OrgBalt
LIFE project

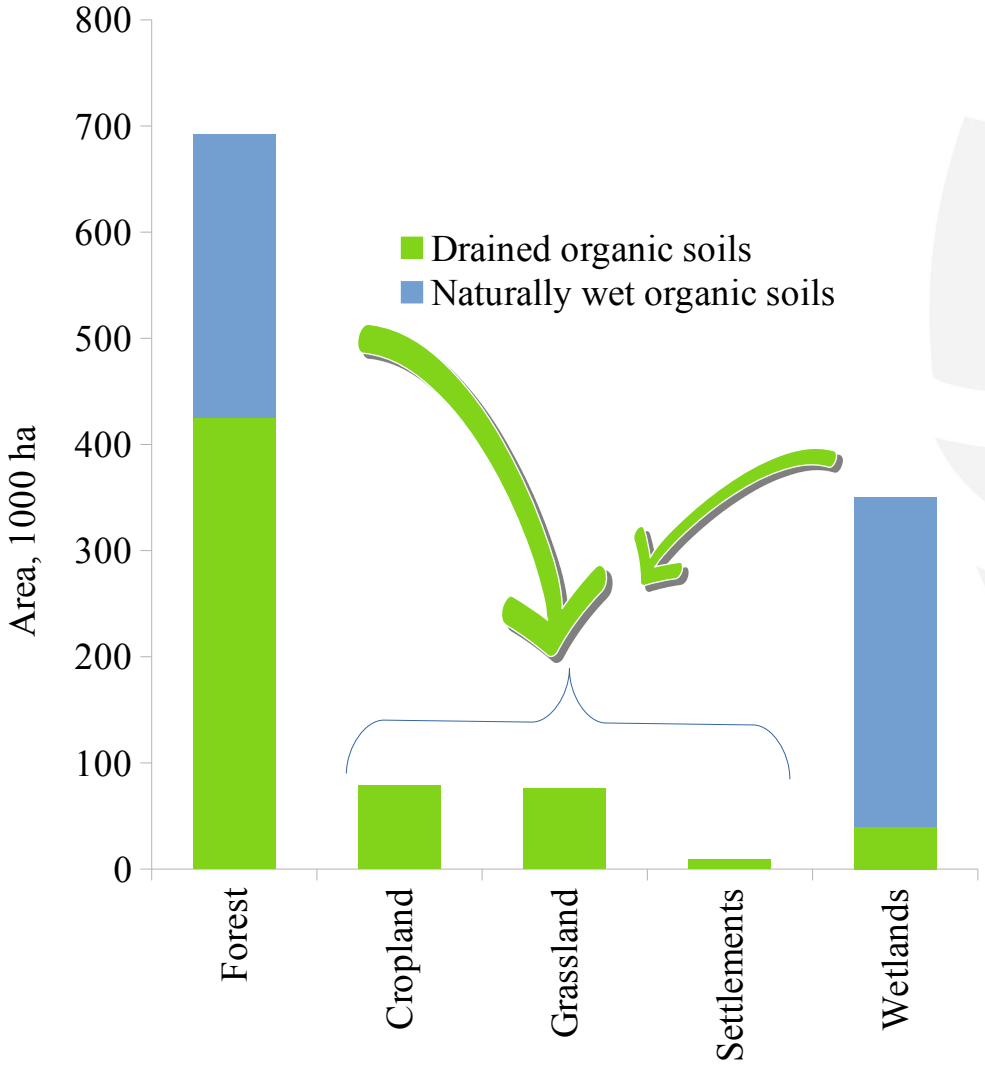
Wetland GHG emissions inventory and research

The Baltic Peat Producers Forum 2022
September 14th - 15th Riga, Latvia
Peat through the ages
September 15th
Bellevue Park Hotel, Slokas Street 1, Riga

LIFE OrgBalt, LIFE18 CCM/LV/001158

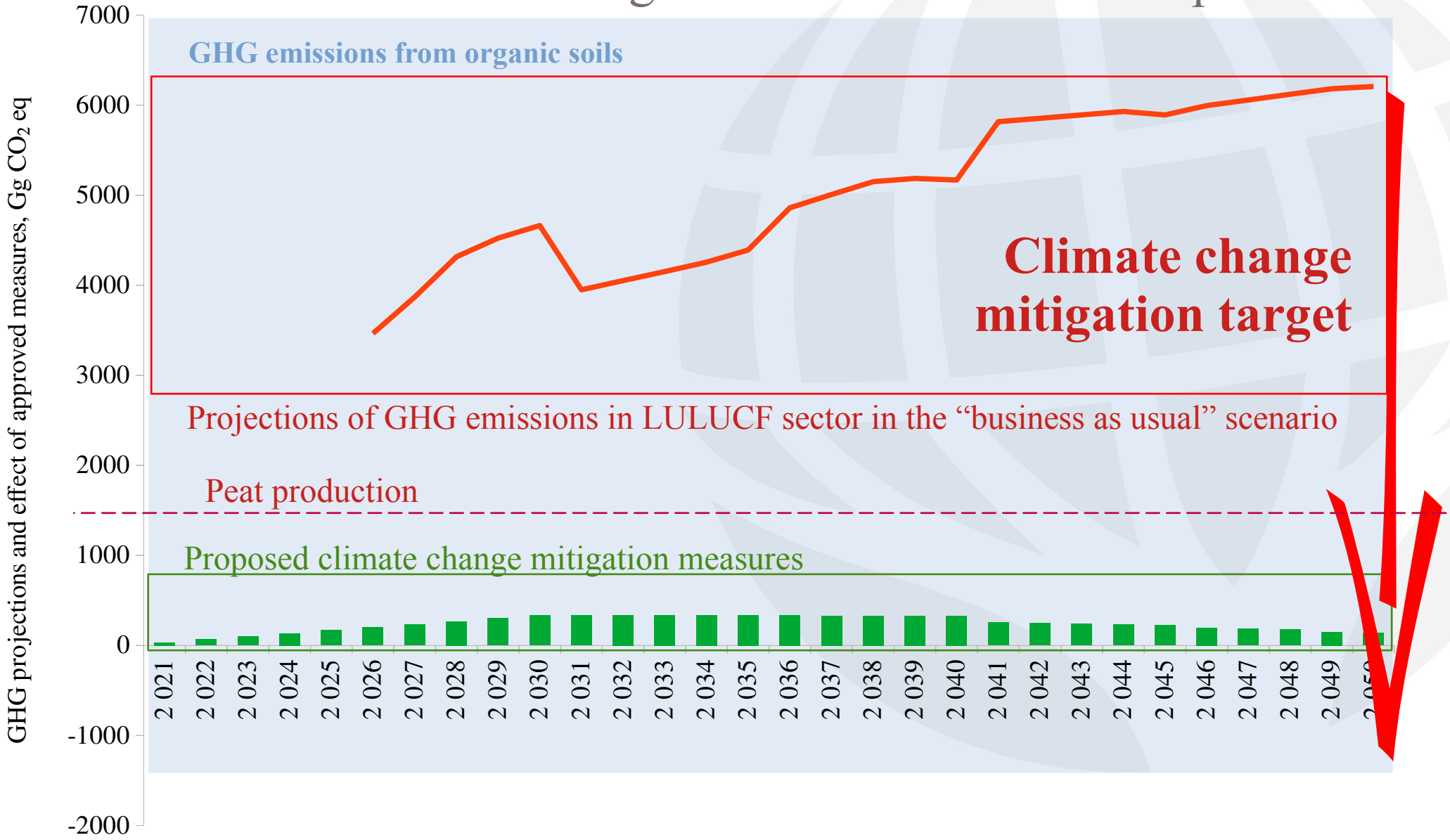
EU LIFE Programme project
"Demonstration of climate change mitigation potential of nutrients rich organic soils in Baltic States and Finland"

