

EU LIFE Programme project "Demonstration of climate change mitigation potential of nutrients rich organic soils in Baltic States and Finland"

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

(E.1)

ACTIONS

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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 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."





NOTICE BOARDS

The collection of information for the preparation of the project notice boards (content and implementation) was carried out and completed during the reporting period 01/11/2020 - 31/01/2021. A professional layout was developed and approved. The contract with the contractor however had to be extended twice since due to the weather conditions it was not possible to install notice boards until May 2021.

All notice boards are in place now in all 13 Latvia demonstration sites. The remaining 3 notice boards have reached Finland and will be install in the near future.

The LIFE OrgBalt project aims to implement a wide range of innovative organic soil management measures to demonstrate how these areas can be managed sustainably, taking into account economic, social and climate aspects. 16 project demonstration sites have been established in Latvia and Finland. LIFE OrgBalt studies greenhouse gas emissions from managed organic soils – In total 51 sites are measured – they include all project demonstration sites and reference sites.

Below the list of all demonstration sites with the title of the implemented climate change mitigation measures and a brief description of the main benefits.

#	Country	Code	CCM measure	CCM benefits
1	Latvia	LVC303	Paludiculture - afforestation of grassland with black alder and birch	 Potential benefits of establishment of forest paludiculture in rewetted grassland: ✓ Reduced GHG emissions from soil due to improvement of water regime by mounding and establishment of network of shallow furrows to drain exceeding surface water ✓ Reduction of risks associated with natural disturbances in forests with wet organic soils ✓ Accumulation of CO₂ in living and dead biomass, soil and litter and replacement effect of forest biofuel and harvested wood products
2	Latvia	LVC302	Conventional afforestation considering shorter rotation	 Potential benefits of afforestation: ✓ Reduced GHG emissions from soil ✓ Accumulation of CO₂ in living and dead biomass, soil and litter and replacement effect of forest biofuel and harvested wood products ✓ Shorter rotation and more intensified management ensure higher yield and replacement effect, as well as reduces carbon losses due to root rot and other disturbances

Table 1. LIFE OrgBalt demosites











3	Latvia	LVC308	Continuous forest cover as a forest regeneration method in spruce stands	 Potential benefits of continuous forest cover: ✓ Reduced CH₄ and N₂O emissions from soil due to avoiding of increase of the groundwater level after harvesting
4	Latvia	LVC307	Application of wood ash after commercial thinning in spruce stands	 Potential benefits of wood ash application in forest on organic soils: ✓ Increased CO₂ removals in living biomass, dead wood, soil, litter and harvested wood products due to improved growth conditions and additional increment in living biomass
5	Latvia	LVC311	Riparian buffer zone in forest land planted with black alder	 Potential benefits of improved planting of black alder in riparian buffer zone: ✓ Reduced GHG emissions from soil due to improvement of water regime by mounding and establishment of network of shallow furrows to drain exceeding surface water ✓ Reduction of risks associated with natural disturbances in forests with wet organic soils ✓ Accumulation of CO₂ in living and dead biomass, soil and litter and replacement effect of forest biofuel and harvested wood products
6	Latvia	LVC309	Semi-natural regeneration of clear- felling sites with grey alder without reconstruction of drainage systems	 Potential benefits of forest stand regeneration without reconstruction of drainage systems (from naturally wet or rewetted organic soils): ✓ Reduced GHG emissions from soil due to improvement of water regime by mounding and establishment of network of shallow furrows to drain exceeding surface water ✓ Reduction of risks associated with natural disturbances in forests with wet organic soils ✓ Accumulation of CO₂ in living and dead biomass, soil and litter and replacement effect of forest biofuel and harvested wood products
7	Latvia	LVC306	Agroforestry - fast growing trees and grass	 Potential benefits of agroforestry: ✓ Increased CO₂ removals in living biomass and soil ✓ Reduced GHG emissions from soil and replacement effect of woody and herbaceous biofuel and harvested wood products
8	Latvia	LVC310	Fast growing species in riparian buffer zones	 Potential benefits of fast-growing species in riparian buffer zones: ✓ Increased CO₂ removals in living biomass and soil ✓ Replacement effect of woody and herbaceous biofuel and harvested wood products ✓ Avoided nutrients leakage from farmlands
9	Latvia	LVC301	Conversion of cropland used for cereal production into	 Potential benefits of cropland conversion to grassland: ✓ Reduced GHG emissions from soil ✓ Increased carbon stock in soil and below-ground biomass









