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# THE COST-EFFECTIVENESS OF MEASURES TO MITIGATE GHG- EMISSIONS FROM DRAINED PEATLANDS

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**RRR21**

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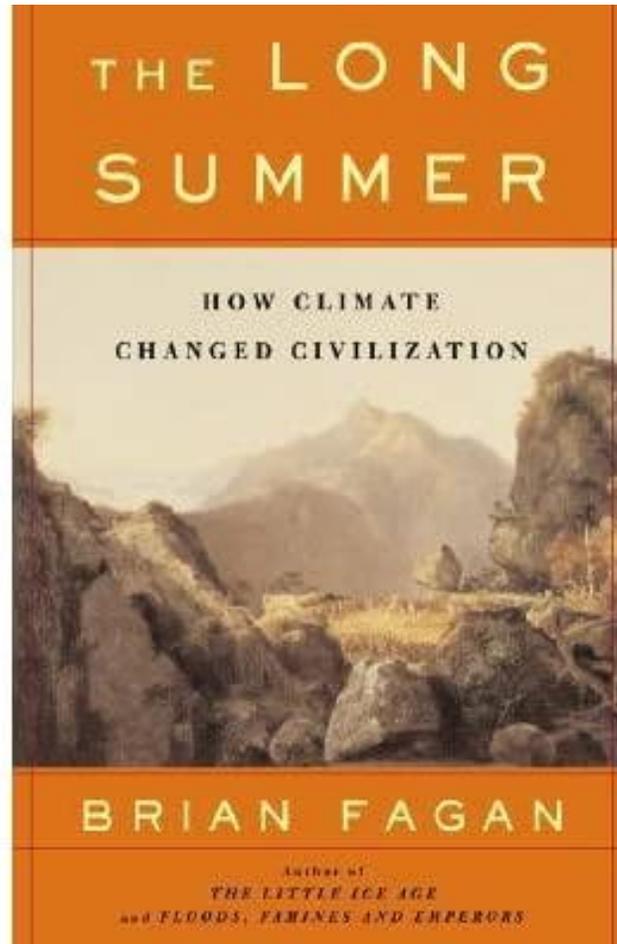