Organic soils (peatlands) in Latvia

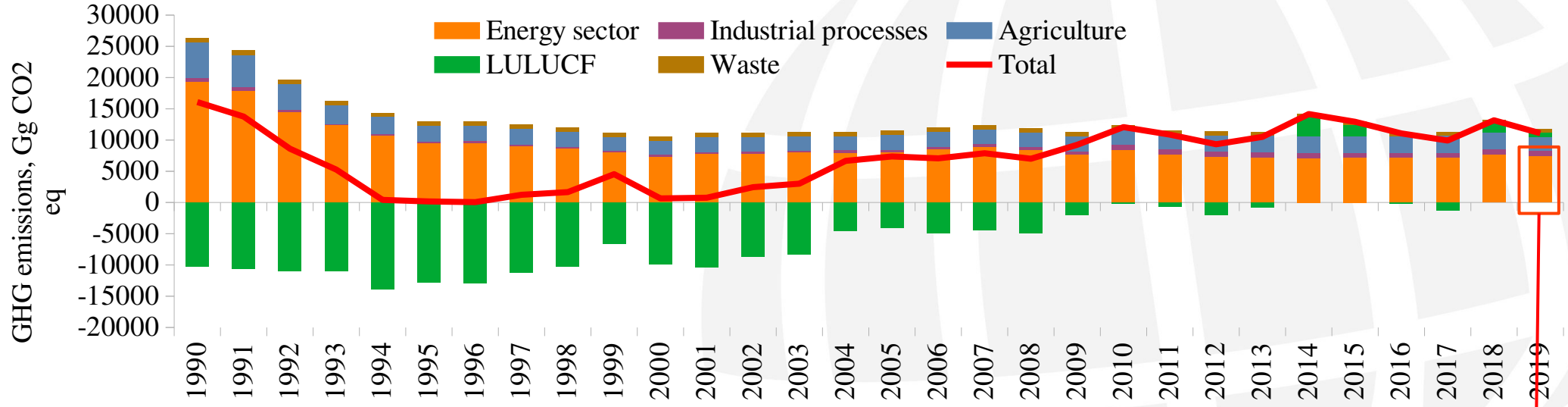


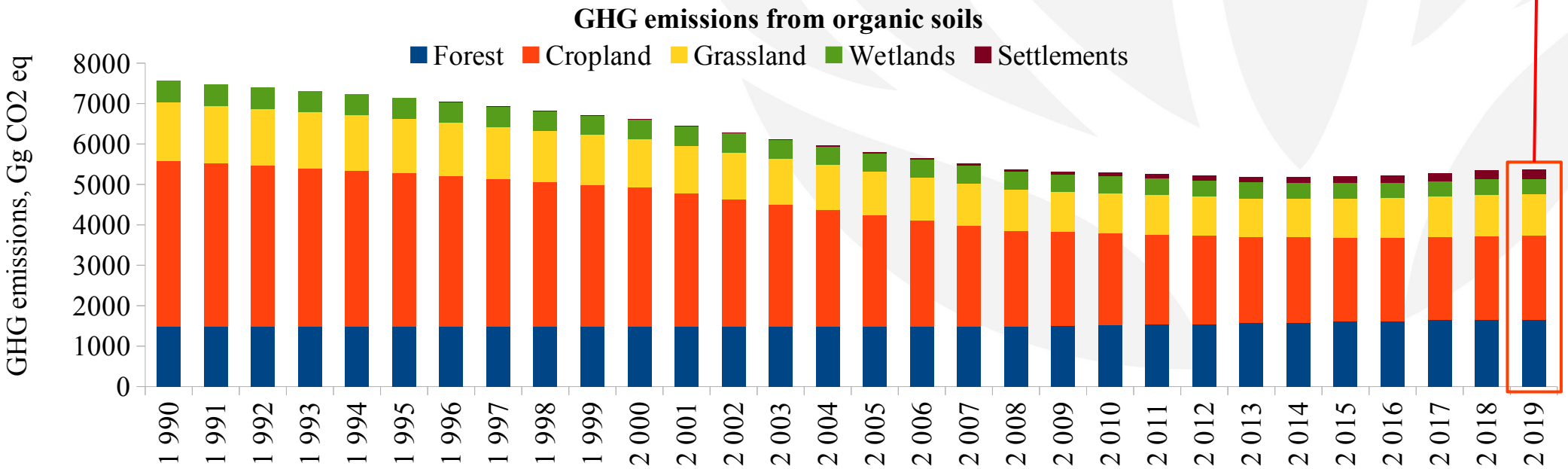
- Total area of organic soils 1.2 mill. ha *(19% of the country area)*.
- Drained organic soils – 0.63 mill. ha *(52% of the area of organic soils)*.
- Forests – 0.69 mill. ha *(57% of the area of organic soils)*.
- **Peat extraction takes place in 3% of the area of organic soils.**

