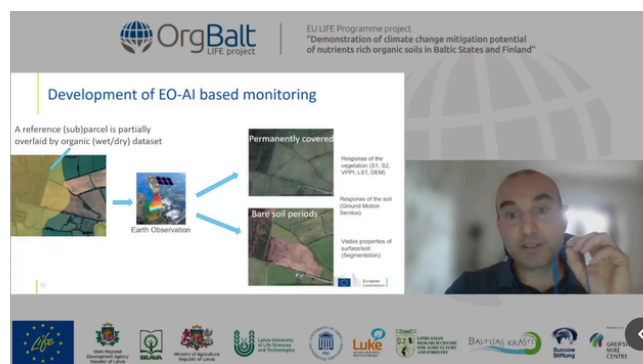
The project partners have organized workshops and training sessions with more than 500 participants total in all project countries. The project has in total organized or participated with expert presentations in more than 30 events, including the UNFCCC COP28 in Dubai. Information about the project has been disseminated in more than 37 scientific publications, 8 newsletters, and 4 short documentaries.

LATEST EVENTS

LIFE OrgBalt International Conference

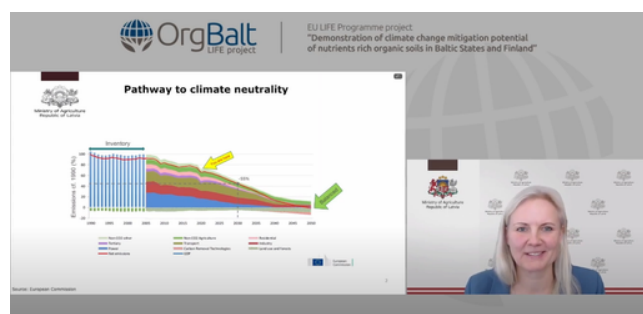
The International Conference “Climate Change Mitigation in Organic Soils in Agricultural and Forest Lands” held on June 13-14, 2024, at the University of Latvia, featured discussions on EU regulatory frameworks, GHG emission factors, and mitigation strategies. The event included expert sessions, panel discussions, and site visits, emphasizing the importance of addressing organic soils in climate change mitigation efforts. The conference attracted 190 participants, both in person and virtually, highlighting the relevance of the theme in today's context. All speaker presentations and recordings from the conference are available on project website:

Organic soils within the EU regulatory frameworks and climate related policies: current status and scientific challenges: Emanuele Lugato, European Commission – Joint Research Center



Mr. Lugato provided insight into the status and challenges of managing organic soils within the EU's climate policies. The presentation highlighted the importance of peatlands and their role in reducing greenhouse gas emissions and explored ways how new technologies like AI can be applied for better monitoring and mapping of these ecosystems.

LIFE OrgBalt project results for developing coherent climate and environment policy for the land use sector: Dace Arāja, Ministry of Agriculture of the Republic of Latvia



The presentation by Dace Arāja described the importance of LIFE OrgBalt in the context of national policy making, outlined the status of Land Use, Land Use Change and Forestry (LULUCF) sector emissions in Latvia and future policy goals. She emphasised the need for more research in this area and outlined practices from the project to be integrated in the Latvian National Energy and Climate Plan (NECP).

Distribution of peatlands and organic soils in the Baltic Sea region: Andreas Haberl, Michael Succow Foundation/Greifswald Mire Centre

The presentation by Andreas Haberl highlighted the great responsibility for improving climate change mitigation on organic soils in the peatland-rich Baltic Sea Region, where a disproportionate share of agricultural greenhouse gas (GHG) emissions



come from drained peatlands. In total, 7% of the EU's annual GHG emissions come from drained peatlands. The presentation therefore called for the conservation of remaining pristine peatlands (mires) and the rewetting of drained sites. It concluded that improving data, communication, peatland and water management at catchment scale are essential to optimize nature-based CCM.

Overview of used joint field methodology: Jyrki Jauhiainen, Natural Resources Institute Finland (LUKE)



In this presentation, Mr. Jauhiainen explained how drained organic soils, despite being significant sources of greenhouse gas (GHG) emissions, play a crucial role in the production of food, fodder, and raw materials. The presentation then described the LIFE OrgBalt project harmonized field methods for data collection over two years, monitoring GHGs, litter, vegetation, water, temperature,

and soil characteristics. This comprehensive approach allows for a more accurate understanding of carbon dynamics in these soils, contributing to effective climate change mitigation strategies.