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Leibniz Centre for  
**Agricultural Landscape Research**  
(ZALF)

# Climate and human society?

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# Peatland drainage

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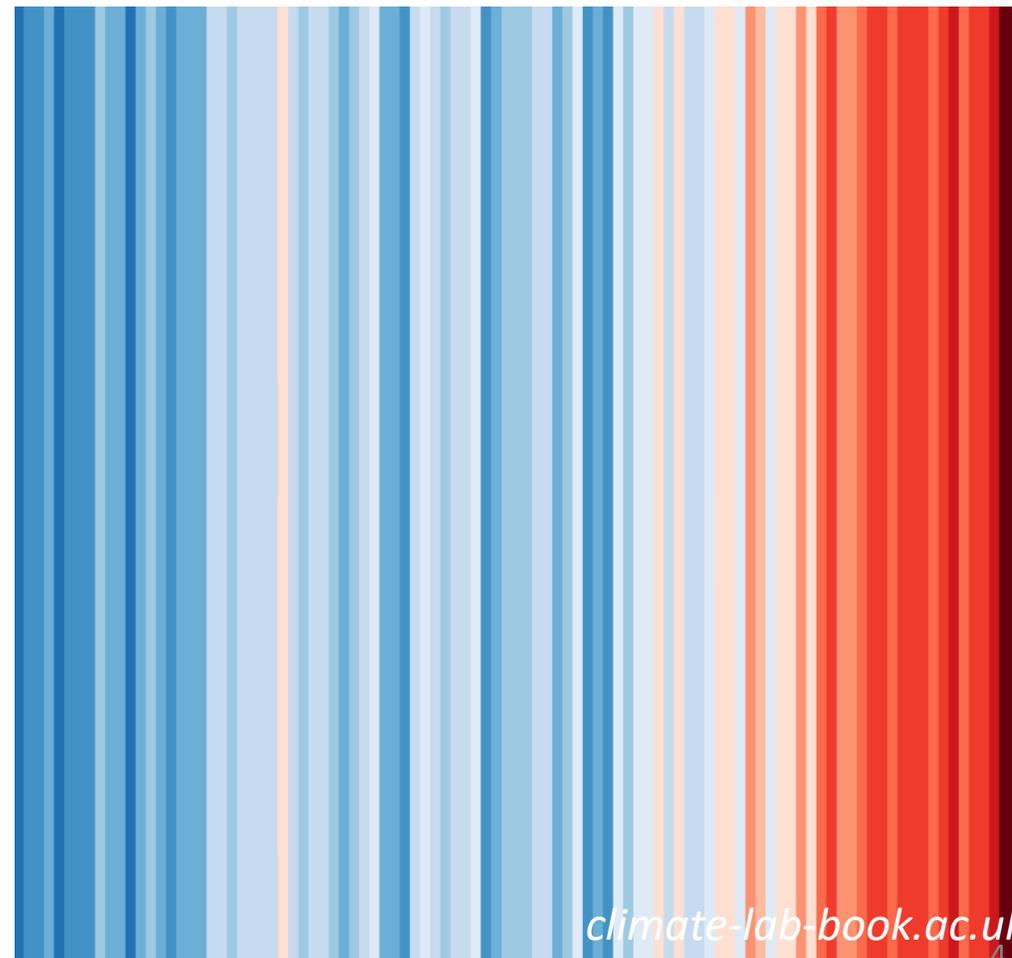


