

Water values and the transition to resilient sandy landscapes



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Water allocation from an economic perspective?

- During summers freshwater is a scarce resource in sandy soils and will be more so in the future
- When water is scarce, we compete for it
- Limiting some water uses but not others is difficult!
- Water is essential and without replacement
 - NO water NO life
- Water sources can be partially substitutable
 - E.g. switch from surface water to groundwater

(1) Is technology not enough?

RQ: To what extent do technological improvements change agricultural water demand?

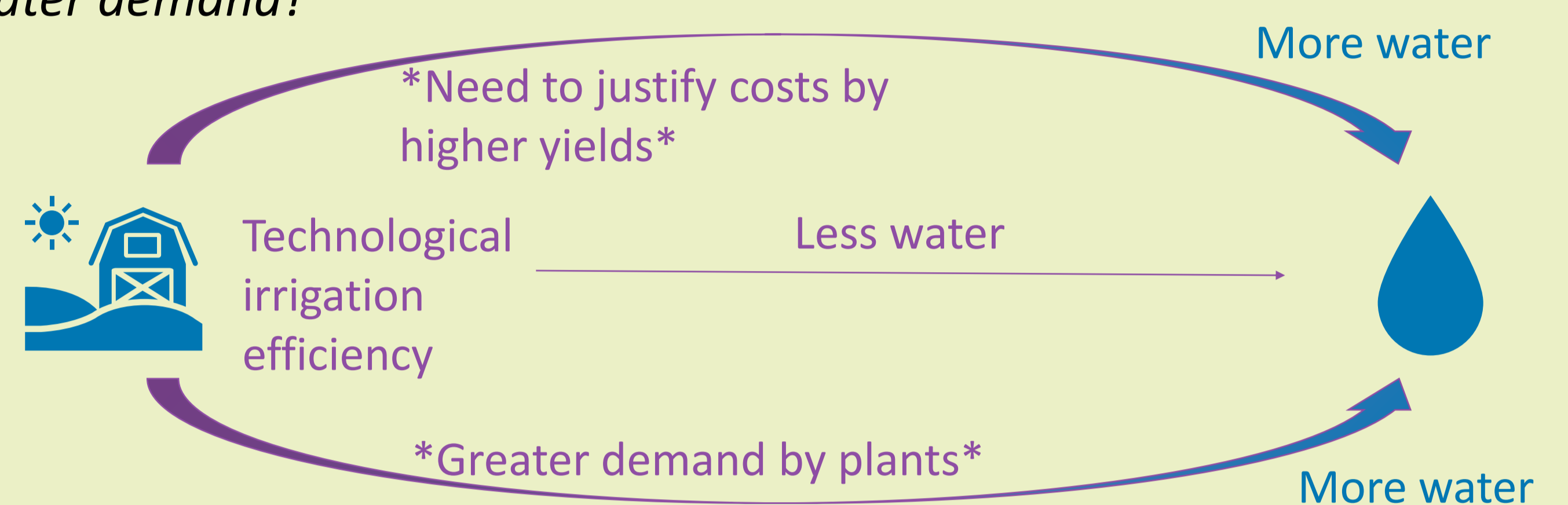


Figure 1 Scheme of possible rebound effect of technologically improved irrigation efficiency

(2) Droughts – What did farmers do?

RQ: What farmer characteristics determine the resilience response of farms to water shortage?
To what extent farmers apply these measures separately or in combination?
To what extent are the responses substitutable?

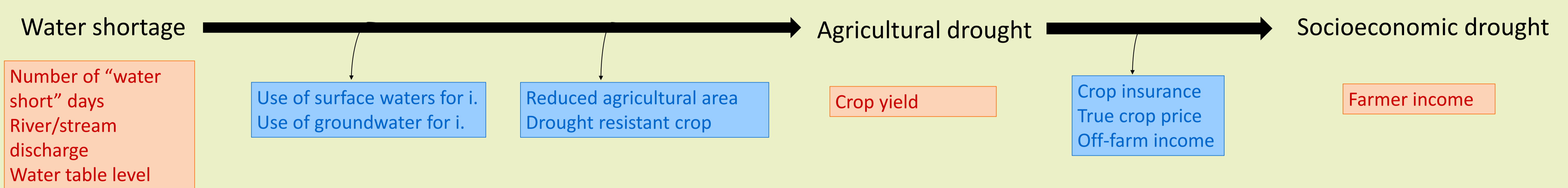


Figure 2 Drought definitions (Hughes et al., 2022; Schasfoort et al., 2019) and their indicators, along with resilience responses

(3) Room for cooperation?

