LIFE OrgBalt project results for developing coherent climate and environment policy for the land use sector

LIFE OrgBalt National seminar in Lithuania
April 19, 2024

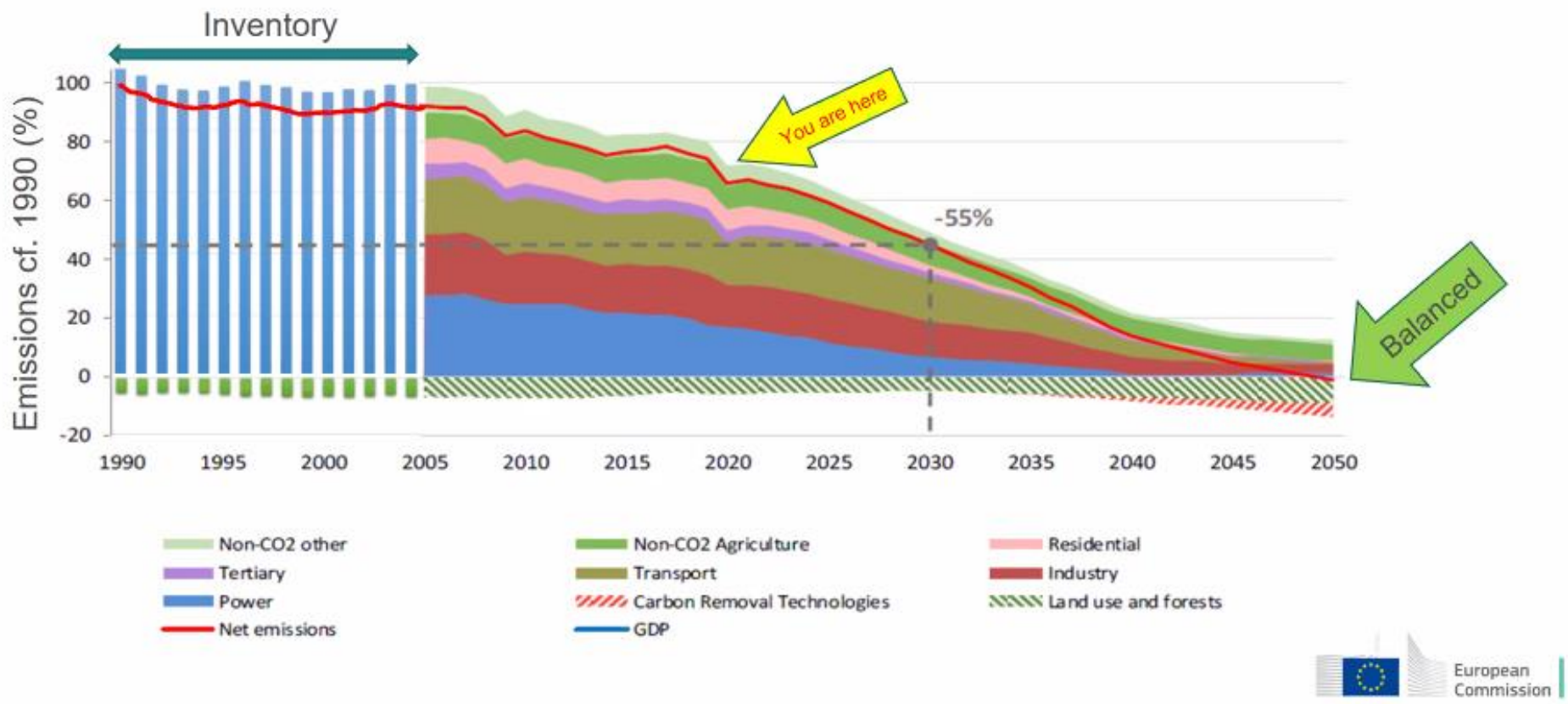
Elīna Lāce

Ministry of Agriculture Republic of Latvia

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