# Environmental consequences

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*Platform Slappe Bodem / Vincent Basler*



# From drainage and back

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# GHG-mitigation from drained peatlands

What are the costs?

# Studied measures

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- Subsurface drainage
- (Foundry) Sand addition
- Ditch treatments
- Controlled drainage
- Afforestation
- Paludiculture (Reed canary grass, Typha, Reed)
- Sphagnum farming
- Natural succession



# Methods

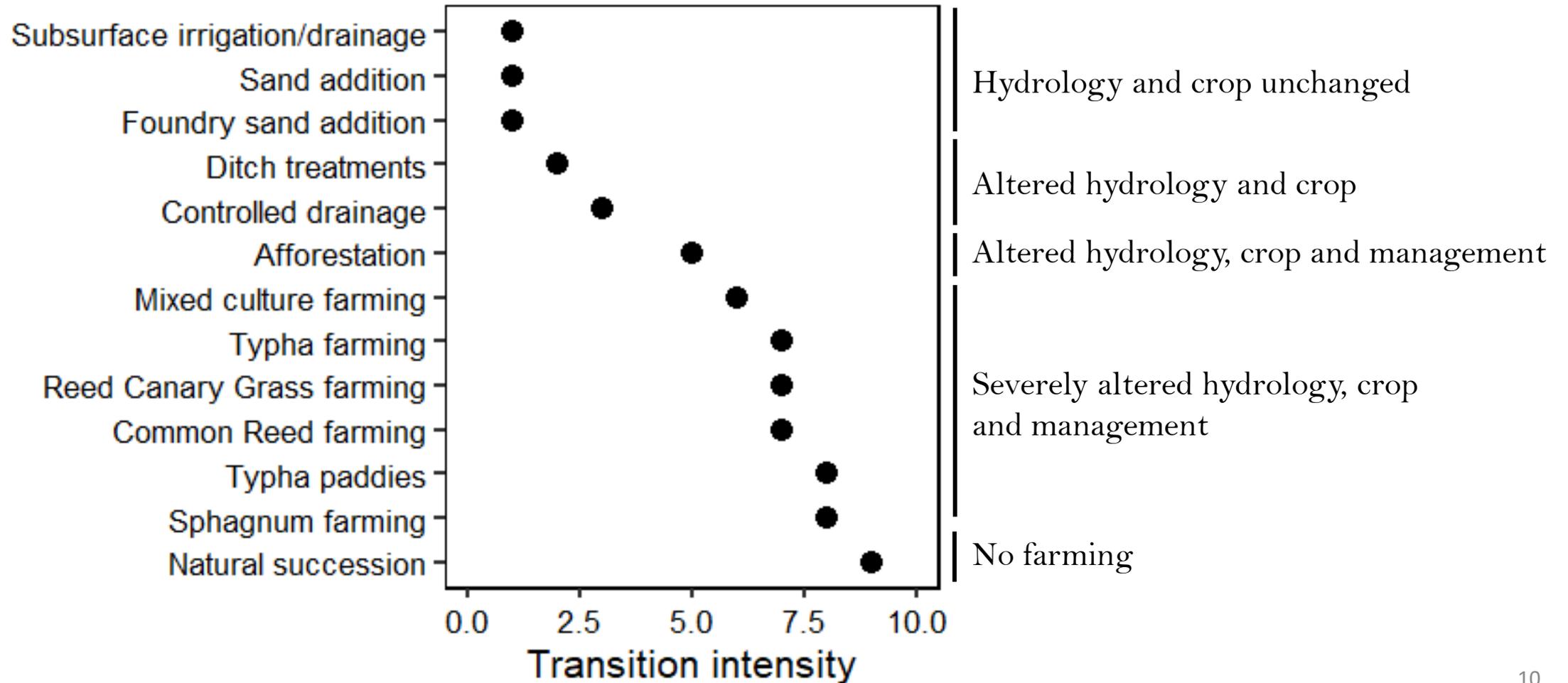
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- Transition intensity
  - Change in farm management
  - Requirement of new infrastructure
  - Change in groundwater level
  - Changes in crop type
- Investment costs
  - *“Cost that are required to implement land-use changes for a mitigation measure”*
  - Assumed farmers owned the land
  - Assumed no purchase of new machinery (contracters invest)
  - Opportunity costs not included
- GHG-emissions; control vs mitigation measure
- Literature search
- Pers. communication
- Three costs scenarios: low, medium and high
  - Assuming land-use change and material costs differ