GHG emissions from organic soils – a scale of the problem

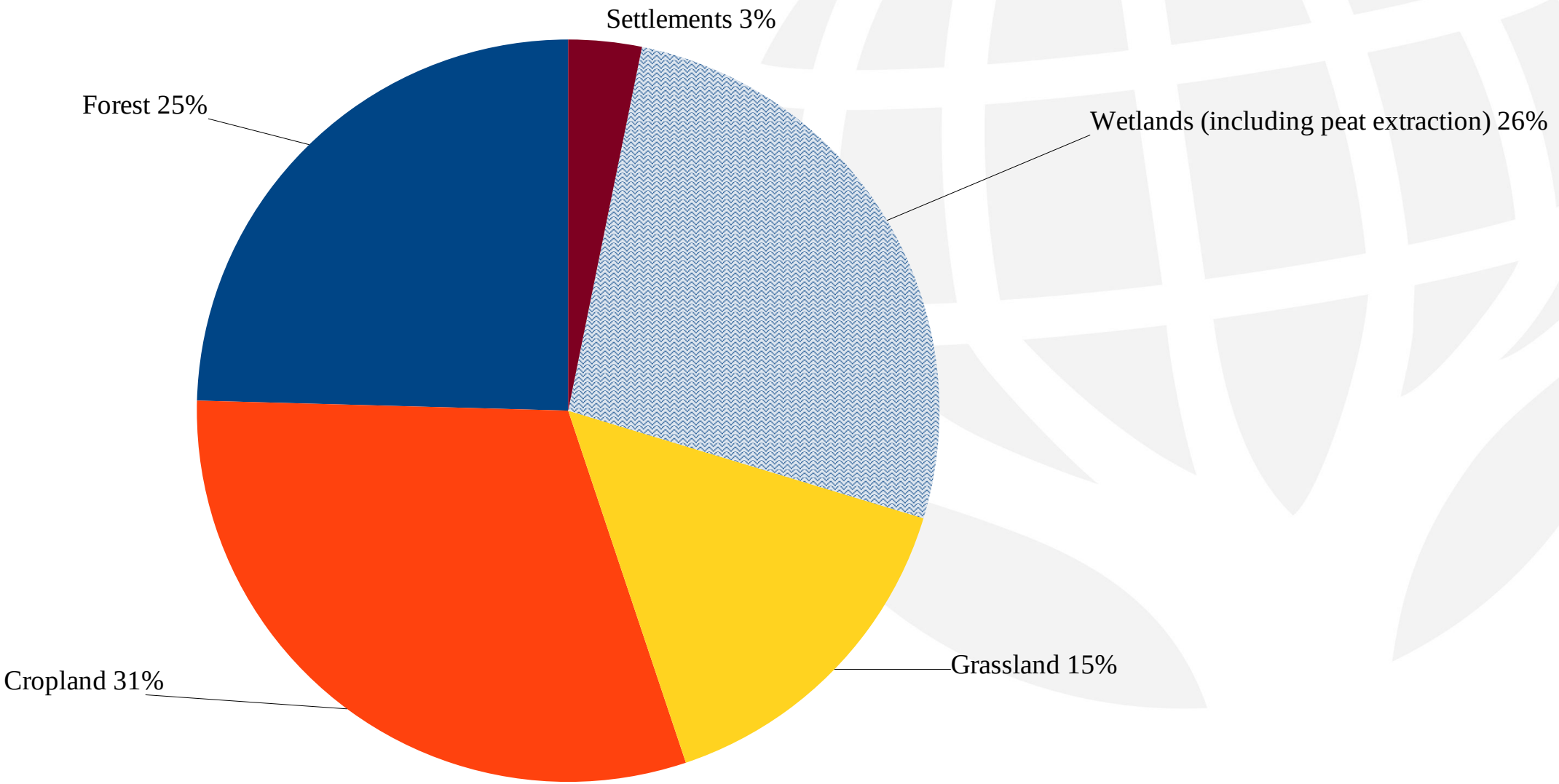


GHG emissions from organic soils in comparison to other sectors

