

# The 2022 European Drought Needs to be a Turning Point for Drought Risk Management

## An Overview from Drivers to Impact and Management

Riccardo Biella; Shyrokaya Anastasiya; Ionita Monica  
Drought in the Anthropocene (DitA)



DROUGHT IN THE  
ANTHROPOCENE  
NETWORK



Centrum för naturkatastrofslära



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# Drought in the Anthropocene (DitA) network of Panta Rhei



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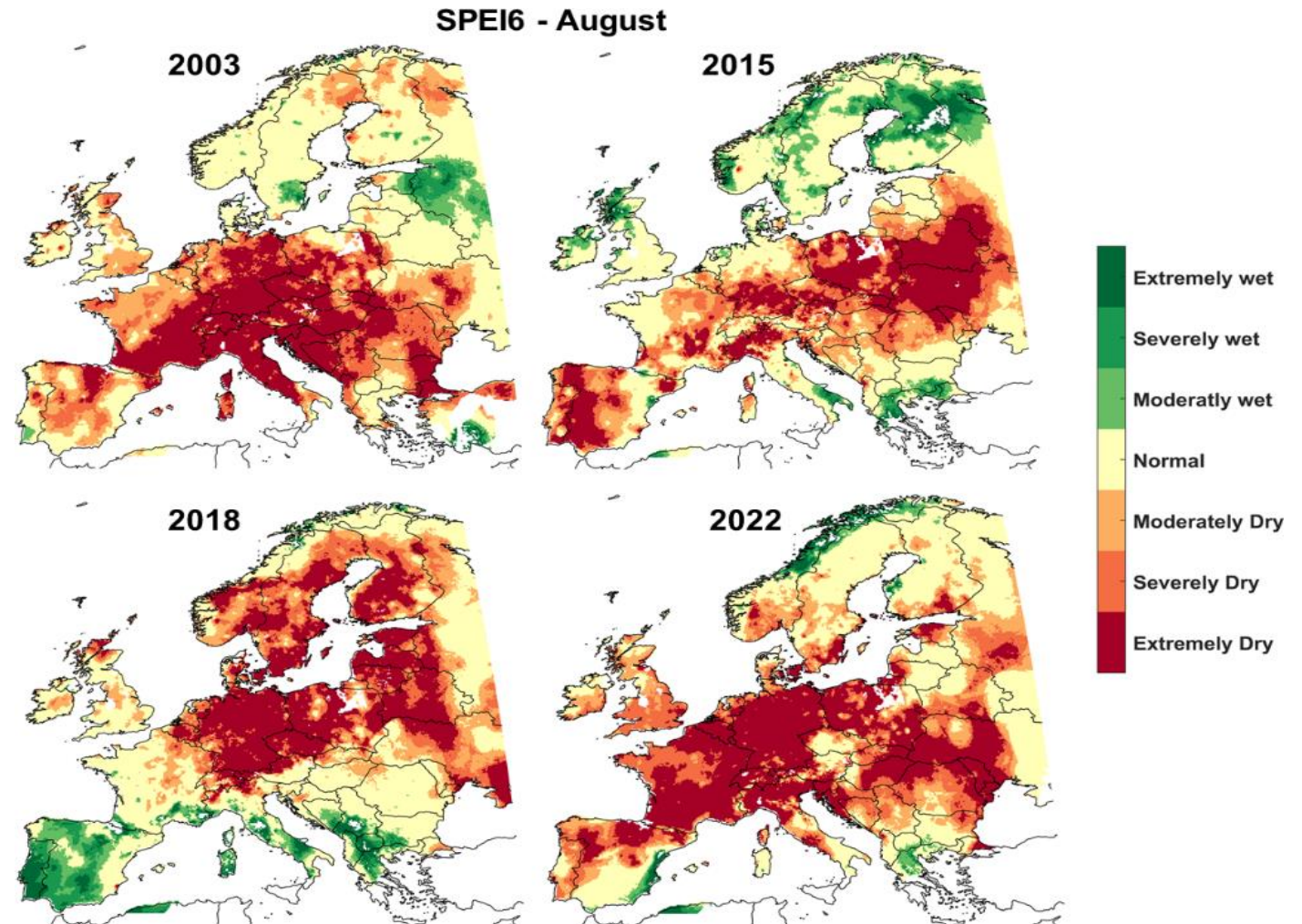
Alencar Pedro; Bakke Sigrid J; Barker Lucy J; Bláhová Monika; Blauhut Veit; Ceola Serena; Cid Daniela; Di Baldassarre Giuliano; Hamed Raed; Hauswirth Sandra ; Krakovska Svitlana; Lam Marleen; Llasat Maria Carmen; Madruga de Brito Mariana; Maskey Shreedhar; Matanó Alessia; McGrane Scott J; Moccia Benedetta; Nagavciuc Viorica; Pechlivanidis Ilias; Ridolfi Elena; Roy Tirthankar ; Russo Fabio; Stenfors Elin; Sutanto Samuel; Tallaksen Lena M; Teutschbein Claudia; Todorovic Andrijana; Tootoonchi Faranak; Trambauer Patricia; Van Tiel Marit; van Loon Anne; Vidal Jean Philippe; Vignola Raffaele; Wendt Doris



# DROUGHTS IN EUROPE

Increasing:  
Extent  
Frequency  
Intensity  
Duration

Continent-  
wide issue



# THE STATE OF DROUGHT RISK MANAGEMENT IN EUROPE

## NO UNIFIED DROUGHT RISK MANAGEMENT POLICY

THE EU RELIES ON:

- WATER FRAMEWORK DIRECTIVE (from 2000)
- A SERIES OF DROUGHT-RELATED COMMUNICATIONS

Ambitious... but non-binding

22.12.2000

EN

Official Journal of the European Comm...