# Transition intensity

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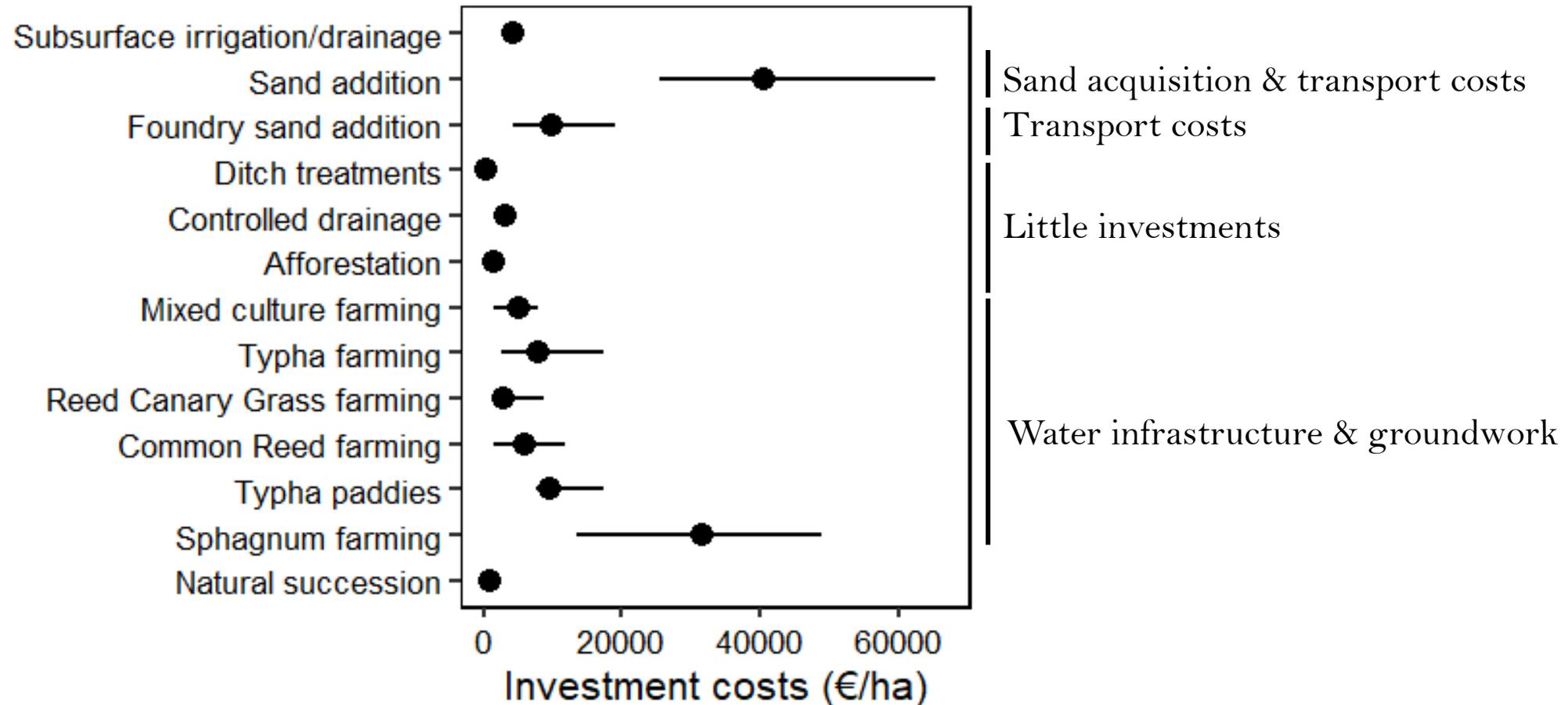
# Transition intensity