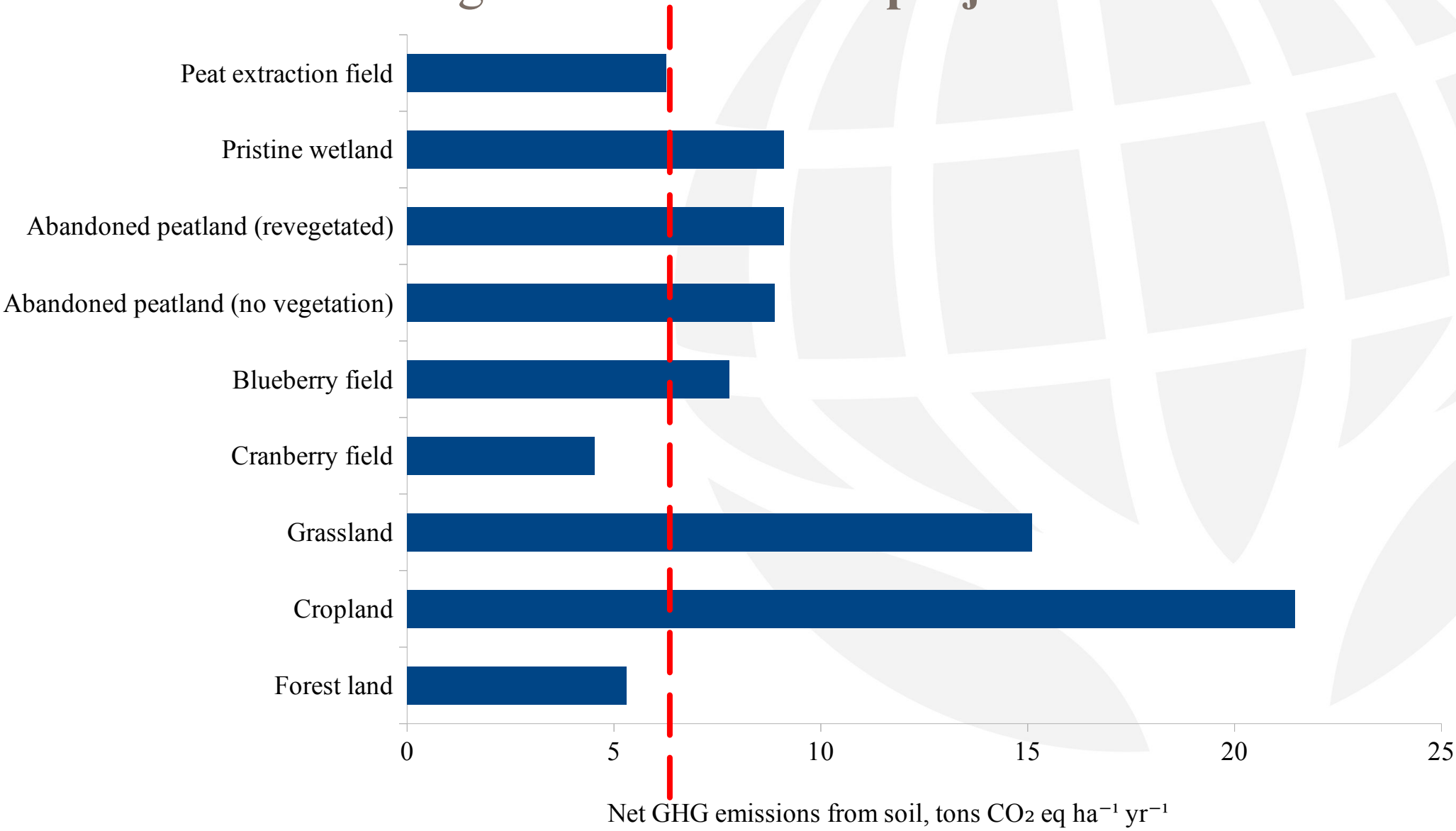




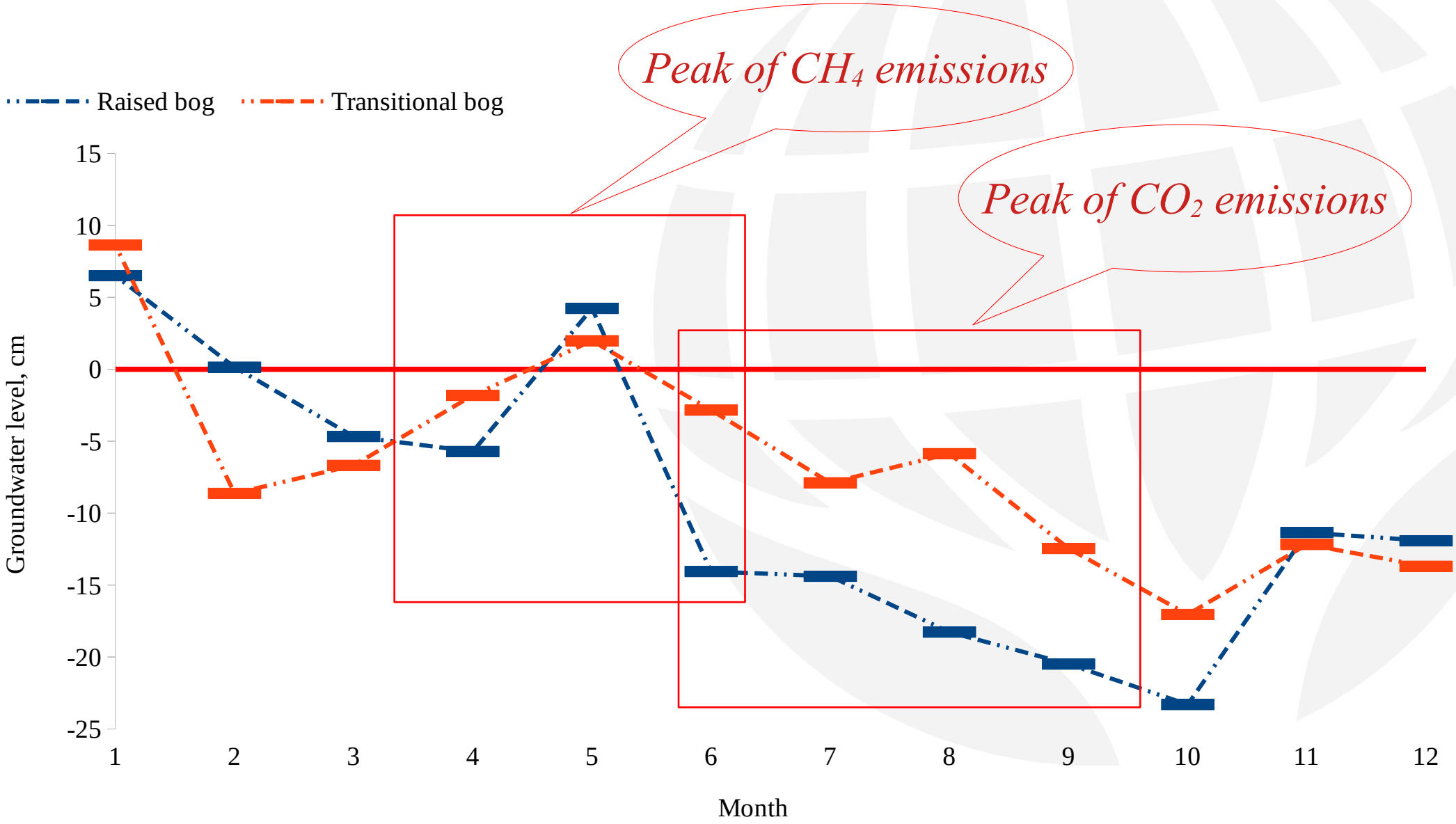
GHG emissions from organic soils in LULUCF sector