LIFE OrgBalt, LIFE18 CCM/LV/001158

Pathway to climate neutrality

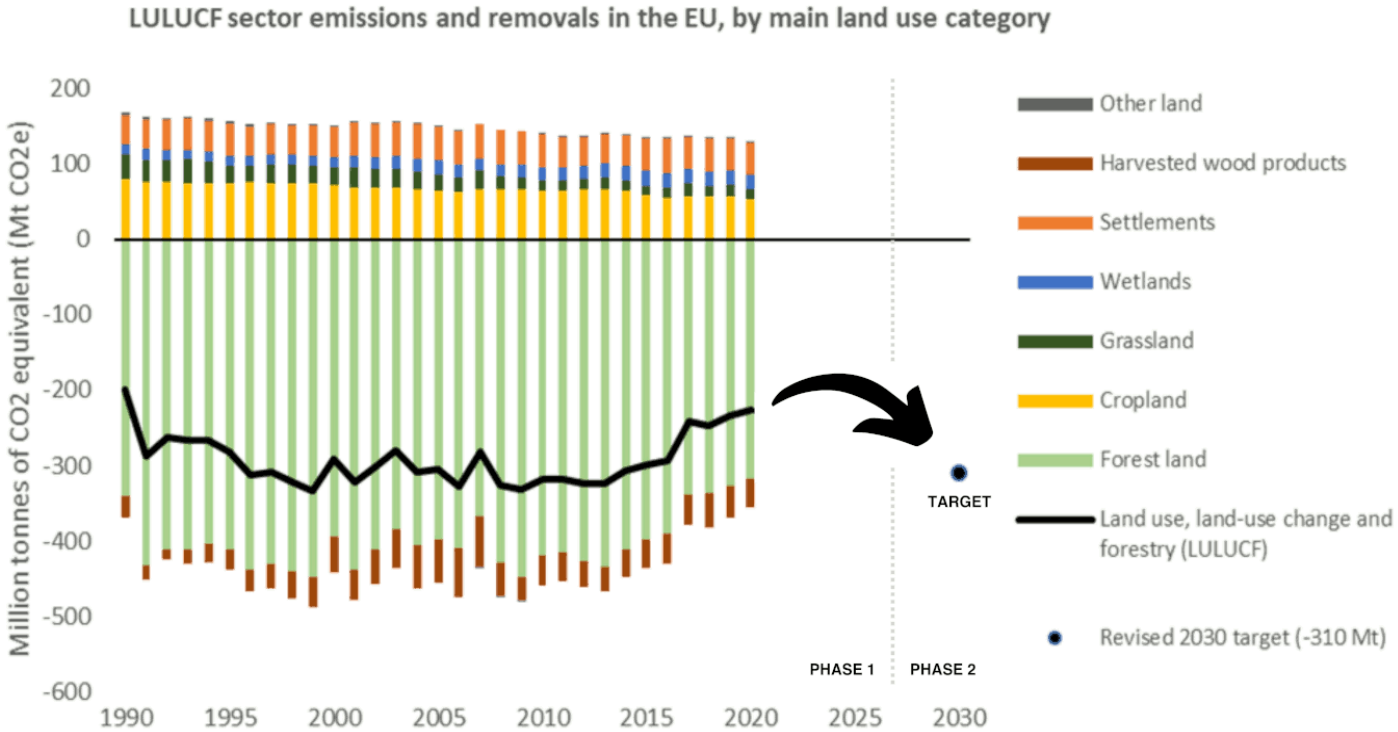


Source: European Commission

Two periods and two goals of LULUCF

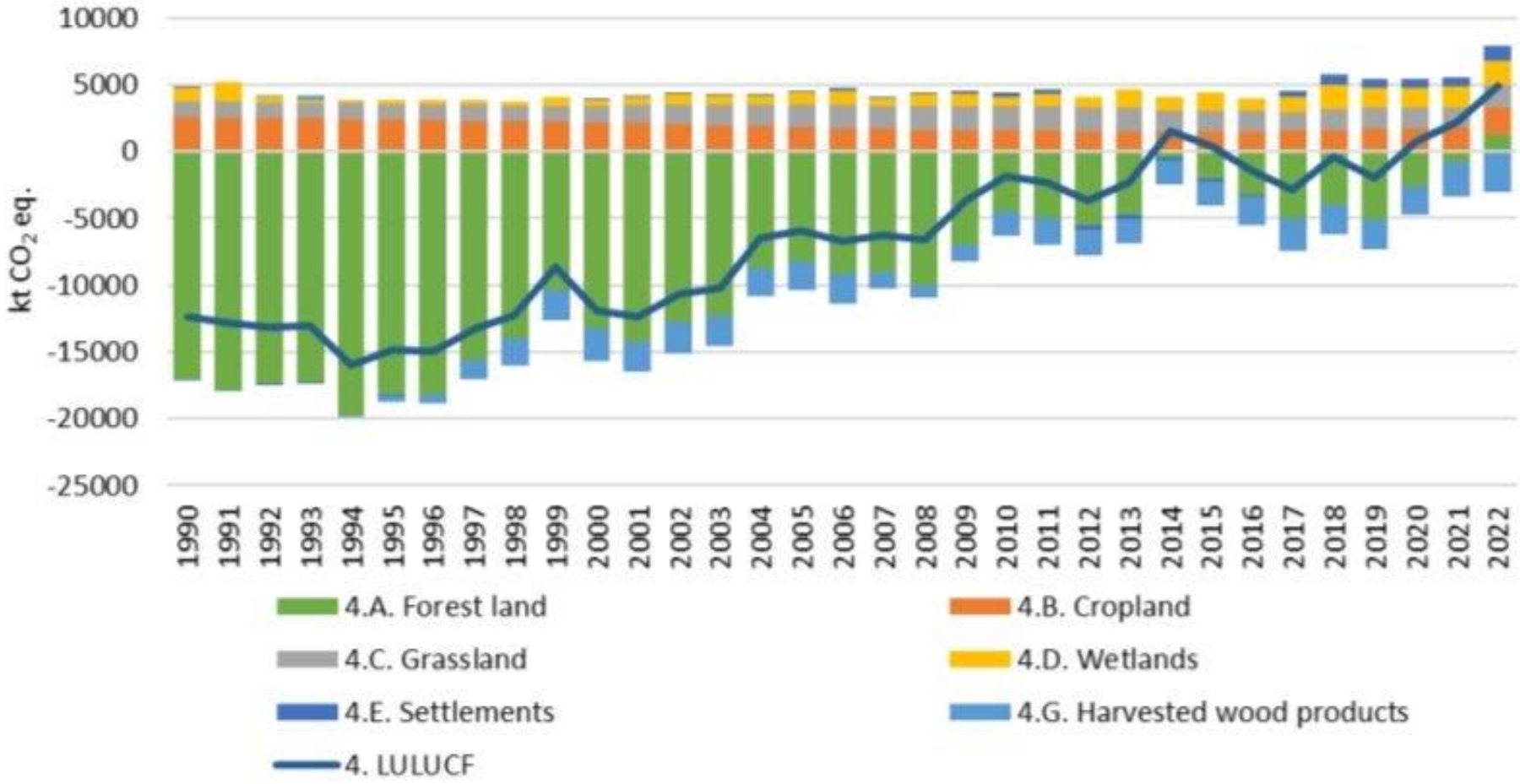
The revised Regulation consists of two phases:

- **Phase 1 from 2021 to 2025:** For the period from **2021-2025**, the goal of each member state, including Latvia, is to ensure that **GHG emissions in its territory do not exceed the base level of removals**.
- **Phase 2 from 2026 to 2030:** This phase enlarges the territorial scope to cover all managed land and introduces the EU-wide target of -310 Mt CO_2 equivalent of net removals by 2030.



