Nature-Based Solutions in Open Wetlands Restoration for Biodiversity, Water Quality Improvement and Climate Mitigation, online conference, 2025 June 12th

Restoration of Wetlands for the Sake of Biodiversity and Climate in Transition Economy

Paweł Pawlaczyk

Wetlands are biodiverse…

But has the biodiversity economic value?

The answer is probably double: No & Yes
Or: Yes, but not always possible to recognize

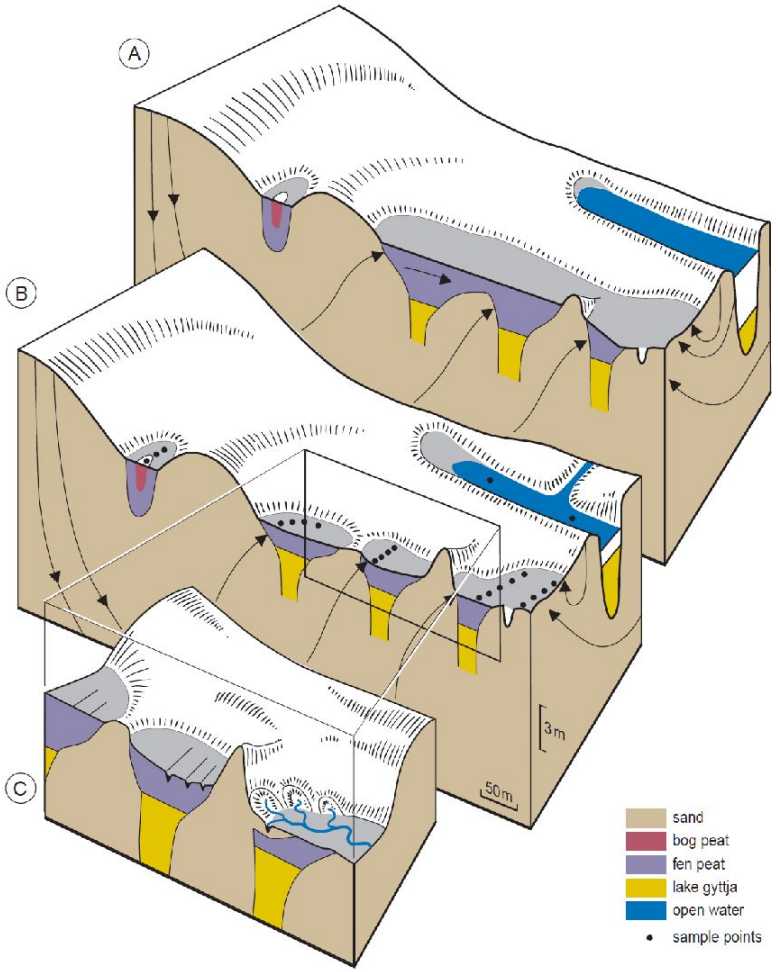
sometimes value from wetlands far away…


Fot. dr Gunter Nowald

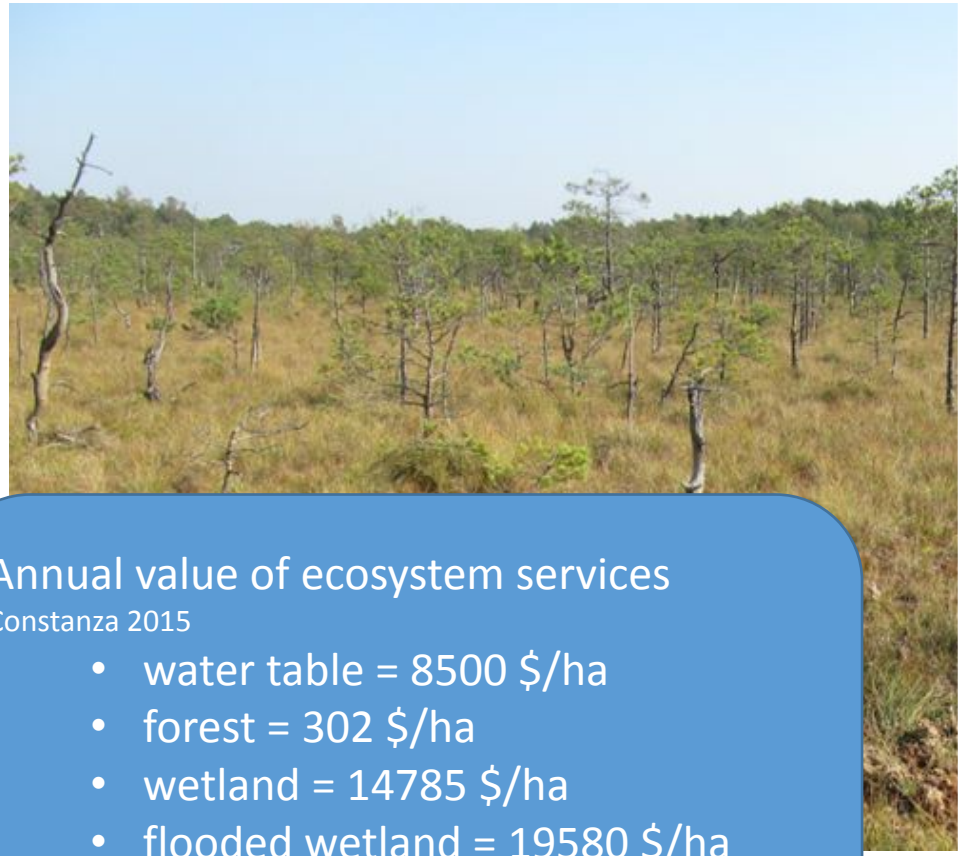

Karsten Peter


M. Strikis, Wikimedia Commons

