



**Ecologic Institute**  
Science and Policy  
for a Sustainable World



# Addressing the impact of droughts and flooding on agriculture - policy options and best practices

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# Introduction



WADKlim



Learning from past (Interreg DROP, BMBF STEER) and ongoing research projects (BMBF Klimawerk, UBA WADKlim, HEU GOVAqua)

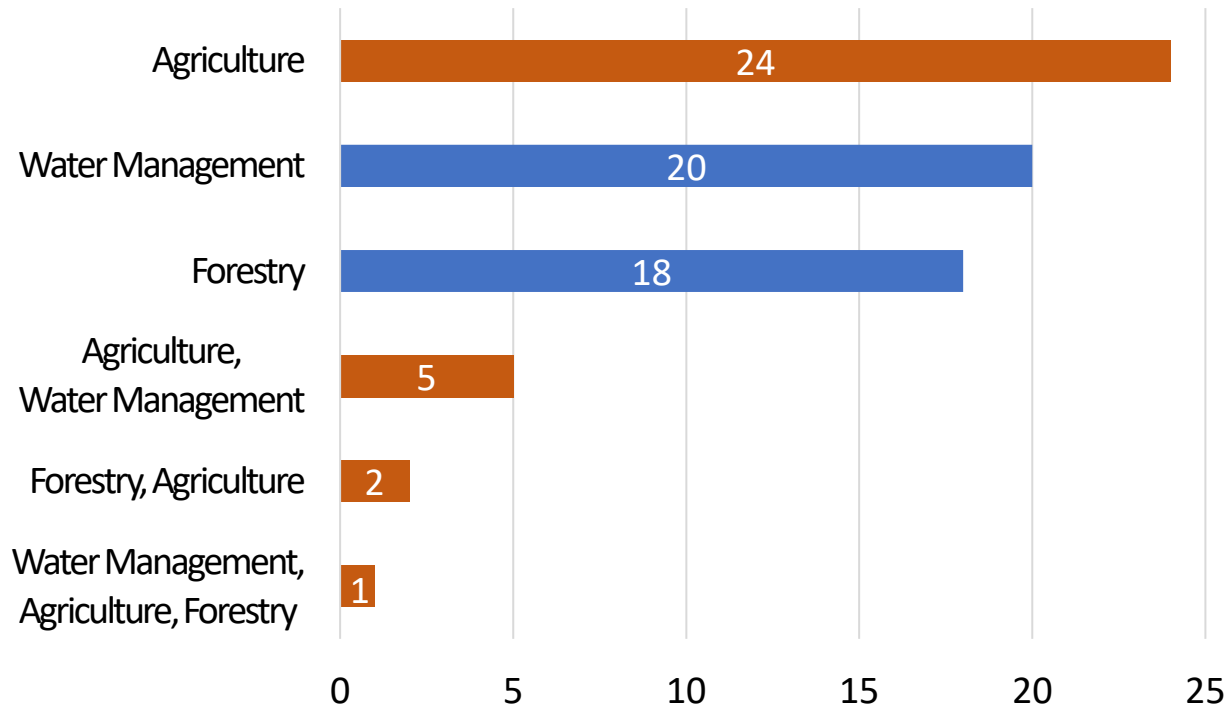
- I. Sustainable management of the regional landscape water balance is essential to ensure resilient agroecosystems.
- II. The portfolio of relevant adaptation measures in rural landscapes to tackle water scarcity and flooding directly or indirectly is rather large. However, the responsibility for the implementation rests on the shoulders of different sectors.
- III. Cross-sectoral coordination and cooperation is essential: sustainable management of the regional landscape water balance requires cooperation between different stakeholders of different sectors. Innovative governance instruments and approaches are needed.