RQ: What are the barriers and leverages for cooperation in groundwater extraction?
To what extent can monetary and water inputs facilitate transformation?

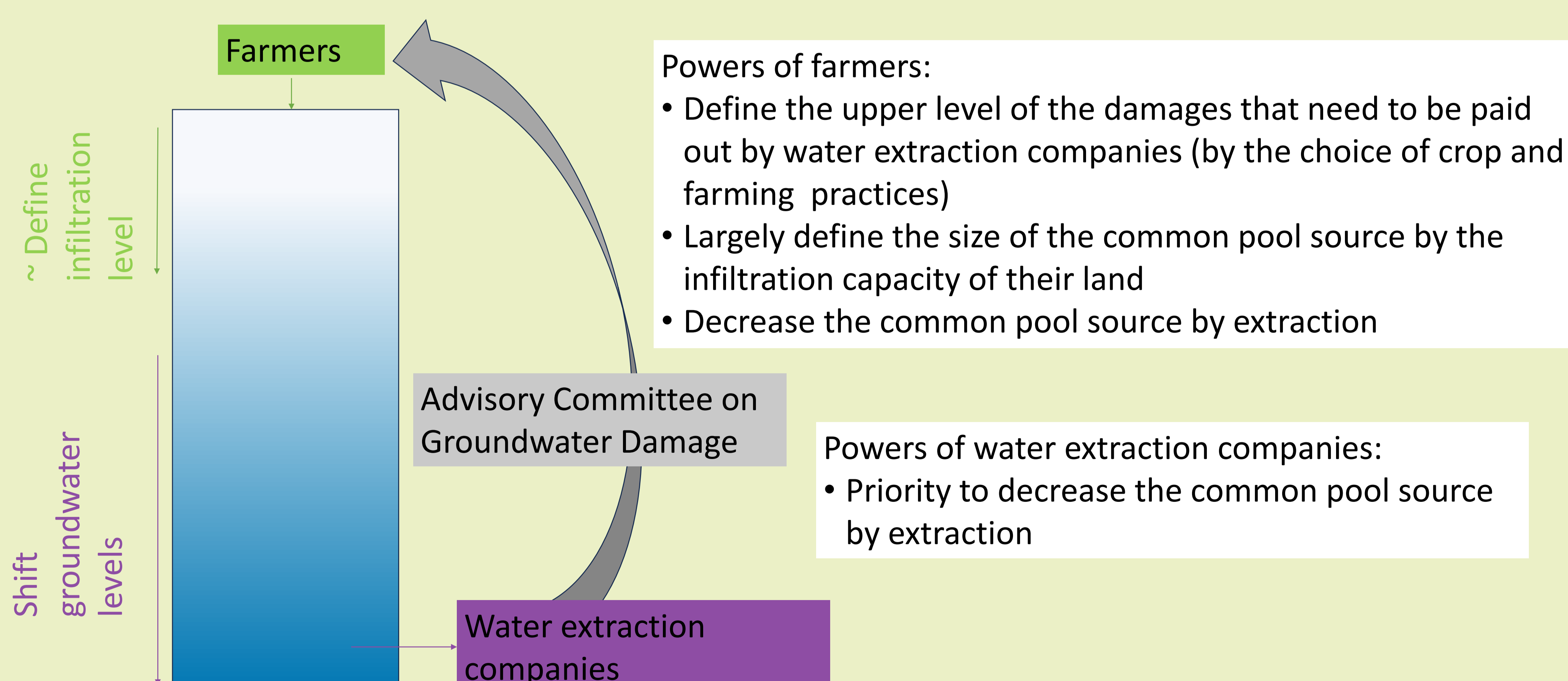


Figure 3 Scheme representing groundwater (represented by blue in the rectangle, where the rectangle is the profile depth) extraction and water flows (thin arrows) along with monetary flows (thick arrows) in the vicinity of large water extraction areas

Discussion points

- Possibility of differentiation between the source of the damage
- Damages to nature?
- ❖ Possibilities of cooperation between farmers and other small extractors?
- ❖ Possibilities of cooperation between water extraction companies and farmers?
- ❖ Typology of incentives for long-term transformation:
 - Monetary
 - Water inputs during scarcity

Desired societal impact

- Further the understanding of water scarcity on farms
- Explore how payments can be stacked for farmers to achieve spatial land use transformation