Source: https://climate.ec.europa.eu/eu-action/land-use-sector_en

LULUCF sector emissions in Latvia



Updating the National energy and climate plans

- the Member States have to submit their updated National energy and climate plans (NECP) until the end of June 2024. Most Member States submitted their draft NECP's at the end of 2023 and the EC have prepared recommendations;
- the NECP includes measures to reach the goals of the non-ETS and LULUCF sectors;
- the measures in the draft NECP's for most Member States have been pointed out not to be sufficient by the EC;
- Member States have different approaches on their NECP's and also different accounting approaches in their national GHG emission reports;

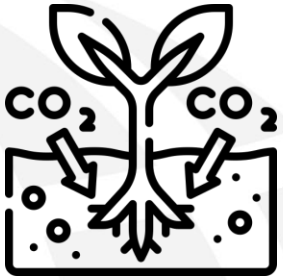
Lithuania's key objectives, targets and contributions

	2030 value submitted in the draft updated NECP	2030 target under EU legislation	Assessment of 2030 ambition level
GHG **GHG emissions in ESR sectors** (compared to 2005)	-20.9%	-21%*	Lithuania does not reach its target based on projections.
GHG **GHG removals in LULUCF** (Mt CO_2 eq. net greenhouse gas removals)	-6.7	- 0.661 (additional removal target) - 4.633 (total net removals)**	Not reaching its target based on projections.

Planned LULUCF measures for Latvia's submission for NECP

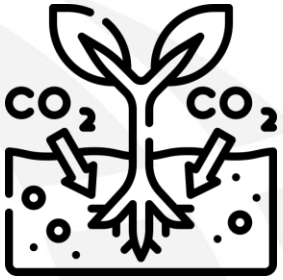
Fertilization of the forest (application of mineral fertilizers)
Use of wood ash for soil enrichment/fertilization in drained organic soil forests
Improvement of the hydrological regime (drainage) in forests with wet mineral soils
Replacement of unproductive stands
Rewetting/paludiculture in cropland/grassland organic soils - afforestation with black alder together with rewetting
Afforestation of agricultural mineral soils with lower soil quality and **afforestation of organic soils were rewetting isn't possible**
Trees, hedges along diches.
Cultivation of willow coppices and use of wastewater sewage sludge in them
Group of trees in pastures (0.09 ha per 1 ha of pasture) - agroforestry
Targeted afforestation in rewetted organic soils on peat extraction fields (paludiculture)
Peat extraction site renaturalization

Carbon framework regulation



- Planned at the first half of 2024
- The regulation defines the basic principles for the certification of carbon sequestration in the EU. Certification will be voluntary.
- In cooperation with the working group of experts, the EC will develop certification standards for various sequestration activities by 2027, both for nature based and technological solutions.
- In the scope of the certification, it is planned to include not only the sequestration, but also the reduction of emissions in agricultural soils.
- It is not clear how to upscale carbon farming. The future of the AFOLU sector ETS and polluter pays principle is also unclear.

