PEAT TRANSFORM

Līdzfinansē Eiropas Savienība

2027 Nacionālais attīstības plāns

Pētniecībā un inovācijās balstīti risinājumi kūdras nozares virzībai uz klimatneitrālu ekonomiku, veicinot Latvijas dabas resursu ilgtspējīgu izmantošanu

PeatTransform project – the most significant upcoming changes in the GHG inventory for LULUCF sector

Research and Innovation-Based Solutions for the Peat Sector's Transition towards a Climate-Neutral Economy, Promoting the Sustainable Use of Latvia's Natural Resources, PeatTransform (6.1.1.2/1/25/A/001)

Training school: Importance of wood performance, protection, and longevity in the presence of climate change

LVMI Silava, 14.09.2026

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What Has Changed in Previous Years

- Activity data with spatial reference (LIFE REstore), ensuring compliance with the requirements of Regulation (EU) 2018/841 (peat fields, abandoned peat extraction sites, rewetted and flooded areas);
- Emission factors for soil at peat extraction sites (LIFE REstore+): CO_2 2.8 → 1.2 t C ha^{-1} yr^{-1}; CH_4 from ditches 542.0 → 122.5 kg ha^{-1} yr^{-1}; CH_4 from the field 6.1 → 10.8 kg ha^{-1} yr^{-1}, N_2O 0.30 → 0.44 kg N ha^{-1} yr^{-1}. Total 12.1 → 5.2 tonnes CO_2 eq. ha^{-1} yr^{-1}.
- Emission factors for rewetted and flooded peatlands (IPCC guidelines): CO_2 0.50 → -0.23 t C ha^{-1} yr^{-1}; CH_4 from the field 216 → 92 kg C ha^{-1} yr^{-1}. Total 9.90 → 2.59 tonnes CO_2 eq. ha^{-1} yr^{-1}.
- Emission factors for cranberry and blueberry fields (LIFE REstore+): CO_2 4.8 → (0.32 and 0.60) t C ha^{-1} yr^{-1}.

PEAT TRANSFORM

Co-financed by the European Union

2027 National Development Plan

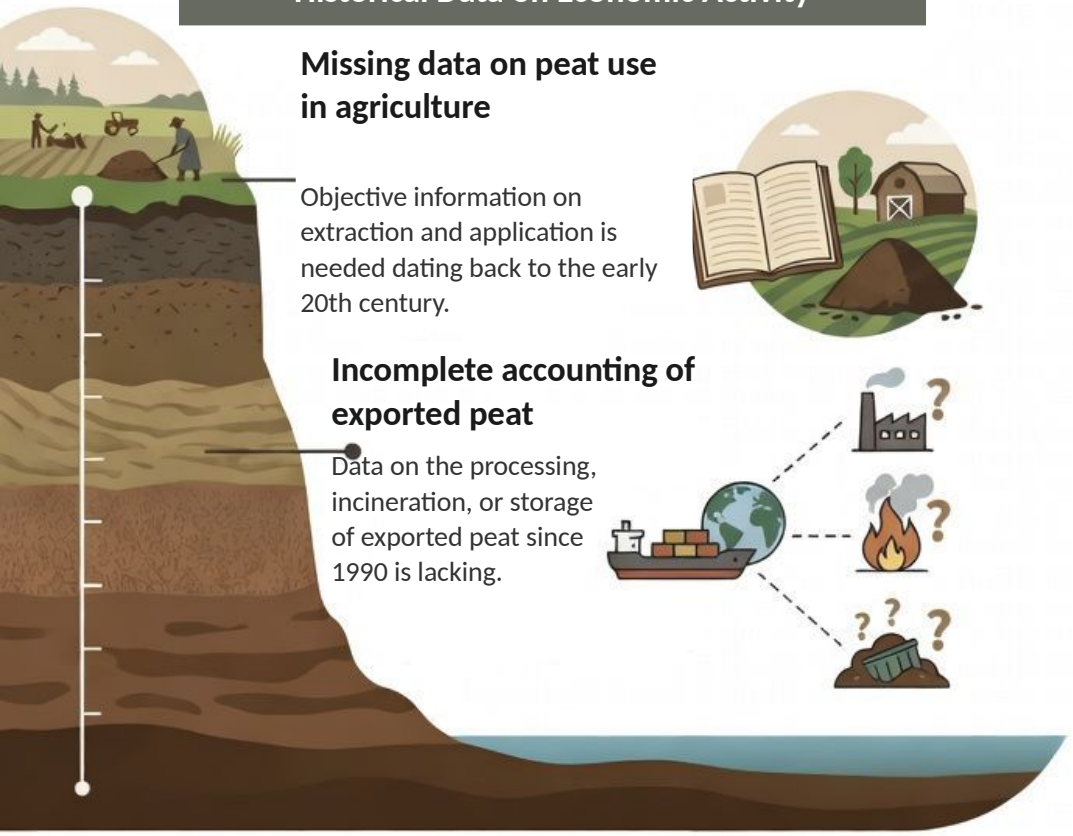
Research- and innovation-based solutions for transitioning the peat sector to a climate-neutral economy, promoting the sustainable use of Latvia's natural resources

PeatTransform: Challenges and Missing Data in the Peat Sector

PeatTransform

The PeatTransform project seeks research- and innovation-based solutions to promote the sustainable use of Latvia's natural resources. The main obstacle is the lack of objective historical and dynamic data on peat extraction, emissions, and ecosystem processes.

Historical Data on Economic Activity



Missing data on peat use in agriculture

Objective information on extraction and application is needed dating back to the early 20th century.

