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The University of Vienna's „Climate Mire“ in Admont, Austria

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Context

The University of Vienna's Roadmap for climate neutrality

- aims at reducing the CO₂ release of the University of Vienna by two thirds until 2030 and compensating the remaining emissions
- This involves capitalizing on internal expertise and projects, two of them being the following biological sinks:
- Tropical rainforest restoration managed by the University's research station in La Gamba, Costa Rica
- Rewetting peat soils presently used as Spruce plantations owned and managed by the Benedictine Abbey, Admont, Austria



Procedure:

- Delineation of a 1.5 ha pilot plot and mapping of drainage ditches
- Analysis of land use history: 1.5 m deep ditches are relic of former preparation for peat extraction, not for recent forestry
- Determination of local CO₂-equiv. of the Spruce plantation
- Calculating the cost of (i) lost (future) forestry revenue and (ii) rewetting measures vs. the CO₂-equiv. mitigation at an agreed- on price of carbon
- Development of a simple local model of CO₂-equiv. to be applied on a scaling area of up to 400 ha

Emission factor:

Model:

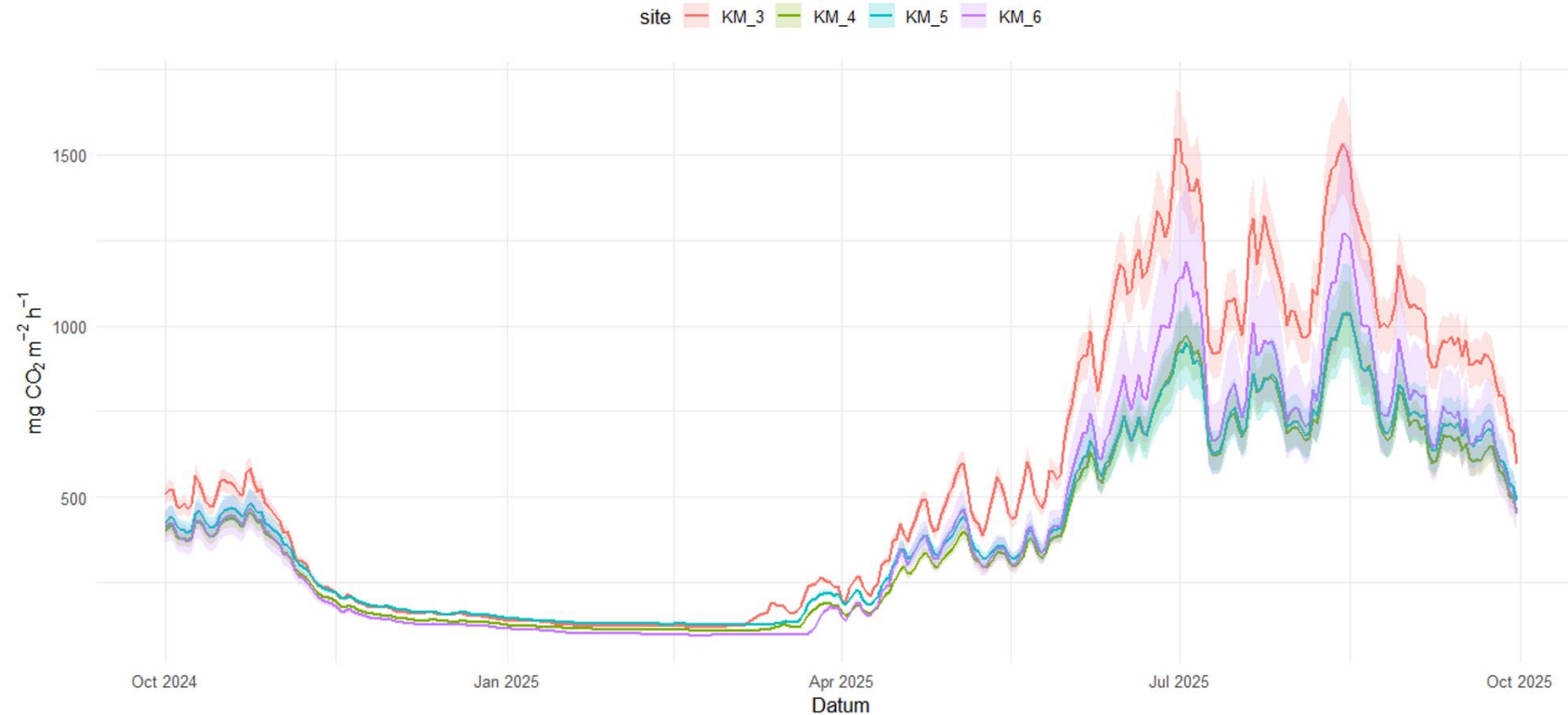
- $\log(R_{\text{eco}}) = a + b \cdot T_{\text{soil}}$

R_{eco} : Ecosystem Respiration, a : Axis intercept, b : slope, T_{soil} : Soil Temperature at 10cm

- Gross photosynthesis: Based on incremental growth of stem thickness
- CH_4 emissions: $\log(\text{CH}_4 \text{ efflux}) = a + b \cdot T_{\text{soil}}$
- N_2O emission: Not considered, given the peat C:N ratio of >50
- ➔ High emission factor: 29 t CO_2 -equiv. $\text{ha}^{-1} \text{yr}^{-1}$



Hourly Reco in the Pilot plot at 5 different subplots





Discussion:

- High C emissions are primarily a legacy of historical drainage for peat extraction and forestry, rather than of current forest management
- Restoration costs are very high given the deep ditches
- A lot of C can be mitigated in a small area
- In this setting, compensation at market prices may be sufficient to cover both restoration costs and foregone revenues from forestry, without additional subsidies
- This requires a long-term perspective and mutual trust among all partners



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Thank you!

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