Emission factors of CO₂ in forest and agriculture lands: Aldis Butlers, Latvian State Forest Research Institute Silava



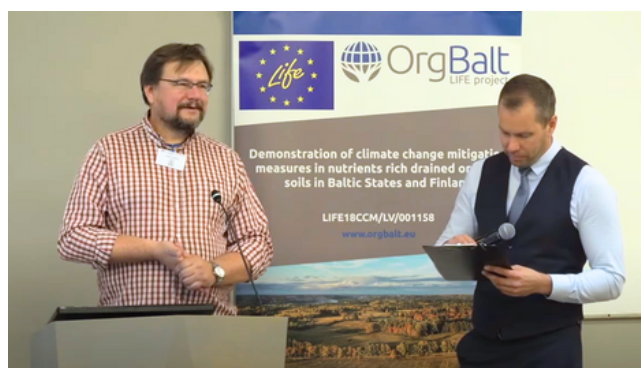
This presentation discussed the CO₂ emission factors in forest, grassland, and cropland areas, focusing on the impact of drainage on carbon flux. It presented empirical data on carbon inputs and soil CO₂ emissions over a 24-month monitoring period. The study included detailed measurements of soil and ecosystem respiration and provided recommendations for emission factors for various land types in the region.

Soil CH₄ and N₂O balance from forest and agriculture lands: Kaido Soosaar, Tartu University

The presentation discussed the balance of soil CH₄ and N₂O emissions from forest and agricultural lands, highlighting their impact on global warming. The findings were based on fieldwork conducted in Estonia, Latvia, and Lithuania, examining various forest types and grasslands, both drained and undrained. Key findings included the effects of land use and drainage on greenhouse gas emissions, with recommendations for updating regional emission factors.



Scenarios for reduction of GHG emissions from nutrients-rich organic soils: Andis Lazdiņš, Latvian State Forest Research Institute Silava



In this presentation, Andis Lazdiņš discussed the key CCM measures evaluated within LIFE OrgBalt. Afforestation, rewetting of grasslands, and application of wood ash in spruce stand were highlighted as effective methods. The presentation emphasized the importance of proper planning and management to achieve significant GHG mitigation results while balancing biodiversity and agricultural productivity goals.

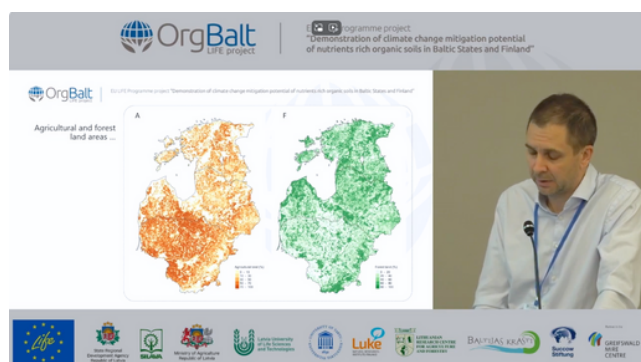
Projections of GHG emissions from different land uses: Vaiva Kazanavičiūtė, Lithuanian Research Centre for Agriculture and Forestry



The presentation by Vaiva Kazanavičiūtė demonstrated the results of the calculation tool - developed to project GHG emissions based on various climate scenarios and land use types, incorporating the first Baltic/Finnish GHG emission factors compiled within the project and country-specific data. The presentation outlined several measures, such as transforming arable land into

grassland, afforestation, and controlled drainage, and their effects in mitigating climate change impacts, providing detailed projections of GHG emissions and reductions under different scenarios over 50 years in Latvia and Lithuania.

Evaluation of the impact of GHG emission reduction measures and their socioeconomic implications: Aleksejs Nipers, Latvia University of Life Sciences and Technologies



The presentation demonstrates the simulation tool - a data-based tool for policy planning and decision-making at regional and national levels, evaluating the impact of climate change mitigation measures on socioeconomic indicators and GHG emission reduction for the Baltic States. A comparison of land management practices that perform well in CCM impacts as well as provide socio-economic

benefits like employment or profit is considered for time frames until 2023 and 2050. The tool can also be used to find out which are the best locations for applying the climate change mitigation practices.

Panel discussion: Opportunities and challenges for the implementation of climate change mitigation measures: Kristīne Sirmā, Ministry of Agriculture of the Republic of Latvia; Johanna Vanhatalo, Ministry of Agriculture and Forestry of Finland; Kristina Simonaitytė, Ministry of Agriculture of the Republic of Lithuania; Arnis Muižnieks, Latvian Forest Owners' Association; Mārtiņš Trons, Farmers' Parliament, Latvia



The panel discussion featured policy makers and sector representatives to exchange their views on future policy development needs for nutrient-rich organic soils and climate change mitigation. Panelists from the Ministries of Agriculture of Latvia, Lithuania, and Finland discussed the challenges they currently face in achieving national targets for the LULUCF sector by 2030. Sector representatives raised concerns about the lack of financial support for farmers and landowners to implement climate change mitigation practices.