# 1<sup>st</sup> Example: Catalogue of water retention measures

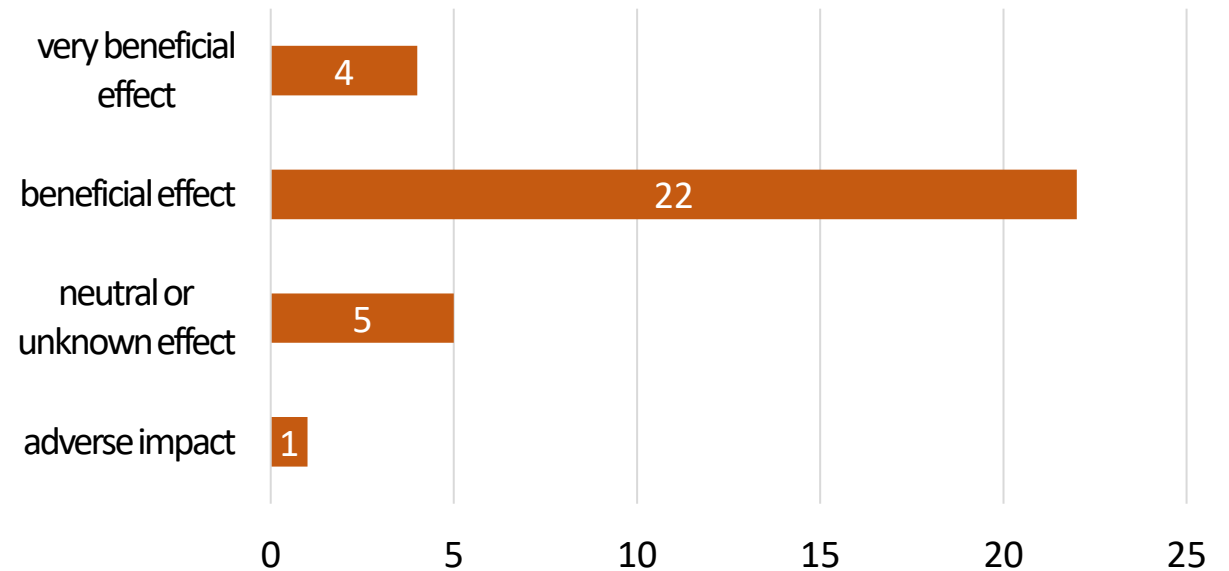
- **Aim:** Is intended to provide stakeholders with a decision-making basis for the implementation of landscape water retention measures in rural areas.
- **Definition:**
  - Landscaping and soil conservation measures that improve water storage and retention capacity in the landscape to increase water availability for dry periods.
  - Only consideration of water retention measures with a lasting, i.e. not one-time, effect on water supply.

# 1<sup>st</sup> Example: Catalogue of water retention measures

Count of measures per sector (n=70)



Count of agricultural measures with effect on flood protection (n=32)