Not only biodiversity – regulatory services



… also has economic value



Annual value of ecosystem services

Constanza 2015

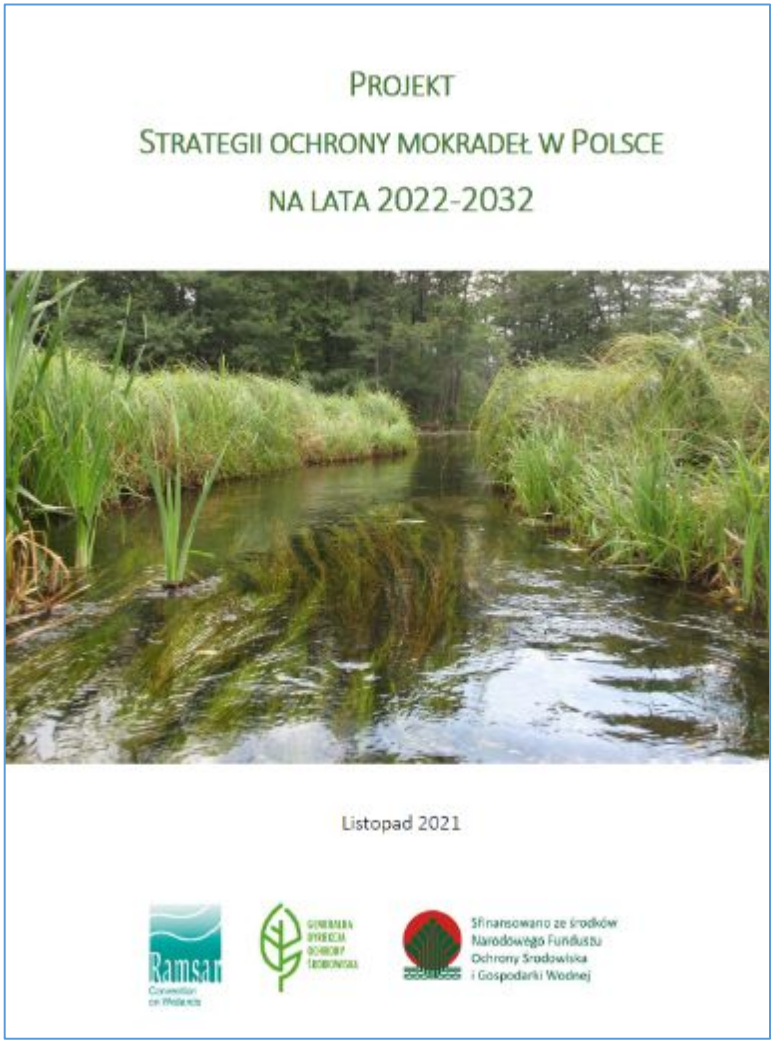
- water table = 8500 $/ha
- forest = 302 $/ha
- wetland = 14785 $/ha
- flooded wetland = 19580 $/ha

Szałkiewicz et al. 2018:

- restored natural river: 7750 €/ha

But need to be wet

… which is an obstacle for some kinds of economical use



Estimation for Polish Wetland Strategy (draft)

- costs € 7 billions
- profits € 18,5 billions

But, the usual problem is…

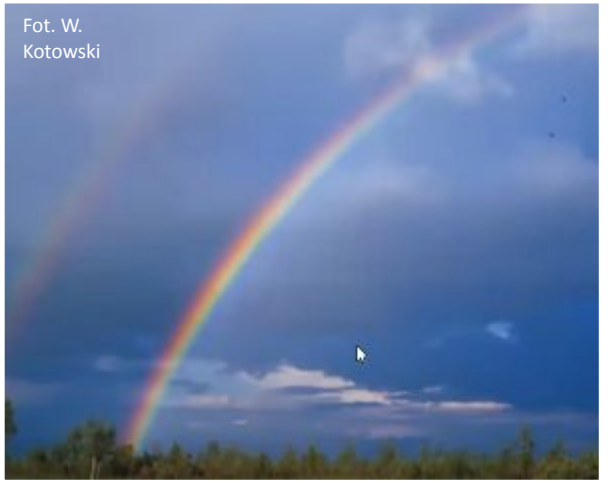
Who pays the costs?
Who profits?