# Costs of GHG-reduction measures

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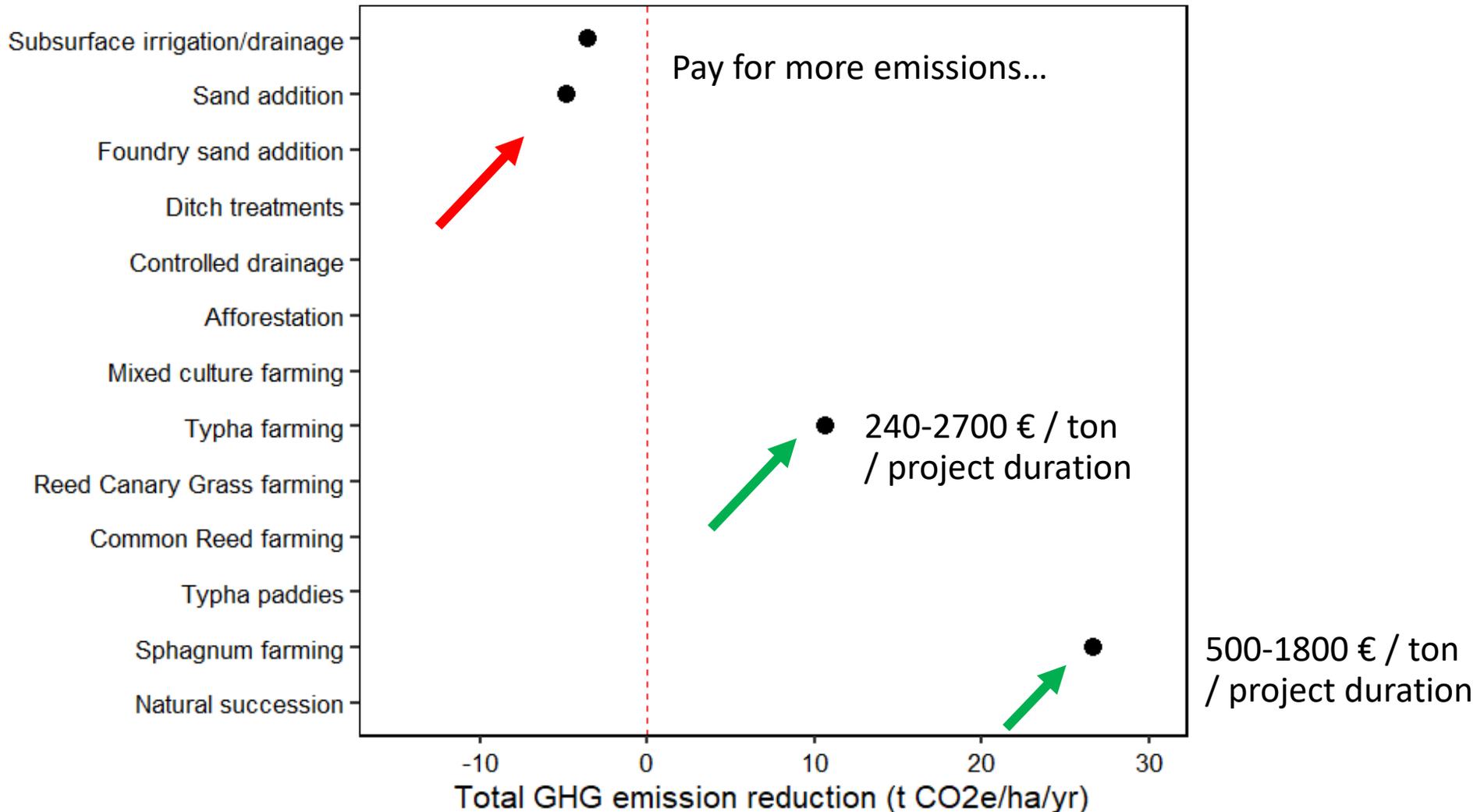
# Costs of GHG-reduction measures