Carbon framework regulation



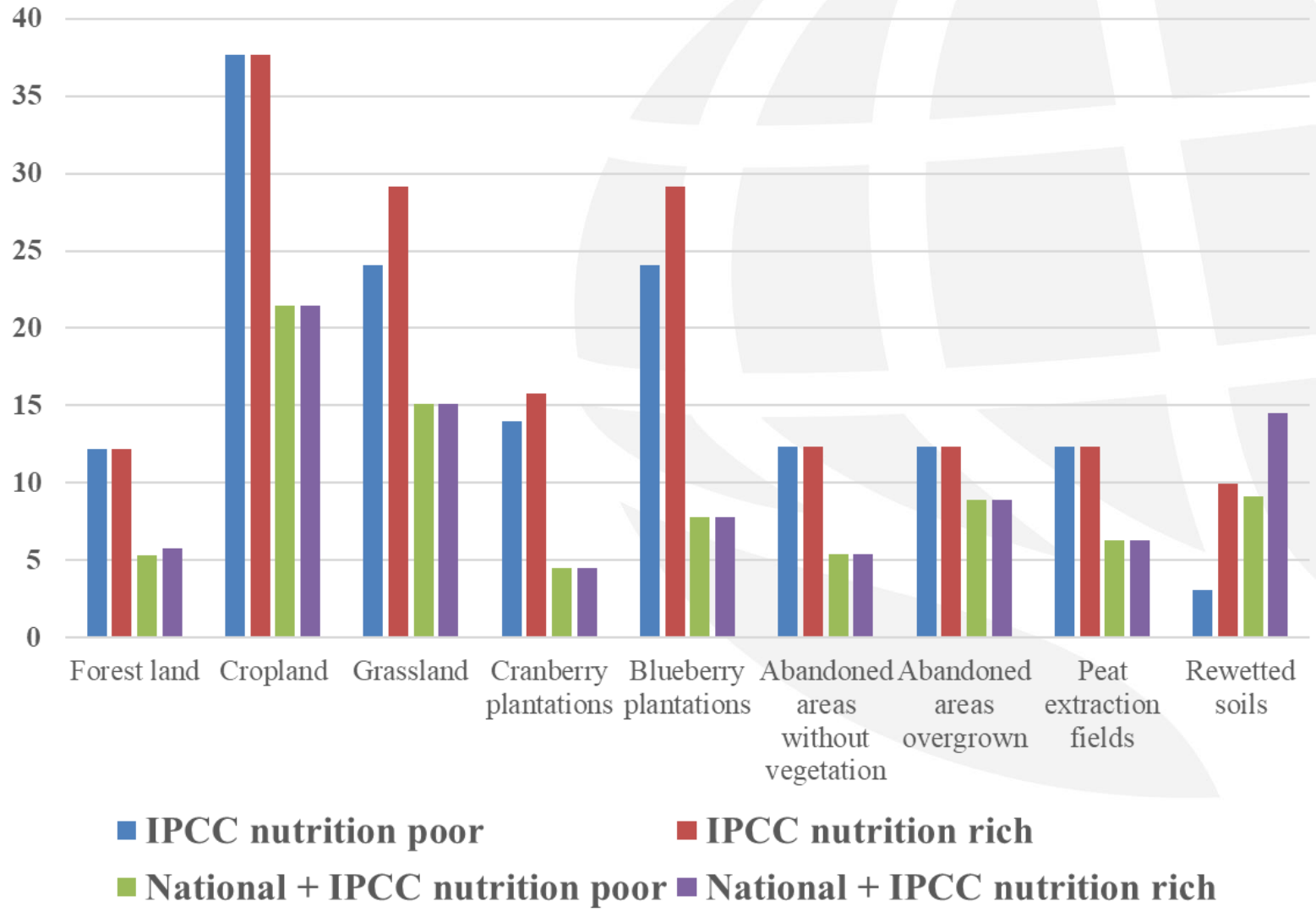
From the minutes of Peatlands Focus Group:

- Afforested peatlands should not be part of the certification scheme with the exception of extreme rewetting for new trees including e.g. alder and willows as part of paludiculture.
- Rewetting leads to a reduction of CO_2 emissions, but an increase in CH_4. The CH_4 peak of the first years is neglectable in 20 to 30 years, depending on the type of peatlands. Therefore, a longer timeframe for measuring CH_4 emissions is recommended in certification.
- Gradually raising the water table results in a slow release of emissions, but will only postpone the process and emissions will be released later.
- Certification of short-term carbon removals via aboveground biomass in peatlands is currently undesirable due to the uncertainty of the use of the biomass afterwards, unless an LCA proves long-term carbon sequestration.
-Removals are more difficult to quantify. For the long-term period, net permanent sequestration or accumulation can be accounted for, but for short-term periods any removal falls under the buffer for leakage or natural losses.
- There are environments where peatlands are net-sequestering year by year.
- Variations in the field due to climate, soil type, etc. make it difficult to be precise unless in case of field monitoring, which is expensive and undoable for all fields. Still, peat accumulation varies between years depending on the weather pattern.