If we restore wetlands, will we restore also wetlands biodiversity?

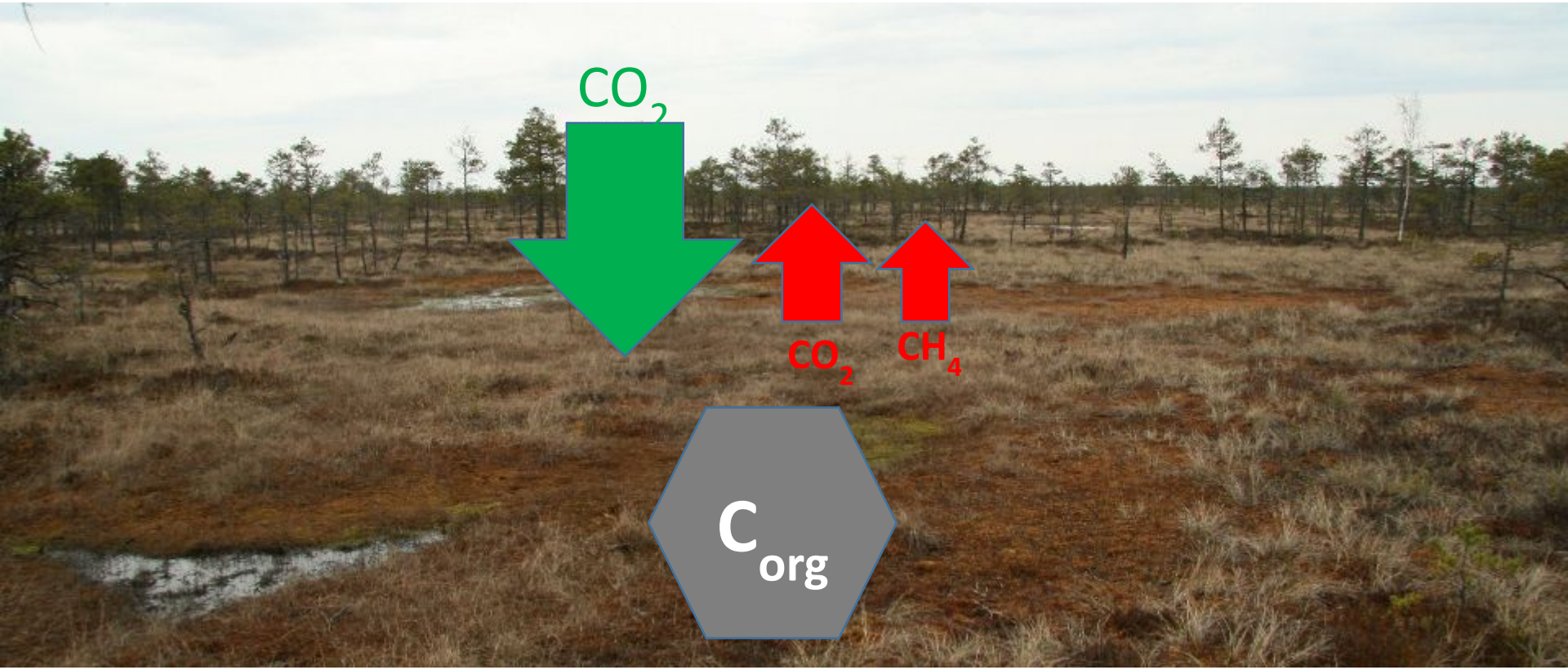
If we restore wetlands, will we restore also wetlands services?