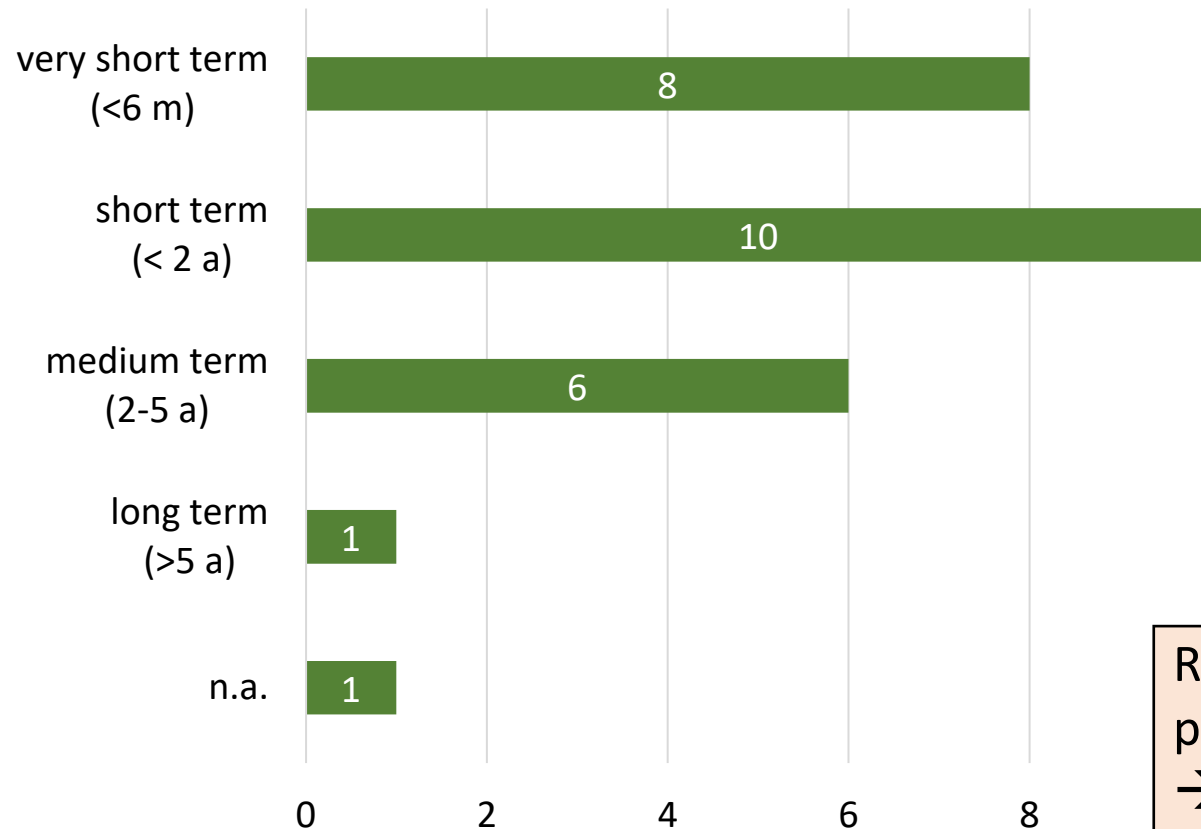


Source: WADKlim 2023

Catalogue water retention measures (n=70)  
→ 24+8 agricultural measures  
→ 26 agricultural measures for water retention with (very) beneficial effects on flood protection

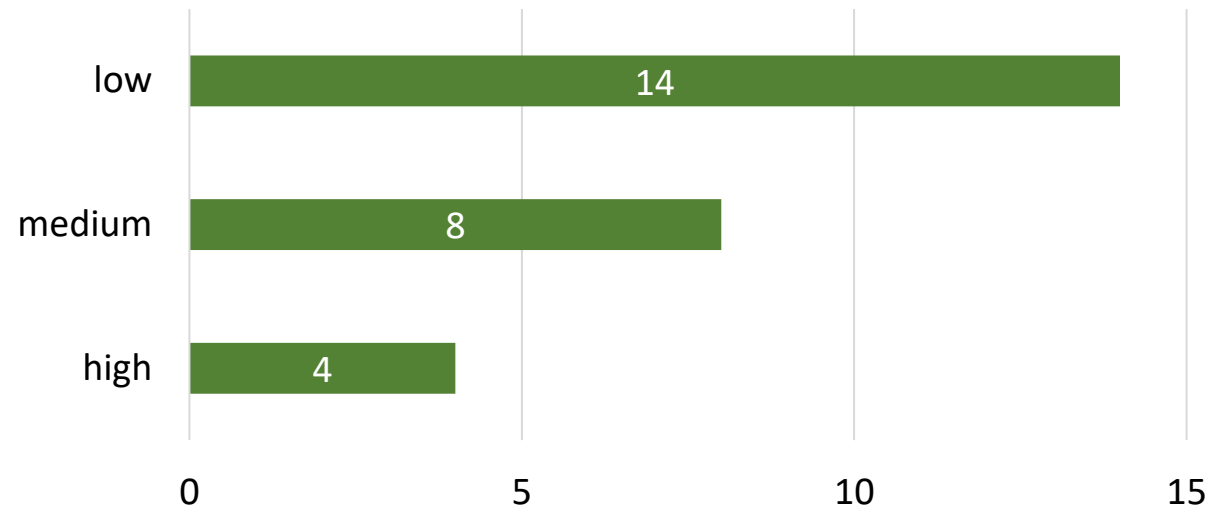
# 1<sup>st</sup> Example: Catalogue of water retention measures