# Cost-effectiveness GHG-mitigation

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# Cost-effectiveness GHG-mitigation

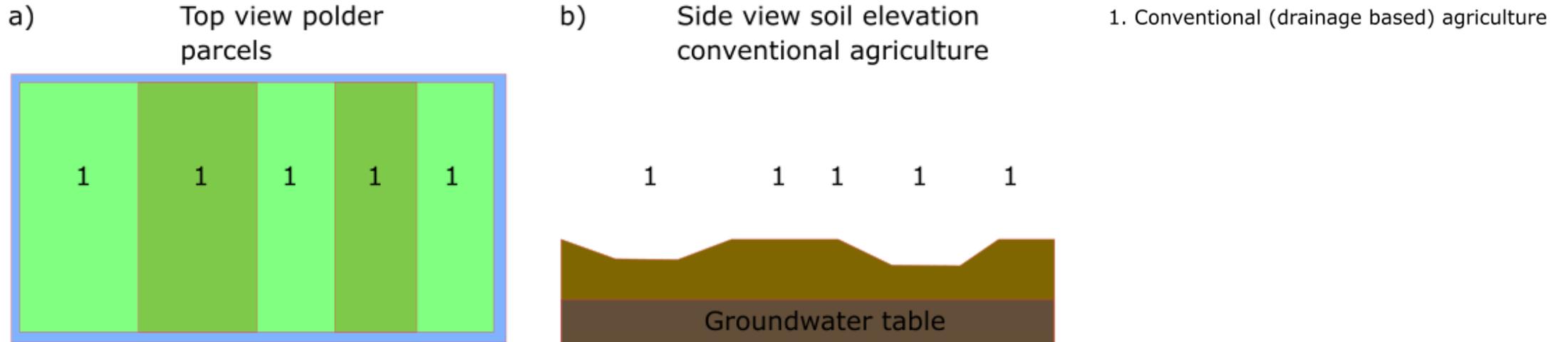


# Implications for GHG-mitigation measures

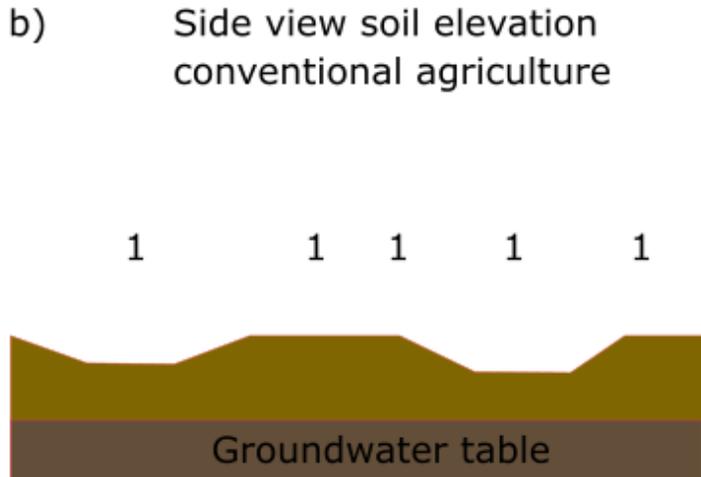
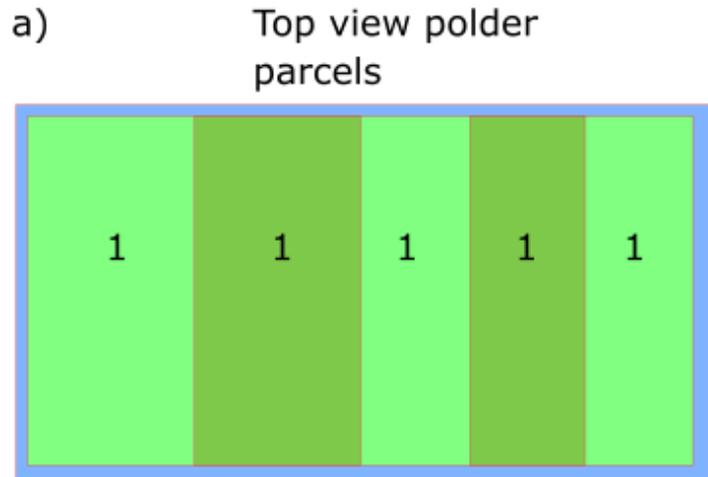
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# Implications for GHG-mitigation measures

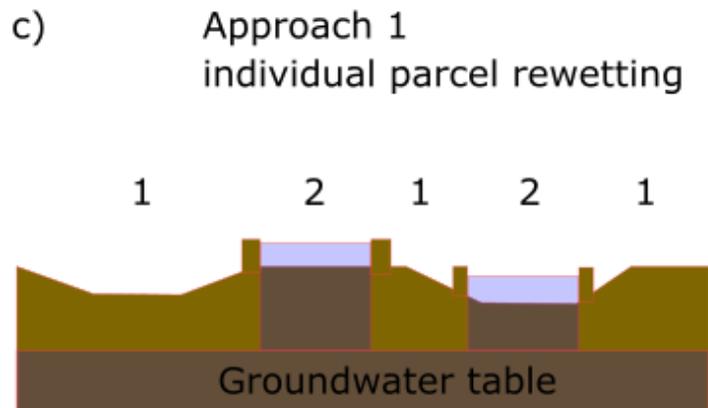
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# Implications for GHG-mitigation measures