In changing climate

Wetlands and climate change resilence



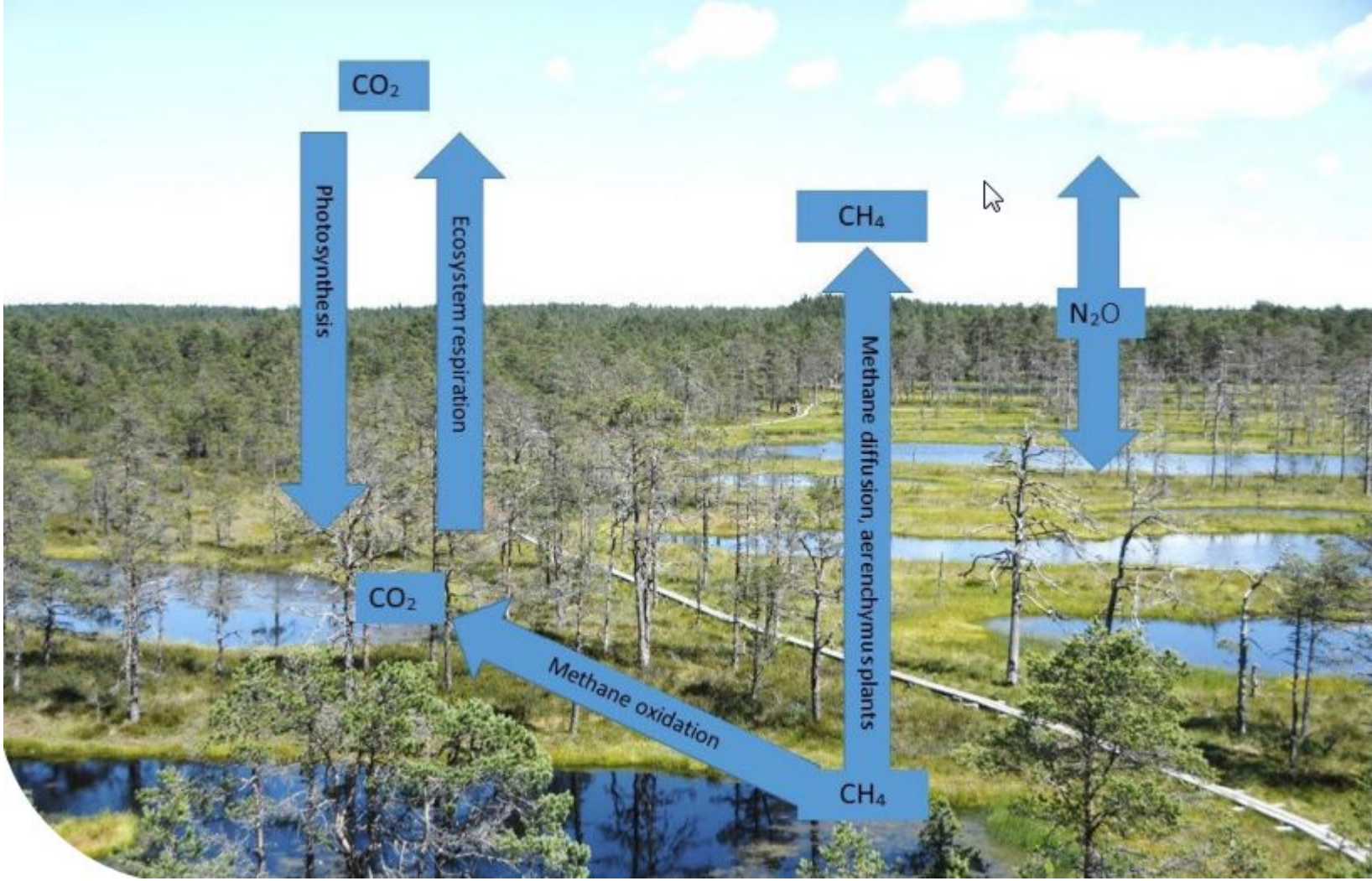
Wetlands (peatlands) and climate change mitigation



Peatlands:
3% of world land area = 500 000 000 000 t of carbon
30% soil carbon resources = 2 x more that all world forests

Carbon !

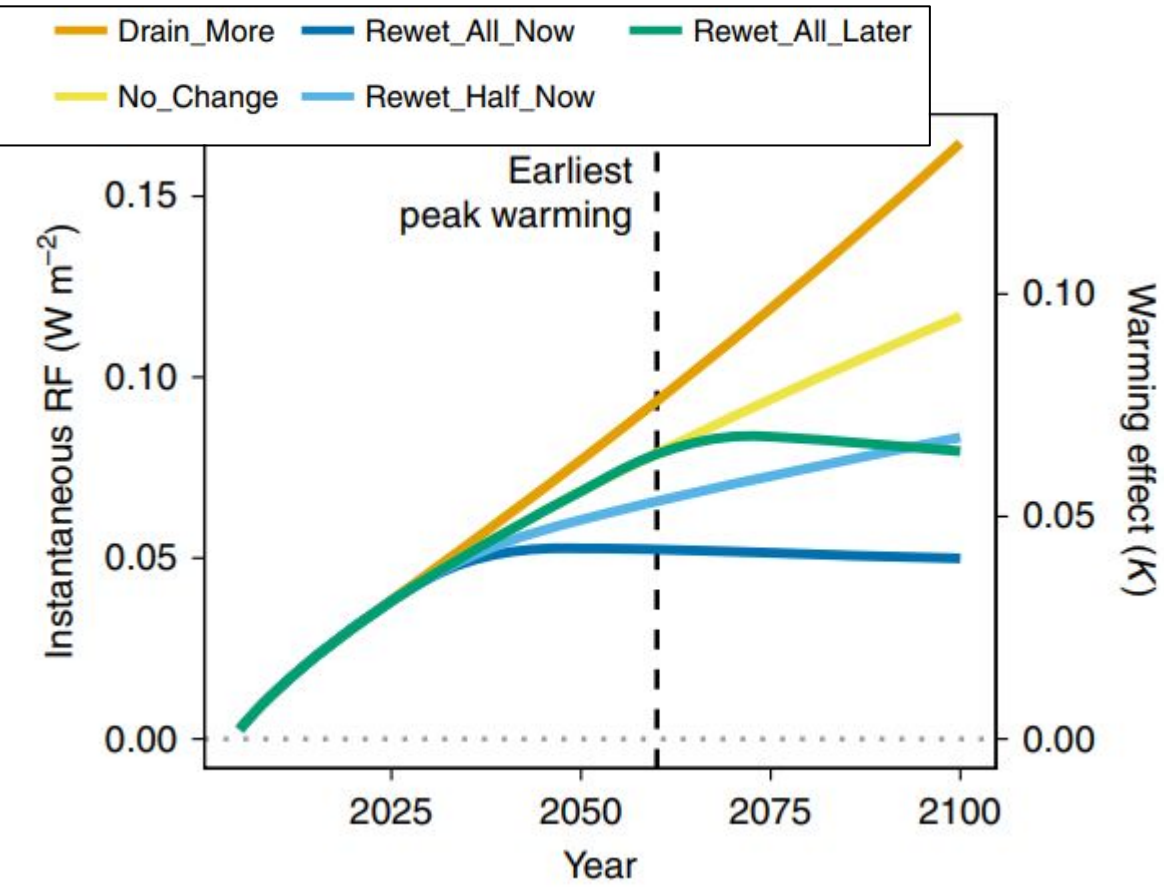
From: Jarašius L. et al. 2022. Handbook for assessment of greenhouse gas emissions from peatlands. Applications of direct and indirect methods by LIFE Peat Restore. Lithuanian Fund for Nature.