Emission factors

- If national emission factors for organic soils between one region countries vary widely, it can lead to the situation that they can have completely opposite organic soil management policies. As a result, rewetting can be a very good climate measure in one country, while in another it can increase emissions on paper. This could also lead to the situation where within carbon farming schemes in one country carbon credits can be earned through rewetting measures, while it is not possible in another country due to the fact that emissions are not decreasing, or reduction of emissions is very small.
- In case of doubt about Tier2 emission factors **metadata** should be preferred to any single study.
- Perhaps in the future to find emission factors, GHG flux studies should not seek to cover the maximum number of sites but should seek to obtain accurate data from **continuous** measurements in typical locations.
- In Latvia's NIR we now use LIFE ReStore emission factors for all organic soils but we are planning to use LIFE OrgBalt emission factors for nutritient rich organic soils.

GHG emissions, tons CO_2 eq ha^{-1} (LifeREstore and IPCC default emission factors)



Tentative soil carbon (CO_2-C), CH_4 and N_2O emission factors (EF) based on the data collection in Life OrgBalt project (Note; final values can be confirmed after approval of peer-reviewed publications).

Land use category	CO_2 EF (t C ha^{-1} y^{-1})	CH_4 EF (kg CH_4 ha^{-1} y^{-1})	N_2O EF (kg N_2O ha^{-1} y^{-1})
Cropland	7.5	-0.61	8.86
Grassland	6.2	4.94	1.84
Forest land, deciduous	3.97	17.2	16.2
Forest land, coniferous	3.79	-2.73	6.58
Forest land, drained deciduous	4.42	-4.81	22.7
Forest land, drained coniferous	4.07	-4.76	7.12
Forest land, undrained deciduous	3.09	61.2	3.29
Forest land, alder	3.90	23.0	20.8
Forest land, birch	4.03	14.3	13.9
Forest land, pine	3.38	-4.25	2.52
Forest land, spruce	4.19	-2.08	8.32
Forest land, drained	4.30	-4.78	13.9
Forest land, undrained	3.00	51.1	2.95
Forest land, drained alder	4.24	-4.11	34.3
Forest land, drained birch	4.60	-5.09	18.1
Forest land, drained pine	3.38	-4.25	2.52
Forest land, drained spruce	4.75	-5.01	9.42
Forest land, undrained alder	3.56	59.0	2.86
Forest land, undrained birch	2.61	62.8	3.61

Cropland and grassland organic soil definitions in NIRs differs for MS:

LV: Soils are considered organic as defined in the NFI: a soil is classified as organic if the organic layer (H horizon) is at least **20 cm** deep. Until submission 2018 it was assumed that area of organic soils in farmland according to summaries of land surveys is 5.18 ± 0.5 %. This value characterizes area of organic soils in cropland before 1990 because it is based on field measurements completed in 60ths, 70ths and early 80ths. Since submission 2018 area of organic soils in cropland is reported according to the results of research projects. According to the results of research project there were 67.10 kha organic soil (4.9% of total area) in cropland remaining cropland in 2020."

