



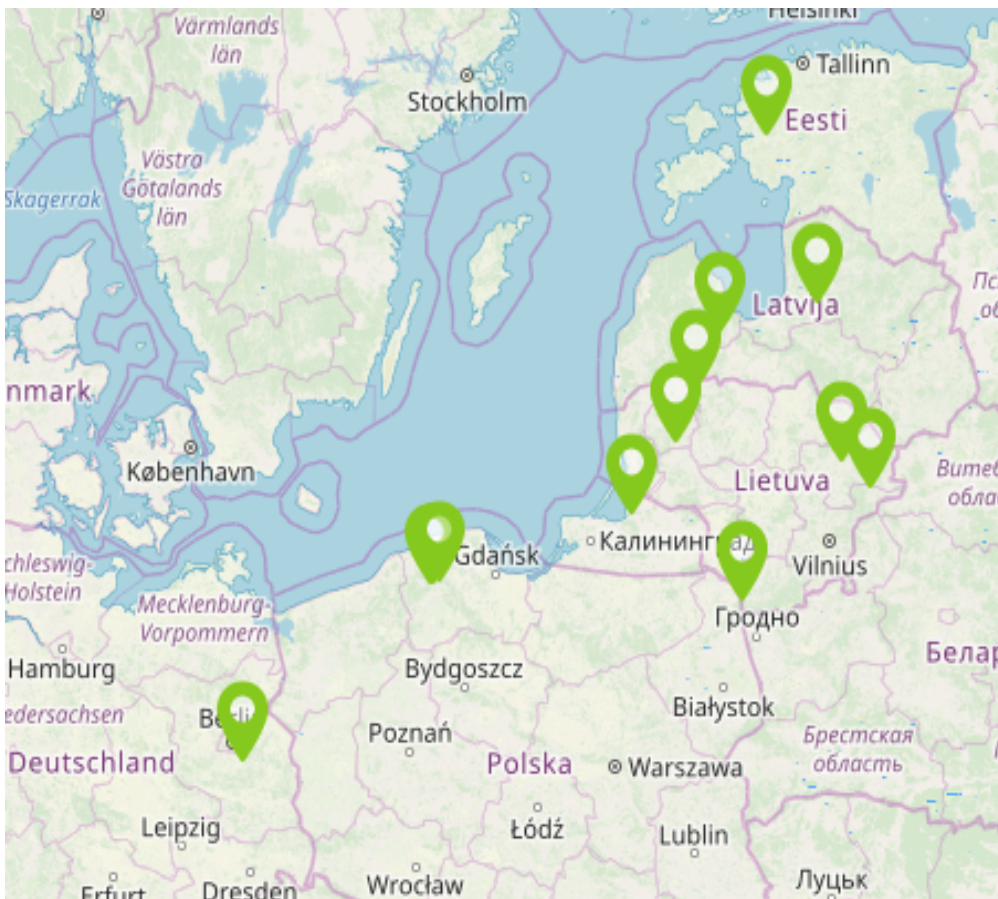
Reduction of CO₂ emissions by restoring degraded peatlands in Northern European Lowland

LIFE15 CCM/DE/000138

Manchester

June 12, 2019

LIFE PEAT RESTORE



9 partners:

Tallinn University
University of Latvia
Lake Engure Nature Park Fund
E-Buvvadiba Ltd.
ELM Media
Lithuanian Fund for Nature
Peat Producers Association
Klub Przyrodników
NABU

11 project sites across 5 countries:

Estonia, Latvia, Lithuania, Poland
and Germany

In total: 5,300 ha

Main project activities & aims

1. Practical restoration

- To reduce CO₂ by restoring degraded peatlands;
- Testing restoration techniques for post-exploited areas: bare peat and water bodies

2. Data collection and monitoring - hydrological, vegetation and GHG emissions

- Measure emissions before and after restoration
- Using estimation (GEST) and direct chamber techniques