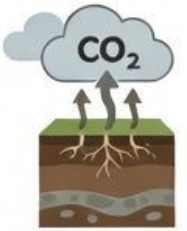
Incomplete accounting of exported peat

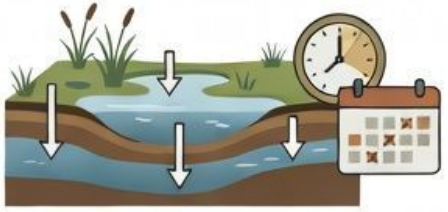
Data on the processing, incineration, or storage of exported peat since 1990 is lacking.

Emission and Ecosystem Dynamics

An analysis of the natural emission baseline is needed

The emission dynamics and length of the transition period on directly recultivated areas must be determined.





Dynamic data on wetland water regime is lacking

Data on groundwater level fluctuations on a daily and weekly basis is needed.

Carbon input and biomass data

Biomass growth measurements for different vegetation classes must be carried out to determine carbon sequestration.

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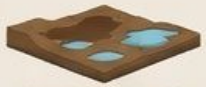
Transformation of GHG Emission Accounting in Latvia's Peatlands

PEAT EXTRACTION SITES AND AFFECTED AREAS

Peat extraction sites



Historical extraction sites

Rewetted areas

Paludiculture

EMISSIONS FROM AFFECTED WETLANDS

Total calculated GHG emissions from areas where economic activity is ongoing or has taken place

REFERENCE LEVEL

The reference level, corresponding to emissions from bogs not directly affected by economic activity, is subtracted from the total emissions.

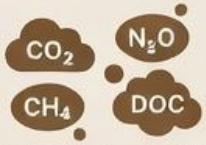
RESULT: ANTHROPOGENIC IMPACT

Only the share of emissions directly caused by human activity is included in the GHG accounting result.

CURRENT AND FUTURE ACCOUNTING SYSTEM

Moving away from a "0" reference
The current accounting system assumes "0" as the emission reference level.

Toward a natural-background reference level
PeatTransform's long-term vision sets a reference level corresponding to the actual emissions from bogs not directly affected by economic activity.



Introducing the Tier 3 method
Unlike Tier 2 methods, Tier 3 accounts for CO_2, N_2O, CH_4, and DOC using equations determined by moisture regime, air temperature, and vegetation.

PLANNED CHANGES AND INNOVATIONS

New and precise activity data
Remote sensing data are used to characterise carbon input and moisture regime for different land-use categories, including paludiculture.

Models based on biomass growth
Emission calculation models characterise CO_2 emissions depending on edaphic conditions and moisture regime.

Research-based innovation
The research is carried out by Latvia's leading scientific institutions, ensuring conditions for the most efficient use of natural resources.

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Improvement Plan for Peat Product Emission Accounting

PEAT FLOW AND TYPES OF USE

All extracted peat: Emissions from wetland management (extraction year)

PEAT EXTRACTION AND INITIAL ALLOCATION

EXPORT

Exported peat: N_2O and CH_4 emissions are accounted for by the importing country

DOMESTIC MARKET

HORTICULTURE

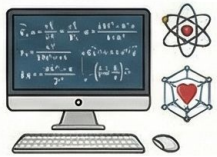
AGRICULTURE

INDUSTRIAL PRODUCTION

GHG EMISSION ACCOUNTING AND CALCULATION METHODOLOGY

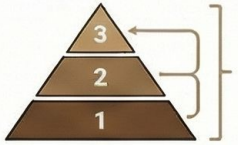
CARBON LOSS ASSUMPTIONS

Calculations include losses at the first and second stages of use (e.g., on arable land, in forests)



SCIENTIFIC CALCULATION MODELS

Yasso models and IPCC guideline equations to characterise carbon mineralisation



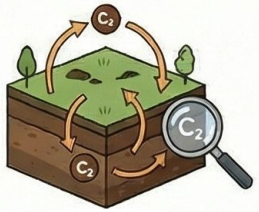
MULTI-STAGE EMISSION ACCOUNTING

Accounts for emissions across up to three use cycles, including carbon storage in soil and in products

STATUS OF ACCOUNTING METHODS AND DATA AVAILABILITY

Activity / Product	Data and Method Availability
1. Peat in horticulture (assumption)	✓ Data and methods available
2. Carbon sequestration in soil (stage 2)	✓ Data and methods available
3. Secondary products (thermal insulation)	✗ Data or methods not currently available
4. Peat disposal / composting	✗ Data or methods not currently available

PLANNED CHANGES AND INNOVATIONS



TRANSITION TO TIER 3 ACCOUNTING

Introducing soil carbon cycle models in agriculture, at higher precision

LONG-LIFE PEAT PRODUCTS

Accounting for new products, adapting the harvested-wood-products methodology

IMPROVED HISTORICAL DATA

Refined data on historical use to determine the overall impact on climate

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Improving the GHG Emission Accounting Methodology: PeatTransform Goals

The "PeatTransform" project develops research- and innovation-based solutions for the peat sector. The main goal is to improve the GHG emission accounting methodology in order to more accurately reflect the sustainable use of Latvia's natural resources and move toward a climate-neutral economy.

GHG emissions from soil

Minimum scenario:
Actual emission level
The accounted emissions are as close to reality as possible, including the effects of weather conditions and economic activity.

Maximum scenario:
Separation of anthropogenic emissions
Separating the impact of economic activity from the natural emission background, making it possible to account for emission-reduction measures in natural bogs as well.

GHG emissions from peat products

Harmonisation with the life cycle

Linking emission accounting to biological processes throughout the entire peat use cycle.

Inventory of long-life products

Developing a methodology for emission accounting of products with a long service life.

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