**Duration until effect of agricultural measures with a beneficial effect on flood protection (n=26)**



Source: WADKlim 2023

**Costs for planning and construction of agricultural measures with a beneficial effect on flood protection (n=26)**



Retention measures in agriculture beneficial for flood protection (n=26):  
→ 18 measures with (very) short duration until effect  
→ 14 measures with low costs for planning and construction

# Catalogue of measures

11 measures in Agriculture with:

- a beneficial effect on water scarcity and droughts and flood protection

AND

- low costs for planning and construction

AND

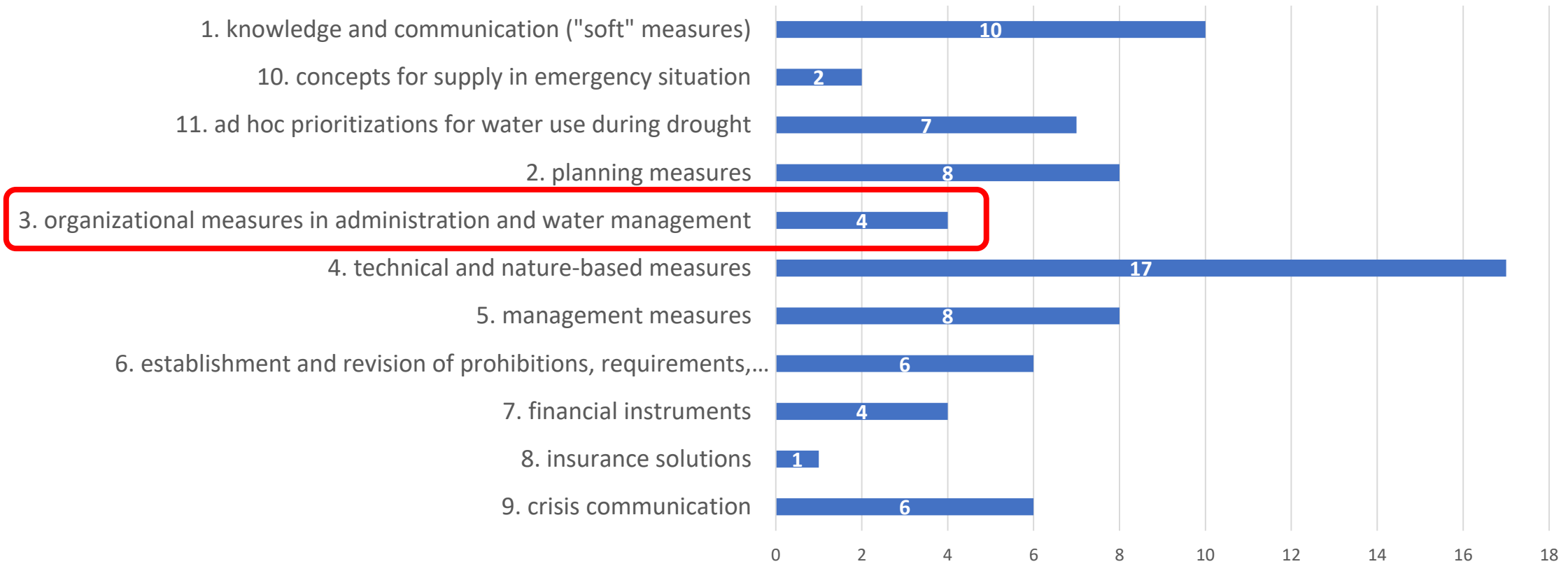
- a (very) short duration until effect

Measure	Sector	Effect on flood protection	Costs for planning and construction	Duration until effect
Adapted selection of crops and crop rotation for better water retention	Agriculture	+	low	short term (< 2 a)
Early sowing	Agriculture	+	low	very short term (< 6 m)
Meadows and pastures	Agriculture	+	low	short term (< 2 a)
Controlled traffic farming	Agriculture	+	low	short term (< 2 a)
Erosion protection-oriented flow division through keyline design	Agriculture	+	low	short term (< 2 a)
Creation of vegetated drainage swales	Agriculture	+	low	very short term (< 6 m)
Slope parallel cultivation	Agriculture	+	low	very short term (< 6 m)
Reduced stocking density	Agriculture	+	low	short term (< 2 a)
Creation of infiltration trenches	Agriculture	+	low	short term (< 2 a)
Buffer strips and hedges	Agriculture, Water management	+	low	short term (< 2 a)
Closure, deconstruction, or control of drainages or drainage ditches	Water management, Agriculture	+	low	very short term (< 6 m)

Source: WADKlim 2023

## 2<sup>nd</sup> Example: Measures to avoid/mitigate water use conflicts

Number of measures per category



(Typology based on EEA 2020)

Source: WADKlim 2023

→ Predominately technical measures and NBS  
→ Only 4 organizational measures to improve cooperation and collaboration with other sectors.

# 3<sup>rd</sup> example: Water advisory boards



## Overall Objective:

Support **balancing** the **interests** of water-using **sectors** and **avoid or mitigate water-related conflicts**

Support **agreement of strategic goals or measures**

Recommend regional **distribution of water or localization of measures**

Strengthen **collaboration** on regional needs

**Create trust**

**Strengthen knowledge base**



## Strengths

- **Promotion of compromises** in case of conflict on water uses