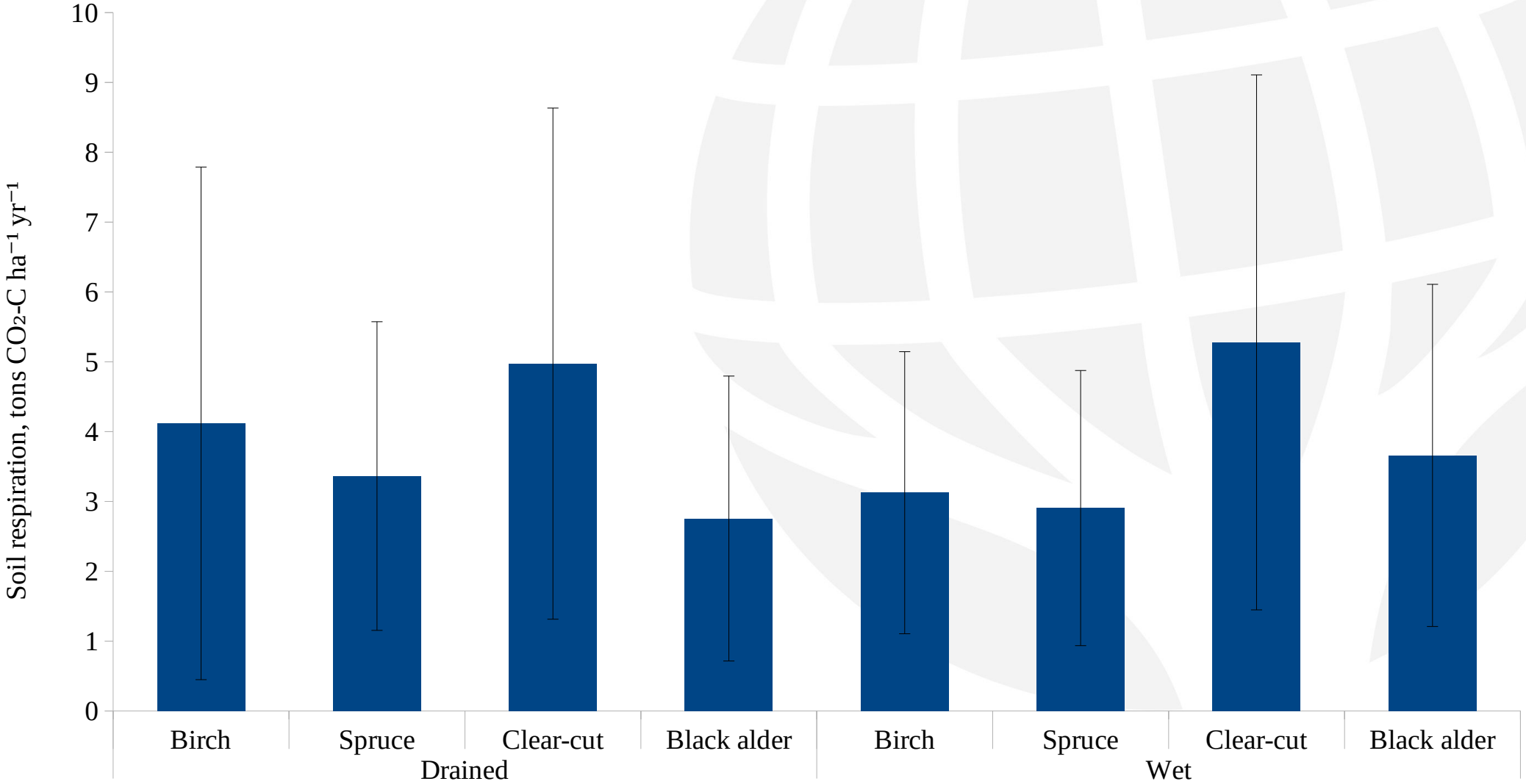
Summary of results of the soil GHG fluxes in degraded wetlands according to **LIFE REstore project results**



Groundwater level in the measurement sites pristine bogs

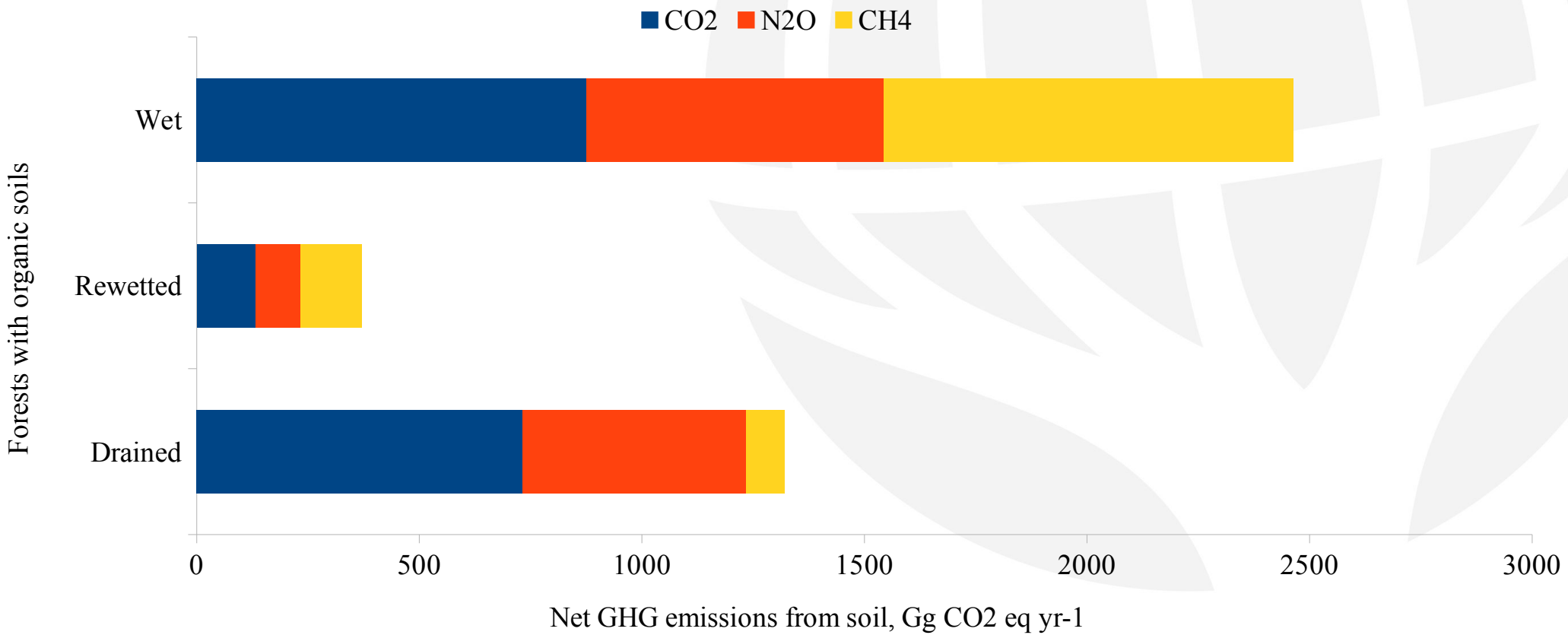


Spin-off study in nutrient rich soils – CO_2 emissions from organic soils in forests



