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Embedding Adaptiveness into the Legal Framework Examples from the Netherlands

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Introduction

- Water scarcity is a problem for some areas (Brabant, Zeeland) in the Netherlands, worsened by climate change + sea level rise.
- Is the Dutch legal and institutional framework adequate for adaptation to water scarcity in agriculture?
- Three case studies from Zeeland
- Discussion & conclusions

Current legal framework

No incentive for water saving:

- Water belongs to no one (except stored water)
- *Permit* (big users)/ *notification* system (farmers)
- Water abstraction is free
- Governmental aim: balance supply and demand against reasonable costs

But:

- During droughts, agriculture low in ranking (surface) *water hierarchy* and *ban* on irrigation

And without water security, no cultivation contracts

Institutions

Water management is a public task

- State responsible for water law & policy at state level & implementation EU law
- 1 State agency responsible for management of large waters
- 11 Provinces responsible for water policy at regional level + supervision
- 25 Water boards (sub river basin districts) responsible for management of regional waters
- Drinking water companies owned by public shareholders, industry water separate daughters

Public participation is mandatory, but only for draft plans/decisions

The Dutch Polder model

- State responsible for management of large waters & pays for large infrastructure – mainly flood defense – of national importance
 - Water boards responsible for management of regional waters (quality & quantity) and maintenance: stake, say, pay
- + *Stakeholder engagement*: consensus building and cooperation
- Unheard voices (environment, citizens)

Adaptation to climate change

Uncertainty & complexity

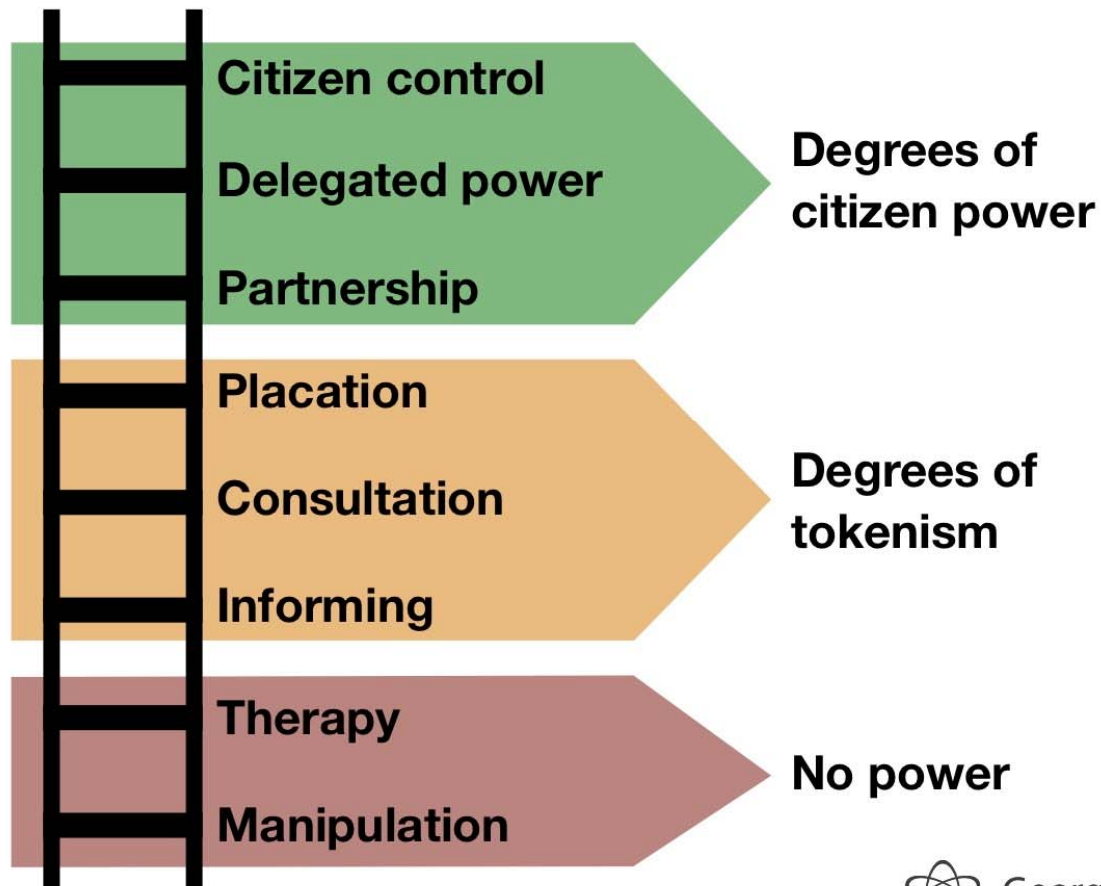
-> **Adaptive management**

Focus on learning

- Experiments
- Social learning: participation
- Bio-regional scale
- Polycentricity or panarchy

Social learning/participation

Arnstein (1969) Ladder of citizen participation



3 case studies from Zeeland



Deltaworks: Oosterschelde barrier



Polder landscape



Water storage area



1. Water farming Walcheren (Zeeland)

- Near seashore -> brackish or salt groundwater -> collective rain water storage, sale also to other parties?
- Parties involved: farmers, water boards, municipality, province, State (RWS) & farmer union, Deltares, Aequator, nature organizations, bank etc.

How can water be collectively owned and sold? -> Green deal with the State to solve a legal problem: farmers cannot easily share water.

Project not implemented.

2. Tholen (Zeeland)

Rainfed agriculture, partly capital intensive crops.

Without intervention: brackish surface water, insufficient groundwater during droughts

- Water board enables irrigation through ditches from Volkerak Zoom lake as pilots, 'for free'.
- 2013 Water board and farmer union sign agreement on **permit & taxation scheme**, based on vicinity to the ditch, to increase supply (3.2-17.6-32 E/ha/year).
- Establishment of advisory committee to water board.
- Water board implemented agreement.

What happens if State opens locks and lake turns brackish again to improve ecology?

3. Zuid-Beveland (Zeeland)

Rain fed agriculture, partly capital intensive crops (fruit orchards)

High water demand in spring if frosty and during droughts

Brackish surface water, insufficient ground water

- Evides industry water owns pipeline to Bieschbosch (different river basin)
- Province Zeeland (shareholder Evides) subsidized the construction of the pipeline in 1998, used for drinking water and industrial water (previous industry pipeline to nearby lake went out of use: algae blooms)
- Farmers pay Evides only for water use (0.6 E/m³).

Pipeline operates at a loss, no extension foreseen.

Conclusions & discussion

- **Adaptation or maladaptation?** Measures increase availability and demand (there is some water pricing) and do not appear financially sound.
- **Adaptive management?** Experiment in Tholen; Water farming experiment failed. Participation? Water farming: citizen control, other 2 partnership & advisory role. Bioregional scale, yes. Polycentricity, yes?
- **Participation could be improved -> citizen/farmer control and financing?**