- **Flexible instruments** that can be adapted to the respective regional context and can sustainably improve intersectoral cooperation and coordination
- Applicable to both **short-term and medium- to long-term** problems
- Can have **different thematic orientations** with either more political or practical objectives

## Weaknesses

- All sectors involved **must have substantial interest** in the collaboration
- **Additional resources** are needed in terms of knowledge, personnel at the municipal level
- **Overlap with existing processes** can be a hindrance. Making the intersectoral approach permanent is a challenge. An **administrative anchor or mandate is needed**
- **Must not be an “alibi event”** (diffusion of responsibility)
- **Susceptible to being manipulated** by individuals or institutions

# Water advisory boards

## Opportunities

- Water advisory councils are proposed in the National Water Strategy
- **There is currently a high demand for intersectoral cooperation to address the issue of climate extremes. Can be applied for both situations of too much and too little water.**
- In some regions, it is possible to build on existing networks and develop them further in a targeted manner
- Lower water authorities could act as caretakers

## Risks

- Other processes (e.g. WFD, FD) may be in competition
- Linkage with local structures (e.g. institutions, networks) is essential
- New issues enter the political agenda and can shift the focus in municipalities

# Take-away messages



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- I. Sustainable management of the regional landscape water balance is essential to ensure resilient agroecosystems.
- II. Adaptation measures in agriculture promise to have a greater impact when applied in combination with adaptation measures of other sectors.
- III. Innovative governance instruments on regional cross-sectoral coordination and cooperation, such as water advisory boards, need to be put in place and need to be linked with existing policy instruments (e.g. RDPs, RBMPs; FRMPs) in order to adapt to droughts and flooding at the same time.

# References



WADKlim



- EEA (2020): Rationale, approach and added value of key type of measures for adaptation to climate change. European Topic Centre on Climate Change Impacts, Vulnerability and Adaptation (ETC/CCA) Technical Paper 2020/2. DOI: 10.25424/cmcc/key\_type\_of\_measures\_for\_adaptation\_to\_climate\_change\_2020
- WADKlim Consortium (2023): <https://www.ecologic.eu/17597>