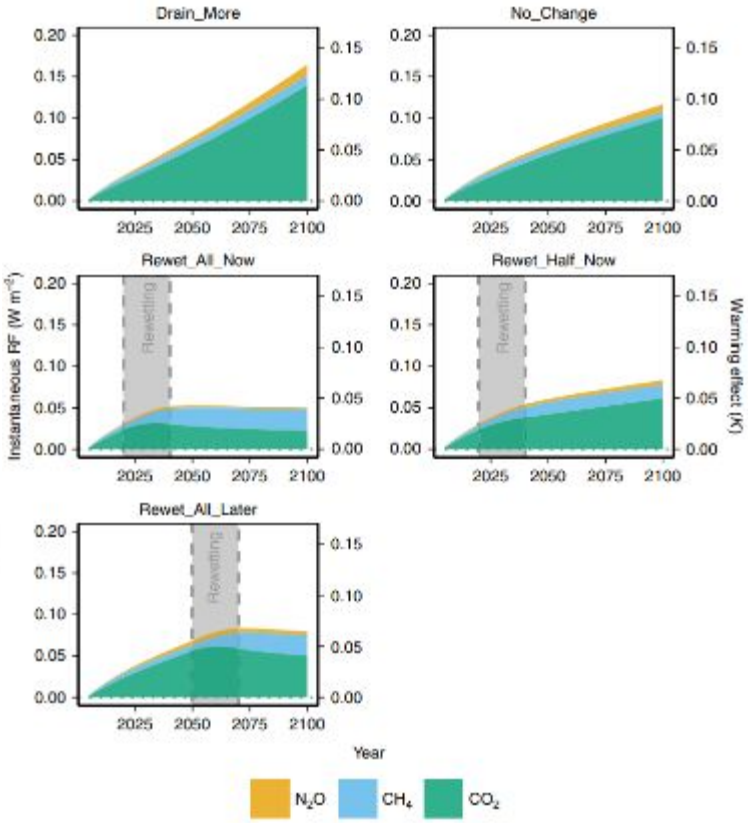


In fact, a bit more complicated…

Strategic choice – what should we do for the best mitigation of climate change?

Gunther et al. 2019

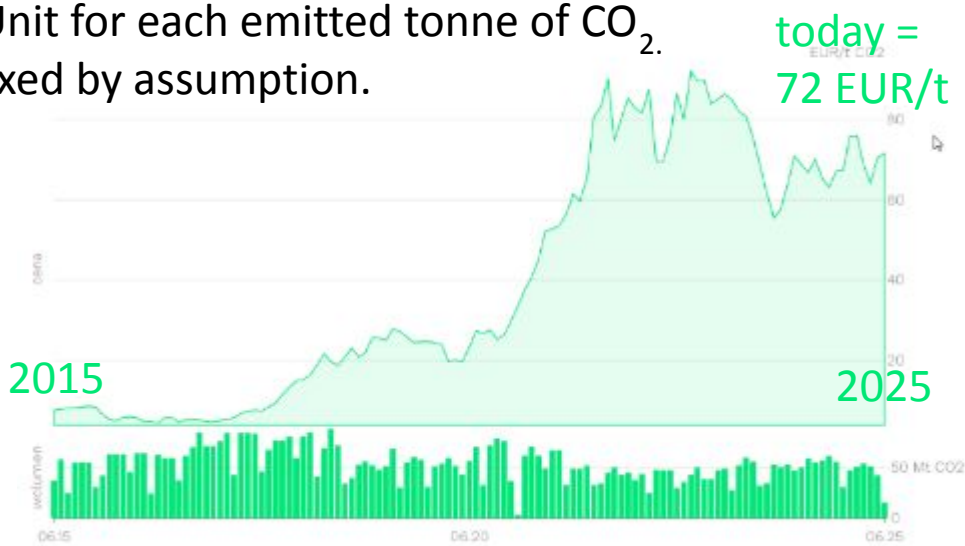




Emission Trading System?