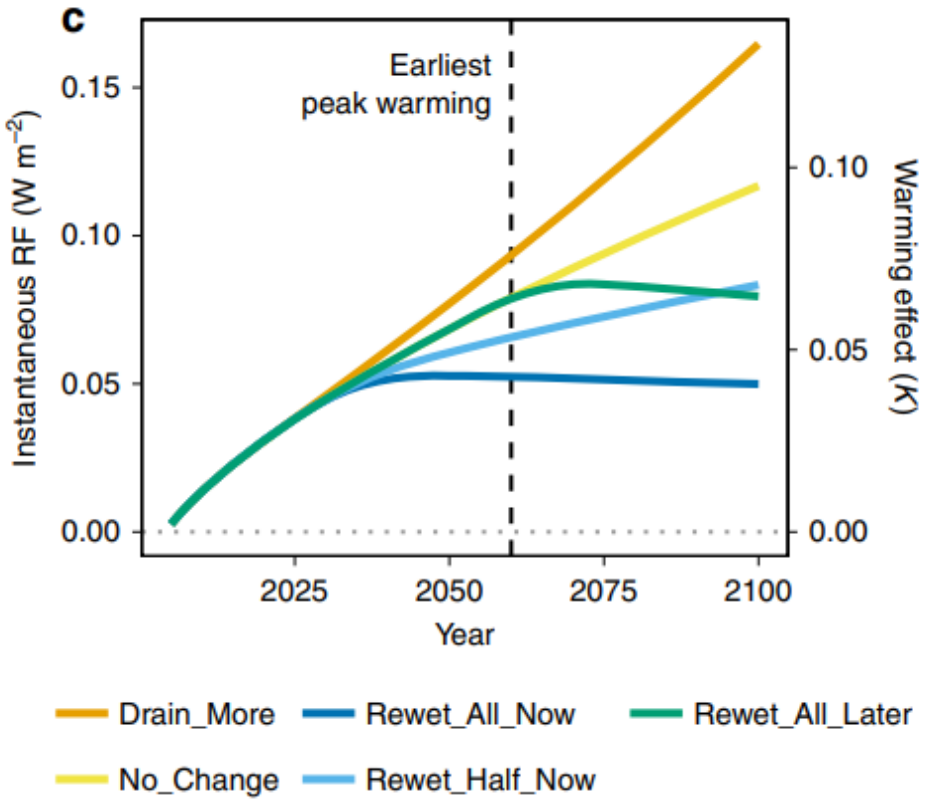
LT: Organic soils in Lithuania are determined by using national definition of organic soils, provided in the book of Lithuanian soil classification (Buivydaite et al., 2001): soil is classified as organic if it has peat layer not thinner than **40 cm or 60 cm** of poorly decomposed peat (mainly mossfibres) in bogs. In addition to this, histic horizon must contain not less than 70 - 75 percent of organic matter by volume. National definition of organic soils (**histosols**) was prepared using Food and Agriculture Organization (FAO) guidelines for soil classification (World reference base for soil resources).

EE: For undrained soils the 'organic' soil type is defined with an organic layer of more than **30 cm** in depth and for drained soils more than **25 cm** in depth. The soil is drained when the distance from the drainage ditch is up to 100 m.

FI: Organic soils are determined to be soils containing more than 20% organic carbon in the top **20 cm** layer of the soil (i.e., about 35 percent organic matter) and thus the definition corresponds to the guidelines of the IPCC.

Radiative forcing, GWP, sustained GWP

- Recently, we more often hear that, in the case of rewetting, the replacement of CO2 emissions with methane emissions cumulatively leads to lower radiative forcing.
- We understand that the GWP's 100-year approach does not really take this into account and cumulative methane emissions instead of cumulative CO2 emissions are essential only in the case of rewetting.
- In addition, we need research on how to promote the activity of metanotrophic bacteria to be able to reduce methane emissions after rewetting.



Source: Günther et al., 2019

Thank you!

www.orgbalt.eu @orgbalt @orgbalt LIFE OrgBalt orgbalt orgbalt

The project "Demonstration of climate change mitigation potential of nutrients rich organic soils in Baltic States and Finland" (LIFE OrgBalt, LIFE18 CCM/LV/001158) has received funding from the LIFE Programme of the European Union and the State Regional Development Agency of Latvia. www.orgbalt.eu