3. Communication - dissemination of policy messages based on results and insights gained, by organising national events, producing informational material and participating in relevant conferences

- Disseminate results to stakeholders
- Raise awareness of strategic relevance of peatlands to the climate



Current project status



Current project status:

- Communication events - ongoing
- GHG monitoring established - 05/2018
- Water and Vegetation monitoring established - 07/2018
- GEST maps of all project sites created - 12/2018
- Mid-term Report submitted - 04/2019
- Start of restoration:
 - Tree and bush removal - 12/2018
 - Rewetting works - 08/2019



Available in project website:

<https://life-peat-restore.eu/en/publications/>

- Publication on vegetation types from Baltic countries, according to GEST
- Updated GEST Catalogue
- GEST Analysis monitoring report
- National Analyses of legal regulatory framework of peatlands
- 1st GEST / GHG Balance scenarios

Booklets for general public:

- Project leaflets (in all project languages)
- Role of peatlands in climate change mitigation
- Tens reasons to restore Estonian mires
- Leave peat in peatlands
- Alternatives for peat use for gardeners (in Lithuanian only)

MONITORING PROTOCOLS

1st Monitoring Protocol (pdf-14 MB)

2nd Monitoring Protocol (pdf-27.9 MB)

GEST Analysis Monitoring Report (pdf-5.1 MB)

1st GEST GHG Balance Scenarios



FIRST DATA ON APPLICATION OF GEST APPROACH IN THE BALTIC REGION

Vegetation Mapping of Pilot Peatlands



Future milestones and deliverables

Events participation:

- Giardina Exhibition, Switzerland - 03/2020
 - Round-table discussions: peat use for gardening

Production of informational material for different stakeholders:

- National Reports - 06/2020
 - Focus on GHG measurement methods
- Guidelines with best practice scenarios for raised bog and fen restoration - 09/2020
- Paper on experience of Sphagnum regeneration in damaged LT peatlands - 12/2020
- Memorandum for wise use of peatlands in foreign countries - 03/2021
 - Signed by peat selling or digging companies
- Recommendations for decision-makers and peat users on wise use of peatlands - 06/2021
- Handbook on peatland conservation and management for experts - 06/2021
- Documentary films
 - Target audience: general public (35 mins)
 - Target audience: practitioners (20 mins)



Challenges and opportunities

How to increase impact of content created within the project?

➤ Create joint events

E.g. workshops, conferences, etc.

➤ Produce joint content:

E.g. guidelines, recommendations
position papers

➤ Share/Compare GHG emissions
data collected

E.g. Joint papers publication



Testing restoration techniques

Large-scale *Sphagnum* farming on bare peat in Lithuania

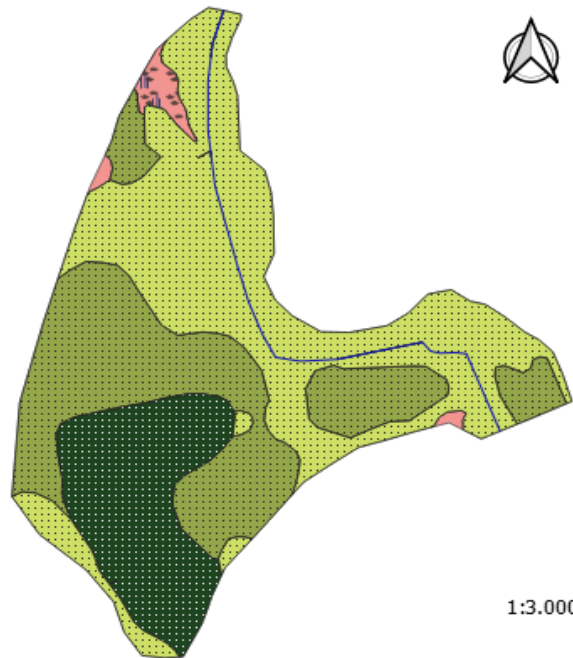


Reshaping open post-extraction water bodies in Słowiński National Park, Poland



GEST (Gas Emission Site Types)