Emitters enforced to have Emission Allowance Unit for each emitted tonne of CO_2.
Free market of EAU, but total numer of EAU is fixed by assumption.

- pay for emission
(polluter pays)



- user of drained peatland should also pay?
(polluter pays)

1500 EUR/ha annually

Are we ready to charge our farmers for farming on peat soils?

Carbon credits market?

pay landowner to emitt less GFG…

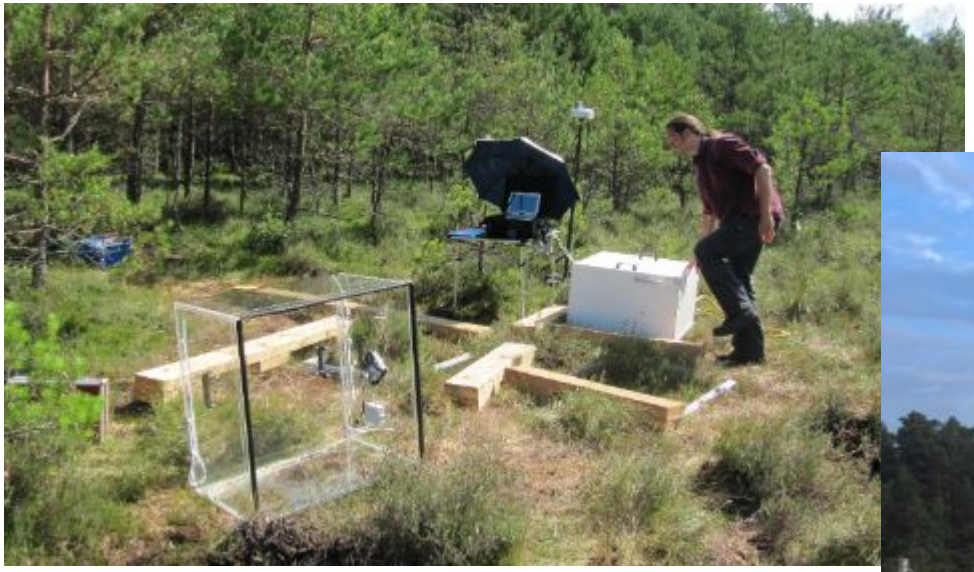
[partial] rewetting
more wet,
emitt less

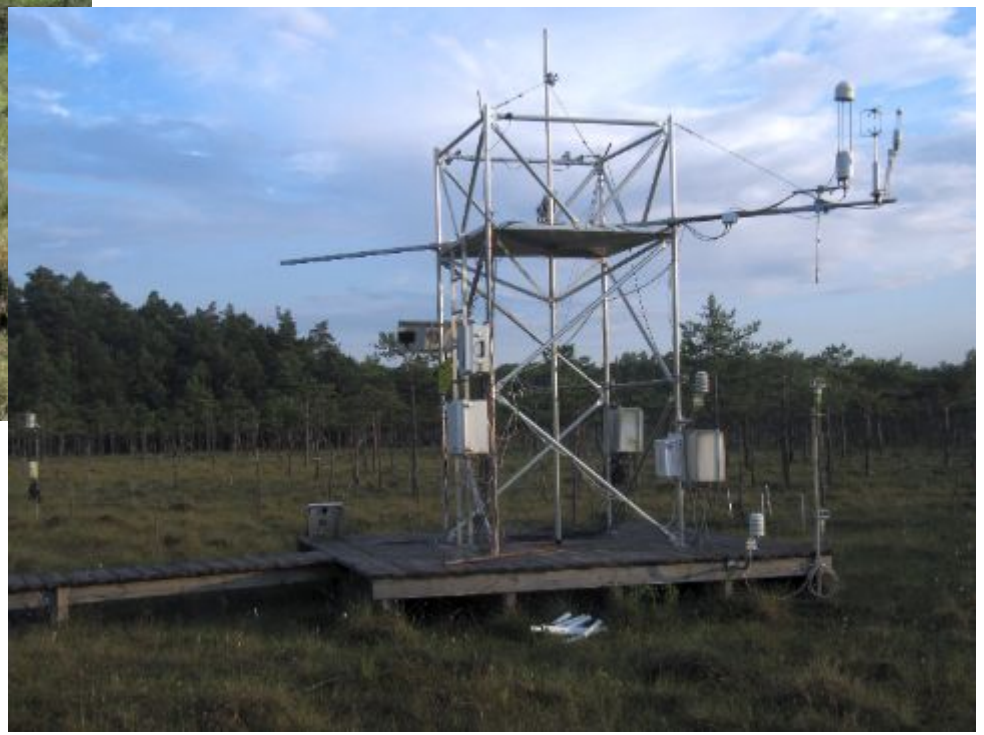
Who pay?
Companies which want to „compensate" their emission and achieve „zero-emission image"

Voluntary system, but market of „carbon credits" can develop

Carbon credits – why difficult?