DISSEMINATION ACTIVITIES

Measurements of soil GHG fluxes within the LIFE OrgBalt project

One of the LIFE OrgBalt project key assignments is elaborating and evaluating the soil greenhouse gas (GHG) balance, especially for carbon dioxide (CO₂), and also for methane (CH₄) and nitrous oxide (N₂O). However, determining those in forests and other ecosystems on organic soils is challenging from technological and capacity perspectives: the annual soil CO₂ balance is formed using summarized CO₂ flux data over the year in monitoring and coherent data on mass-based Carbon (C) stock changes from above and below the ground. The article describes the baseline where the project partners started working on these issues. It also briefly envisages methodology, requirements for the measurements of different parameters, measuring and sampling that were done for two years, as well as calculations done within the project.

Wet agriculture and forestry (paludiculture) on rewetted peatland



In this article, the concept of paludiculture is explained. Paludiculture involves the wet agricultural or forestry use of rewetted peatlands, aiming to preserve long-term carbon storage while maintaining productivity. This approach helps to mitigate climate change by reducing greenhouse gas emissions from drained peatlands and promoting sustainable wet land use practices.

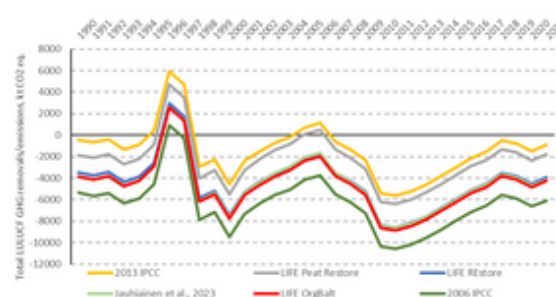


Climate change mitigation scenarios involving improved forest management practices

The article demonstrates how forest management practices, such as riparian buffer zones, selective felling, and wood ash application are applied to bring potential climate change mitigation benefits. These measures aim to reduce greenhouse gas emissions and increase CO₂ removals by improving tree growth conditions and stabilizing groundwater levels.

Contribution of LIFE OrgBalt calculated EFs for the estimation of GHG emissions from drained nutrient-rich organic soil

The article demonstrates how the first regional GHG emission factors developed within LIFE OrgBalt are applied in a calculation tool to project emissions from different land uses, management practices, and climatic conditions. The tool also models peatland soil forest stand development and offers insights into GHG emission savings due to various management practices and land-use changes.



Opportunities and challenges of the carbon credit markets

The article explores how the carbon credit system helps to reduce greenhouse gas emissions by allowing trading of credits from projects that deal, for example, renewable energy or afforestation. Projects like LIFE OrgBalt contribute to developing new regulations and methodologies for carbon flux calculations, improving the system's credibility and effectiveness.

Short documentary on LIFE OrgBalt results



Through interviews and detailed explanations, the documentary provides an overview of the project's contributions to science and policy-making. It showcases the project's achievements in developing regionally harmonized methodologies for greenhouse gas data collection, improving our understanding of biological processes, and creating tools for assessing the impact of climate change mitigation measures implemented on nutrient-rich organic soils.

[Visit the LIFE OrgBalt website to access all materials developed within the project!](#)

THE PROJECT IN BRIEF

Duration: 08/2019 - 08/2024

Project code: LIFE18 CCM/LV/001158

Total PROJECT budget: 3 360 948 EUR

EU LIFE funding: 1 844 004 EUR



The LIFE OrgBalt project aims to improve GHG reporting data (activity data and emission factors) available for nutrient-rich organic soils. Furthermore, the project aims to identify and to demonstrate sustainable, resilient, and cost-effective climate change mitigation measures applicable in nutrient-rich organic soils and to provide tools and guidance for the elaboration, implementation, and verification of the results of climate change mitigation policies. The project is implemented by eight partners from five EU Member States – Latvia, Lithuania, Estonia, Finland and Germany and unites representatives from public administration institutions, and scientific and non-governmental organizations.

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The Project "Demonstration of climate change mitigation potential of nutrient rich organic soils in Baltic States and Finland" (LIFE OrgBalt, LIFE18 CCM/LV/001158) is implemented with the financial support of the LIFE Programme of the European Union and of the State Regional Development Agency of the Republic of Latvia, www.orgbalt.eu

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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 as 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 an assessment of all environmental impacts. For all these reasons, these models should be used carefully in CCM strategy development for the identification of gaps in climate neutrality transition policy and funding frameworks and need further optimization for broader applicability as decision-making tools.