Pristine wet organic soils in forest land as a source of GHG emissions

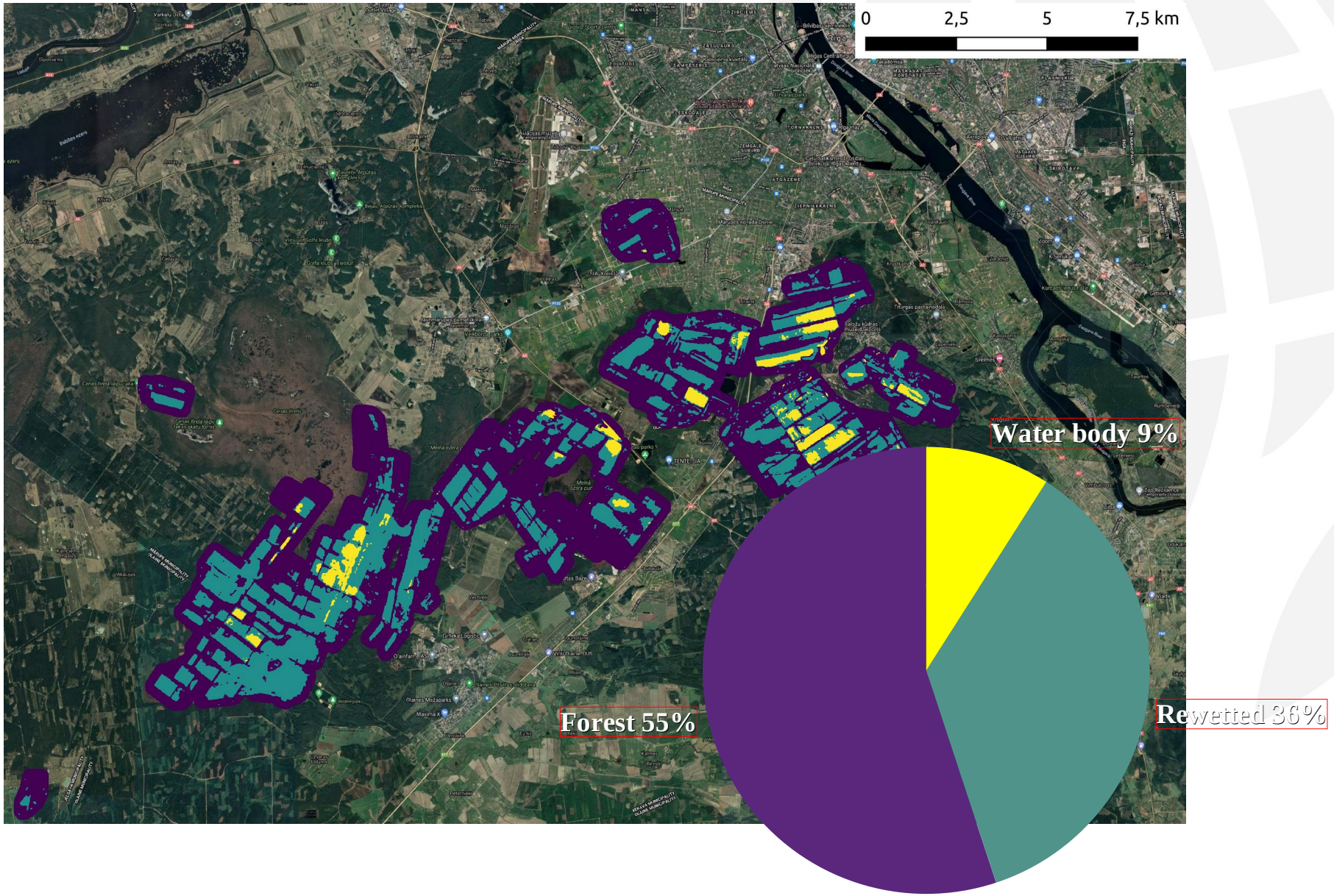
- According to studies in forest lands additional GHG emissions from non-drained and rewetted organic soils are nearly twice higher than from drained soils; however, the assessment is still very uncertain.



Climate change mitigation measures proposed for national funding

- **Encourage recultivation of historically used peat extraction sites** by selecting the most appropriate type of recultivation Land use, land use change and forestry – **12000 ha**.
- Abandoned peat extraction sites is considerable source of GHG emissions. Afforestation, establishment of perennial energy crops or extraction of remaining peat layer with following flooding or rewetting of areas, where growing of perennial crops for biomass production is not possible, may lead to significant reduction of GHG emissions.
- Responsible ministries – Ministry of Environmental Protection and Regional Development.
- Awaited GHG mitigation effect – 132.3 kt CO2 eq in 2025; 485.1 kt CO2 eq in 2030; 926.1 kt CO2 eq in 2035; and 1367.1 kt CO2 eq in 2040.
- Funding sources are not clarified yet.