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			grassland considering	✓ Reduced risks of nutrient leaching and soil
			periodic ploughing	erosion
10	Latvia	LVC305	Controlled drainage of grassland considering even groundwater level during the whole vegetation period	 Potential benefits of controlled drainage: ✓ Reduced GHG emissions from organic soils due to reduced fluctuations of groundwater level ✓ Reduced leaching of nutrients to surface water bodies ✓ In summer drought additional water is available to meet crop demand ensuring higher carbon inputs into soil
11	Latvia	LVC304a	Introduction of legumes in conventional farm crop rotation	 Potential benefits of legumes in conventional crop rotation: ✓ Reduced N₂O emissions from soil reported in agriculture sector because of avoided mineral fertilizer application and gradual nitrogen input by symbiotic organisms ✓ Increased carbon input with plants ensuring increased soil carbon stock
12	Latvia	LVC313	Strip harvesting in pine stands	 Potential benefits of strip harvesting: ✓ Reduced CH₄ and N₂O emissions from soil due to avoiding of increase of the groundwater level after harvesting in comparison to clear-felling
13	Latvia	LVC312	Forest regeneration (coniferous trees) without reconstruction of drainage systems	 Potential benefits of forest regeneration with coniferous trees without reconstruction of drainage systems: ✓ Reduced GHG emissions from soil due to improvement of water regime by mounding and establishment of network of shallow furrows to drain exceeding surface water ✓ Reduction of risks associated with natural disturbances in forests with wet organic soils ✓ Accumulation of CO₂ in living and dead biomass, soil and litter and replacement effect of forest biofuel and harvested wood products
14	Finland	FIC301	Continuous cover forestry on peatland. Selective felling without full ditch network maintenance. Conventional clear cut and uncut plots are used as comparison. Three sites in monitoring at South Finland.	 Potential benefits of continuous forest cover forestry practices: ✓ Lower impact to environment conditions in forest stand ✓ Remaining tree stand evapotranspiration controls soil water-table ✓ Reduced/no need for ditch network maintenance ✓ Reduced change in soil CO₂ emission after harvesting ✓ Reduced inputs of water and plant nutrients to surface water bodies
15	Finland	FIC302	Shifting to continuous	Potential benefits of continuous forest cover forestry practices:
			cover forestry on	✓ Lower impact to environment conditions in
			peatland. Forest	forest stand









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			regeneration following harvesting of overstorey. Conventional clearcut + ditch mounding + planting, and uncut forest are used as comparison. Three sites in monitoring at South Finland.	 ✓ Remaining tree stand evapotranspiration controls soil water-table ✓ Reduced/no need for ditch network maintenance ✓ Reduced change in soil CO₂ emission after harvesting ✓ Reduced inputs of water and plant nutrients to surface water bodies
16	Finland	FIC303	Shifting to continuous cover forestry on peatland. Forest regeneration following small gap harvesting and natural regeneration. Spruce shelter tree stand with natural regeneration is used as comparison. Two sites in monitoring at North Finland.	 Potential benefits of continuous forest cover forestry practices: ✓ Lower impact to environment conditions in forest stand ✓ Remaining tree stand evapotranspiration controls soil water-table ✓ Reduced/no need for ditch network maintenance ✓ Reduced change in soil CO₂ emission after harvesting ✓ Reduced inputs of water and plant nutrients to surface water bodies

Below few pictures were it is possible to see notice boards in place at some selected demonstration sites:

Demonstration site LVC301



Demonstration site LVC303





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Demonstration site LVC313