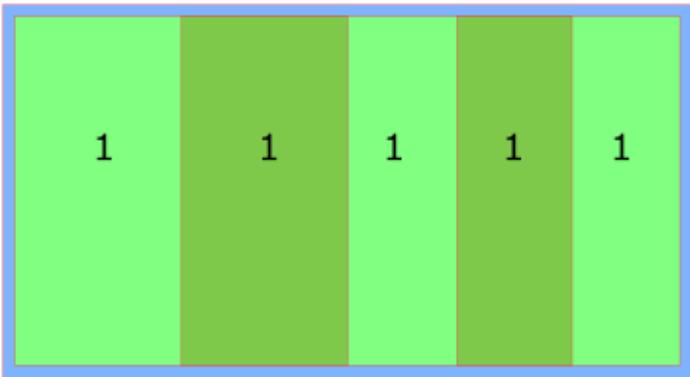


- 1. Conventional (drainage based) agriculture
- 2. Paludiculture with paddies

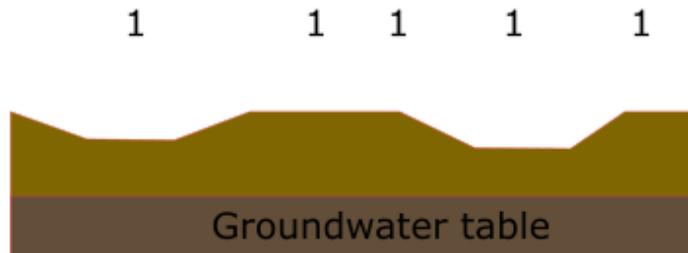


# Implications for GHG-mitigation measures

a) Top view polder parcels

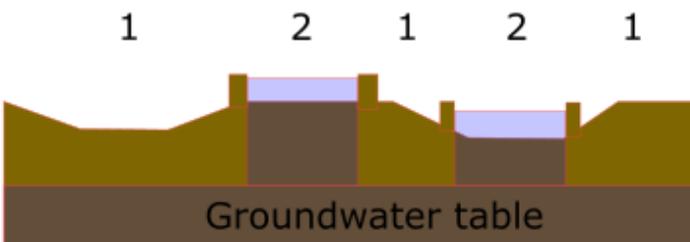


b) Side view soil elevation conventional agriculture

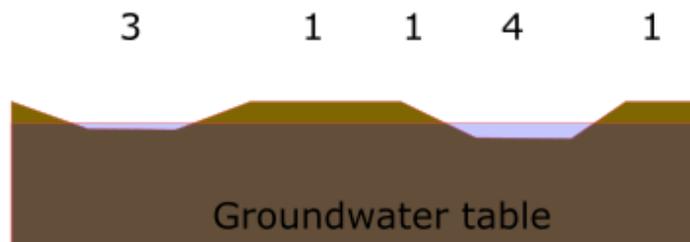


1. Conventional (drainage based) agriculture
2. Paludiculture with paddies
3. Paludiculture on semi-wet lowlands (e.g. Phragmites)
4. Paludiculture on wet lowlands (e.g. Typha)

c) Approach 1 individual parcel rewetting



d) Approach 2 polder rewetting



# Conclusions

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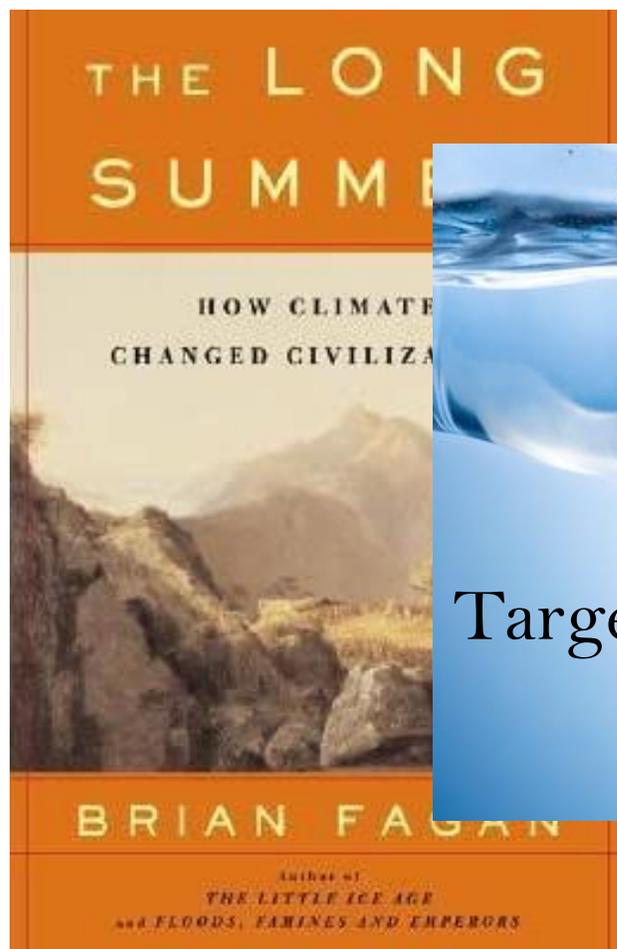
## GHG-mitigation from drained peatlands

What are the costs?

- High variability in costs
- Groundwork is expensive
- (Water) management (infrastructure)
- GHG-mitigation can be **NEGATIVE** and **POSITIVE**
- Smart use of landscape-heterogeneity may greatly reduce costs

# Take home message

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Target; scale; rewet!