Terrain based projection of land use under pristine conditions – results of national wide assessment



Workshop in demo site in LIFE REstore **afforestation demo site** in June, 2022

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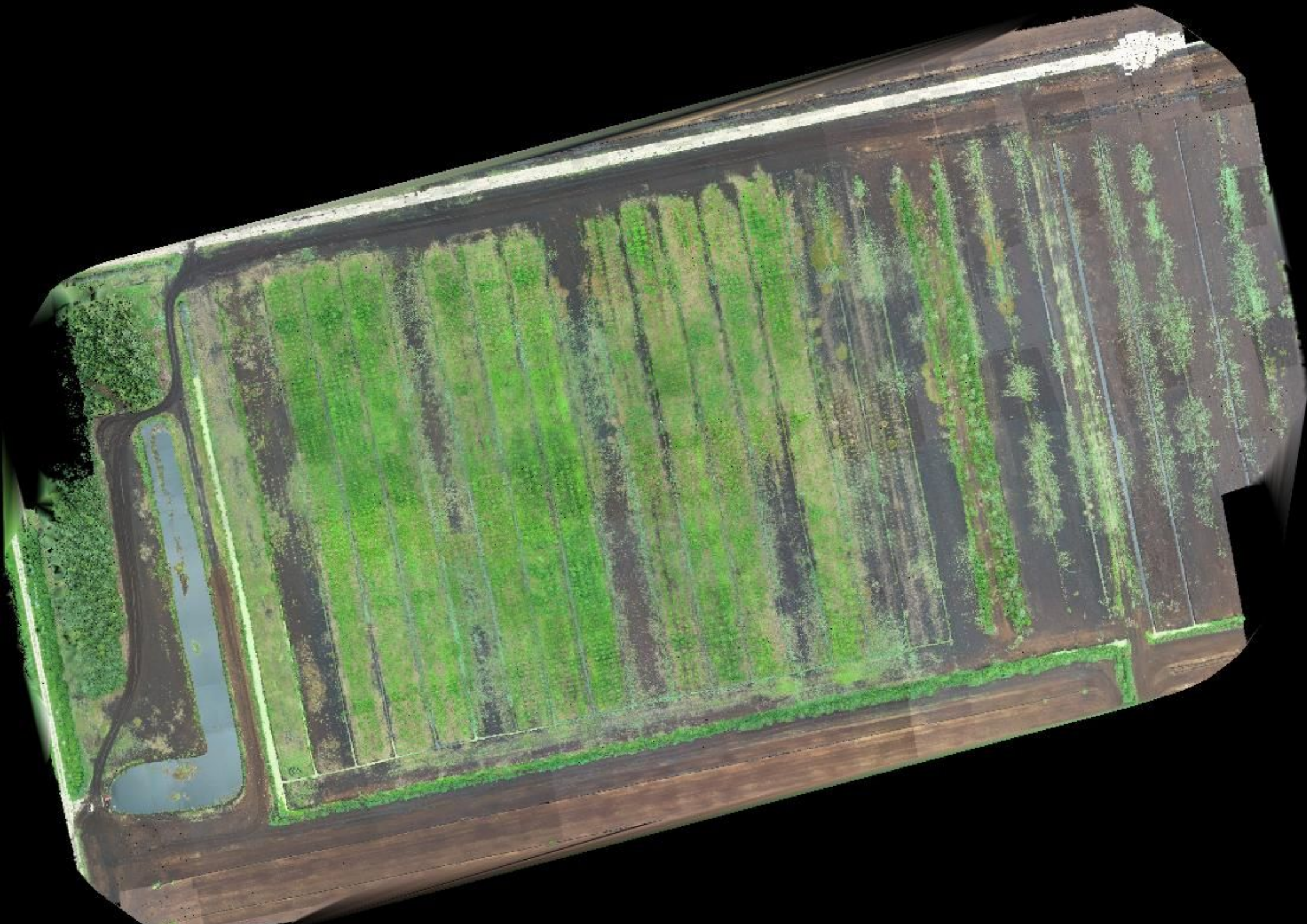
...the same place six year ago

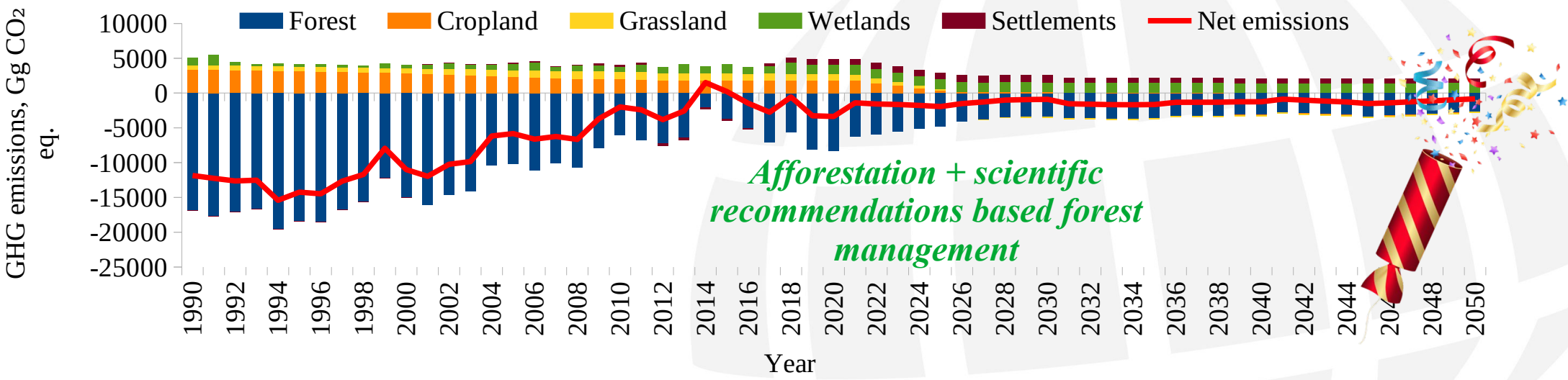


Evaluation of effect of afforestation of organic soils in cropland and grassland

- The total implementation potential in **Latvia is about 152 kha**; however, nature conservation related restriction may limit climate change mitigation potential of this measure.
- The net GHG reduction potential in case of 40 years rotation mitigation effect is **1218 tonnes CO_2 eq ha^{-1}** (30 tonnes CO_2 ha^{-1} yr^{-1}). Natural disturbances and lack of proper management may reduce the proposed effect.
- Use of conventional management systems for spruce or pine would lead to increase of CO_2 removals and reduction of GHG emissions by **79 mill. tons CO_2 in all carbon pools during 20-years period**. Intensified management and shortening of rotation would lead to **90 mill. tons CO_2 removals during 20-years period**.
- Cost of GHG emission reduction, considering 20-years calculation period and 5% discount rate, in case of extensive management is **6 € ton^{-1} CO_2**. Total needed investments in current prices are **264– 282 mill. €** depending from selected scenario.