Germany, Biesenthaler Becken 1 (BB 1)



Legend

GEST-Type

- Moist Forest and shrubberies (Meso- and eutrophic peatlands)
- Very moist forests and shrubberies (Meso- and eutrophic peatlands)
- Wet Forests and shrubberies (Meso- and eutrophic peatlands)
- Moist reeds and (forb) meadows
- Very moist Meadows, forbs and small sedges reeds

GEST-Approach (Greenhouse-Gas-Emission-Site-Types)

To estimate and evaluate the climate effect of the restoration measures and to quantify the GHG-emissions.

Based on 3 fundamental pillars:

(1.) GHG emissions are related to the annual mean water table

(2.) The water table can be described by the presence or absence of special groups of plant species

(3.) Areas with similar hydrological character and vegetation cover can be classified as summarized in Greenhouse-Gas-Emission-Site-Types (GEST), which refers to different published GHG-emission data of similar sites.

Peatland status of GHG measurement plots

GHG Measurement sites

	Peatland status	GEST type
1. <u>Aukštumala, LT</u> LT05	Heavily degraded	Bare peat (dry)
2. <u>Sachara, LT</u> LT03	Heavily degraded / moderately degraded	Forested Peatlands - Oligotrophic peatlands: Moist forests and shrubberies
3. <u>Pučia, LT</u> LT04	Heavily degraded	Bare peat (moist)
4. <u>Amalvas, LT</u> LT01	Heavily degraded	Forested Peatlands - Oligotrophic peatlands: Moderately moist forests and shrubberies
5. <u>Augstroze, LV</u>	Moderately degraded	Wet peat moss lawn; Wet peat moss hollows resp. flooded peat moss lawn; Moderately moist forest and shrubberies (oligotrophic)
6. <u>Lake Engure, LV</u>	Lightly degraded	Wet calcareous meadows, forbs
7. <u>Baltezers Mire, LV</u>	Moderately degraded	Wet meadows and forbs; Wet peat moss hollows resp. flooded peat moss lawn; Moderately moist forest and shrubberies (oligotrophic); Moist forests and shrubberies (oligotrophic)
8. <u>Biesenthaler Becken, GE</u>	Lightly degraded	Meso- and Eutrophic peatlands – Moist Forests and Shrubberies
9. <u>SNP, PO</u>	Moderately degraded	Very moist bog heath
10. <u>Suursoo-Leidissoo, EE</u>	Heavily degraded / moderately degraded / lightly degraded	Very moist calcareous meadows Very moist peat moss lawn Moist forests and shrubberies (minerotrophic) Very moist forests (oligotrophic) Moist forests and shrubberies



Augstroze Nature Reserve, Latvia
Natura 2000



Puščia, Lithuania
NATURA 2000



Slowinski National Park, Poland
Natura 2000



Suursoo-Leidisoo protected area, Estonia
NATURA 2000



GHG measurement parameters

Chamber characteristics

Equipped with cooling system, PAR and temperature sensors

Transparent and non-transparent chambers:

GE/PO: 50cm x 50cm x 50 cm and 50cm x 50cm x 75 cm

EE: 50cm x 50cm x 50 cm

LT/LV: 35cm x 50 cm (extendable, if larger vegetation)

Time scale of GHG flux measurements

- From May to October 2019 and April to September 2020
- In total 8 times per year in 2019 and 2020, within the vegetation period
 - One measurement day per month and site and an additional measurement day in June/July for all sites

Basic Requirements

- Measurements conducted with collars/frames
- Manual gas sampling and analysis in laboratory
- CO₂-Measurements performed repeatedly for each measurement day and plot under different radiation and temperature conditions
- Temperature inside the chamber, soil temperature in 5 cm depth and photosynthetic active radiation recorded in the field in hourly resolution



Thank you!

Questions?

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