Certification of emission decreasing for concrete wetland is difficult





… we can measure emission, but it is resource-consuming and impacts the wetland significantly

Carbon credits – why difficult?

Certification of emission decreasing for concrete wetland is difficult

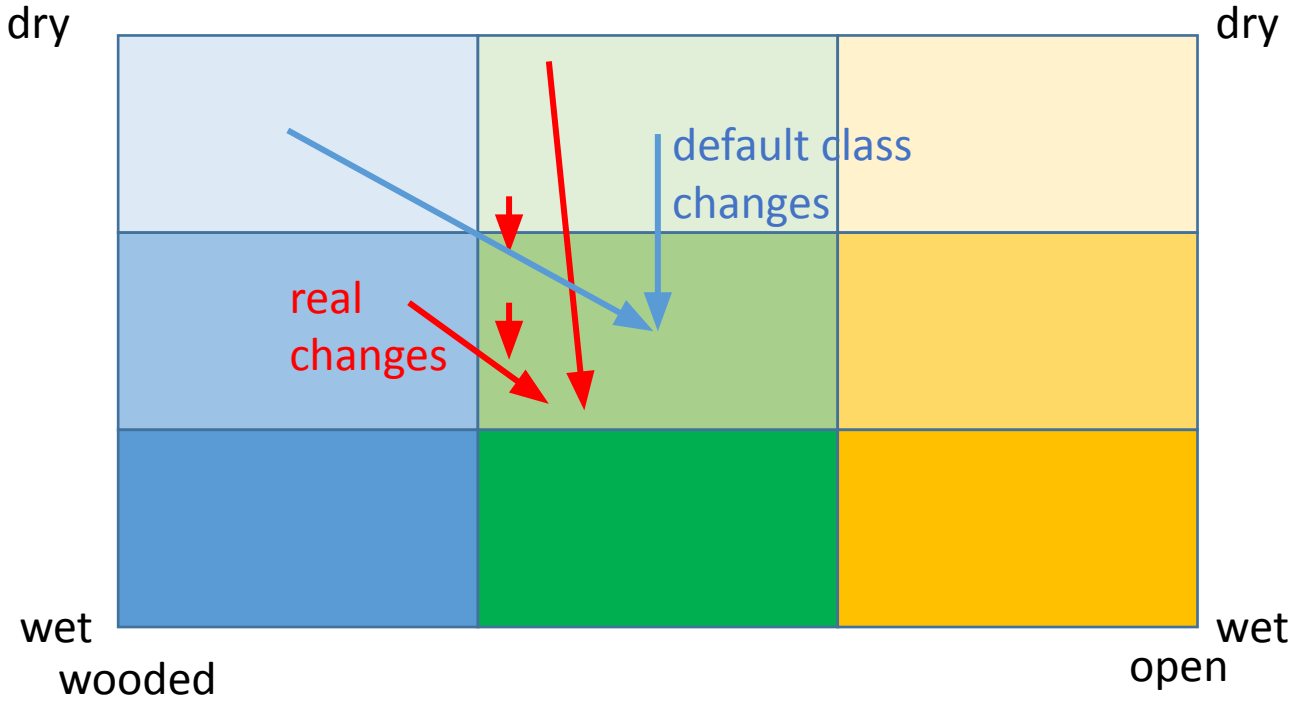
… we can use proxy,

but it is always based on not very safe assumptions…

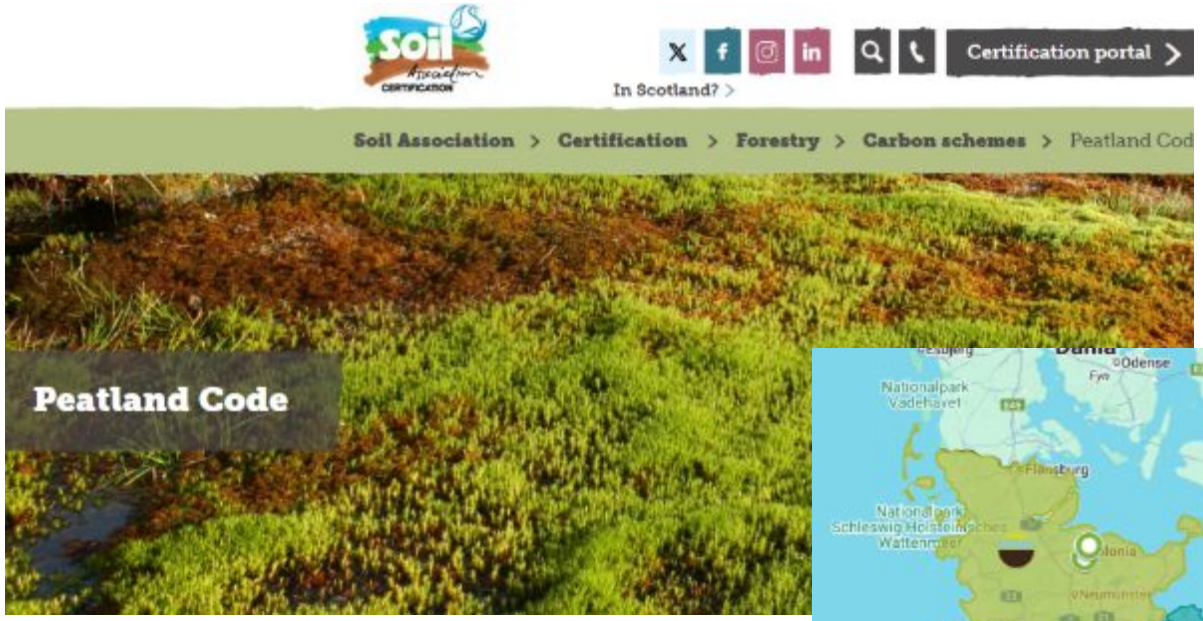
From: Jarašius L. et al. 2022. Handbook for Assessment..

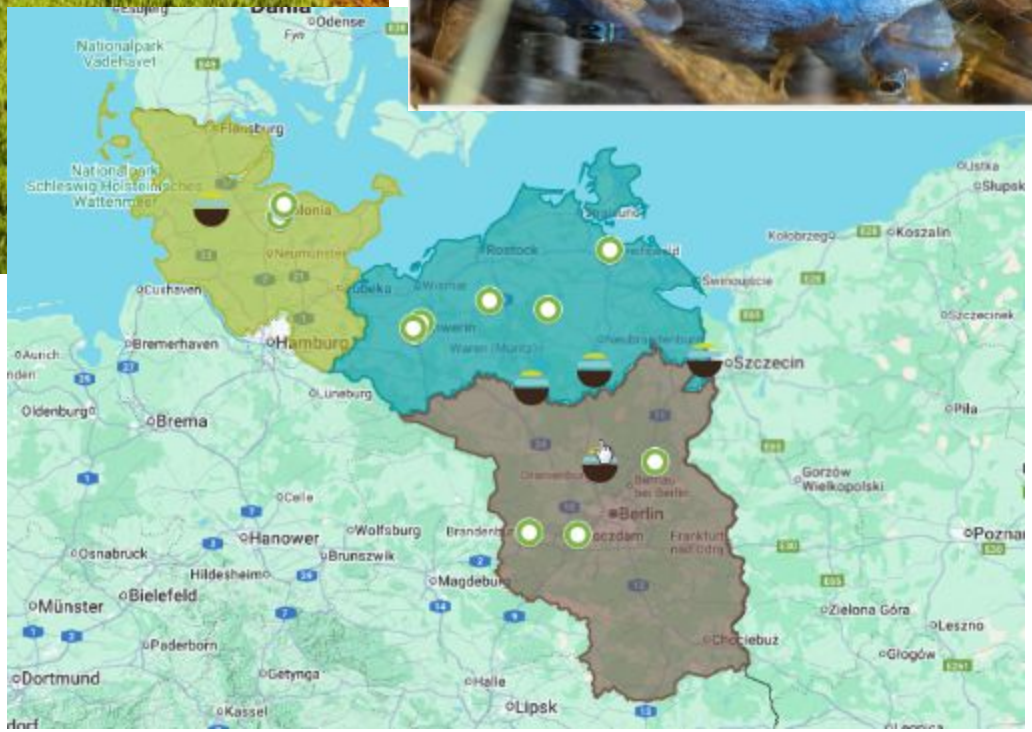
Carbon credits – why difficult?

Certification of emission decreasing for concrete wetland is difficult



… if we use classification approach (GEST, IPPC), real change can be significantly different that difference between „class averages”



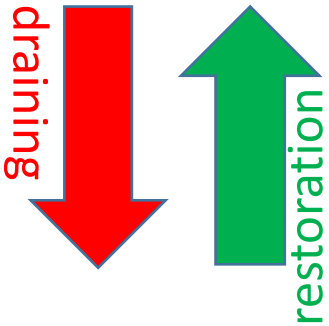


Despite some doubts and problems – carbon credits certification schemes are developed over the world

We can estimate the economic values…

1 ha of peatland (wet):

- water retention: € 334
- carbon storage: € 186
- total € 520



1 ha of drained peatland:

- GHG emission: - € 600

But how to include the economic values into the real funds flow -

– this is still open question