Not only soil preparation, but also improvement of drainage systems

What can be done to reach 2050 target?



GREENHOUSE GAS SOURCE AND SINK ACTIVITIES	Reference period	NET EMISSIONS/REMOVALS						Reference level	Accounting quantity
	2022	2026	2027	2028	2029	2030	Total		
	(kt CO_2 eq)								
A.1. Afforestation/reforestation		249,42	242,47	234,84	241,30	247,81	1215,84		
A.2. Deforestation		977,89	984,04	990,00	986,80	981,72	4920,46		
B.1. Forest management		-4316,84	-4034,01	-3710,58	-3660,72	-3634,78	-19356,92		
B.2. Cropland management		13,24	11,95	10,69	5,69	0,71	42,27		
B.3. Grazing land management		-175,27	-244,14	-312,13	-318,47	-324,65	-1374,66		
B.5. Wetland drainage and rewetting		1416,07	1421,56	1427,05	1431,35	1435,65	7131,67		
LULUCF totals		-1835,49	-1618,14	-1360,12	-1314,06	-1293,54	-7421,35		
LULUCF baseline and tthe commitment	-1541,59					-644,00			
LULUCF reference level		-1092,79	-980,59	-868,40	-756,20	-644,00	-4341,98		
Total accounting quantity									-3079,37

Flexibility rule for non-ETS sector								3100,00	0,00
Remaining quantities to compensate GHG emissions in LULUCF sector									-3079,37

Business as usual 10873 Gg CO_2 eq

Economic potential of GHG mitigation measures in peatlands

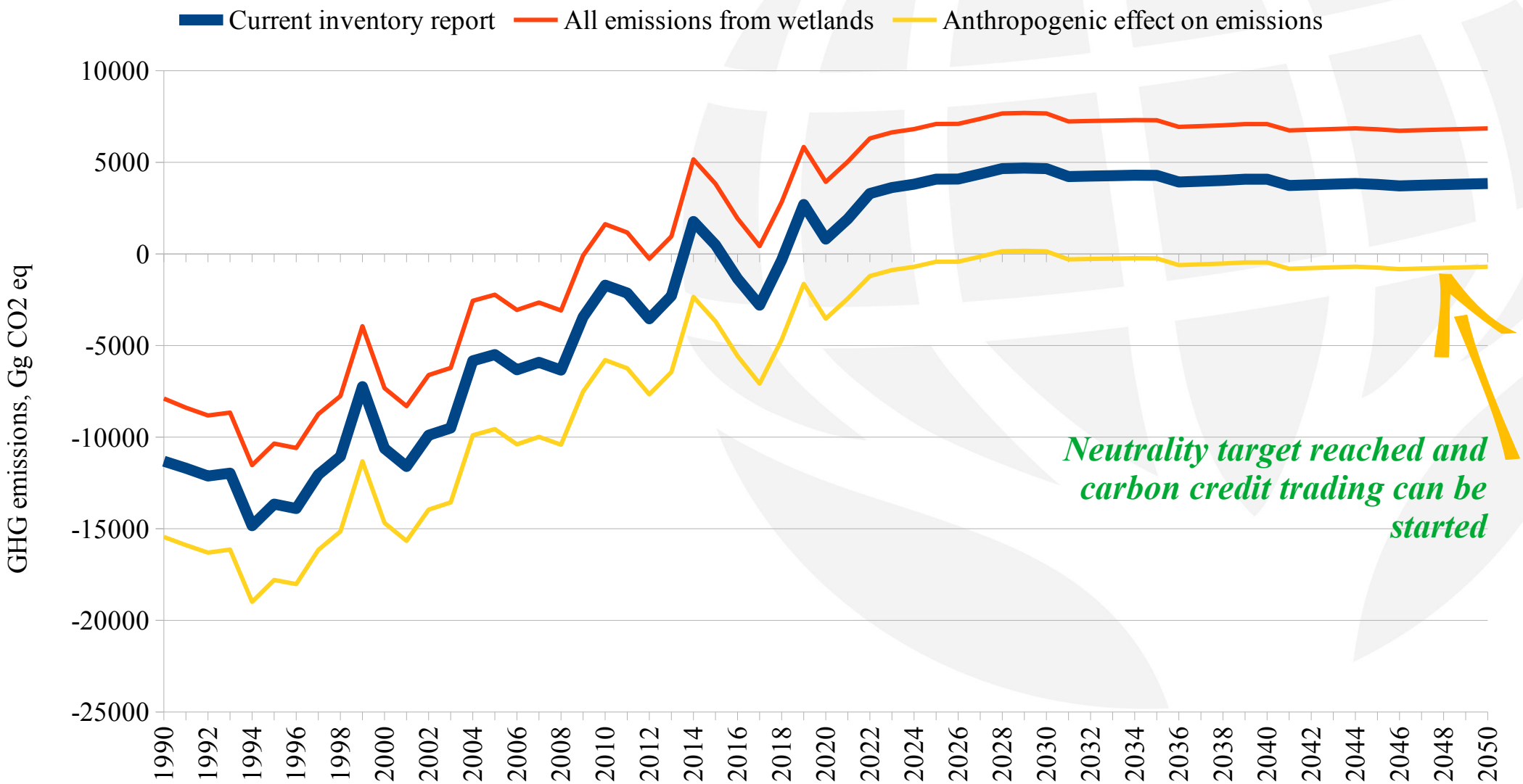
Energy sector excluding substitution effect of biomass:
50...200 EUR ton^{-1} CO_2 eq.

LULUCF sector:
2...10 EUR ton^{-1} CO_2 eq.

Remaining challenges to mitigate GHG emissions in peatlands

- **Informing society** about actual GHG emissions and development scenarios in peatlands.
- Diversifying research by integration of **sustainability** (read – **resilience**), climate change effect, new products and market adaptation.
- Distinction of direct and indirect **anthropogenic effect and natural sources** of GHG emissions.
- Development of national **voluntary CO_2 removal units trading system** on the mathematical basis (resilience and GHG flux reduction) instead of political and emotional criteria dictated system, e.g. Verra.
- Improved **methods and activity data** for GHG accounting in organic soils and identification of anthropogenic effect.

Proposal for changes in GHG accounting approach in the national GHG inventory



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Thanks to everybody supporting us in our work!

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