...ication is obligatory)

...CTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL  
of 23 October 2000  
establishing a framework for Community action in the field of water policy

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE  
EUROPEAN UNION,

Having regard to the Treaty establishing the European  
Community, and in particular Article 175(1) thereof,

Having regard to the proposal from the Commission (1),

and the opinion of the Economic and Social Committee,

and in the light of the joint text  
approved by the Conciliation Committee on 18 July 2000,

Whereas:

(1) Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such.

(2) The conclusions of the Community Water Policy...

(3) The declaration of the Ministerial Seminar on groundwater held at The Hague in 1991 recognised the need for action to avoid long-term deterioration of freshwater quality and quantity and called for a programme of actions to be implemented by the year 2000 aiming at sustainable management and protection of freshwater resources. In its resolutions of 25 February 1992 (2), and 20 February 1995 (3), the Council adopted an action programme for groundwater protection. In 1979, the Council adopted Council Directive 80/68/EEC of 16 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances (4), as part of an overall policy on freshwater protection.

(4) Waters in the Community are under increasing pressure from the continuous growth in demand for sufficient quantities of good quality water for all purposes. On 10 November 1995, the European Environment Agency in its report 'Environment in the European Union - 1995' presented an updated state of the environment report, confirming the need for action to protect Community waters in qualitative as well as in quantitative terms.

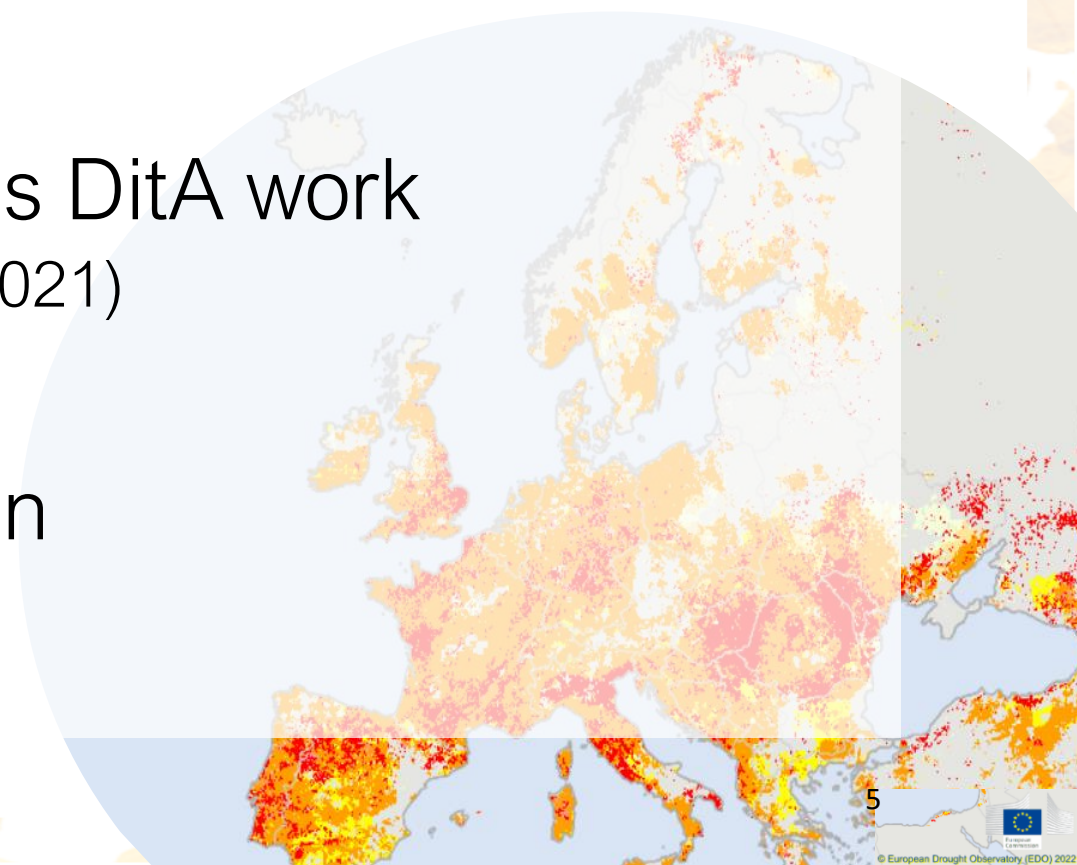
(5) On 18 December 1995, the Council adopted conclusions requiring, inter alia, the drawing up of a new framework Directive establishing the basic principles of sustainable water policy in the European Union and inviting the Commission to submit a proposal.

# OVERVIEW OF THE 2022 DROUGHT

Ongoing

Follow-up from previous DitA work  
(Blauhut et al. 2021)

Call for action



# SURVEY

...to water managers across Europe:

- Impact
- Preparedness
- Response
- Adaptation



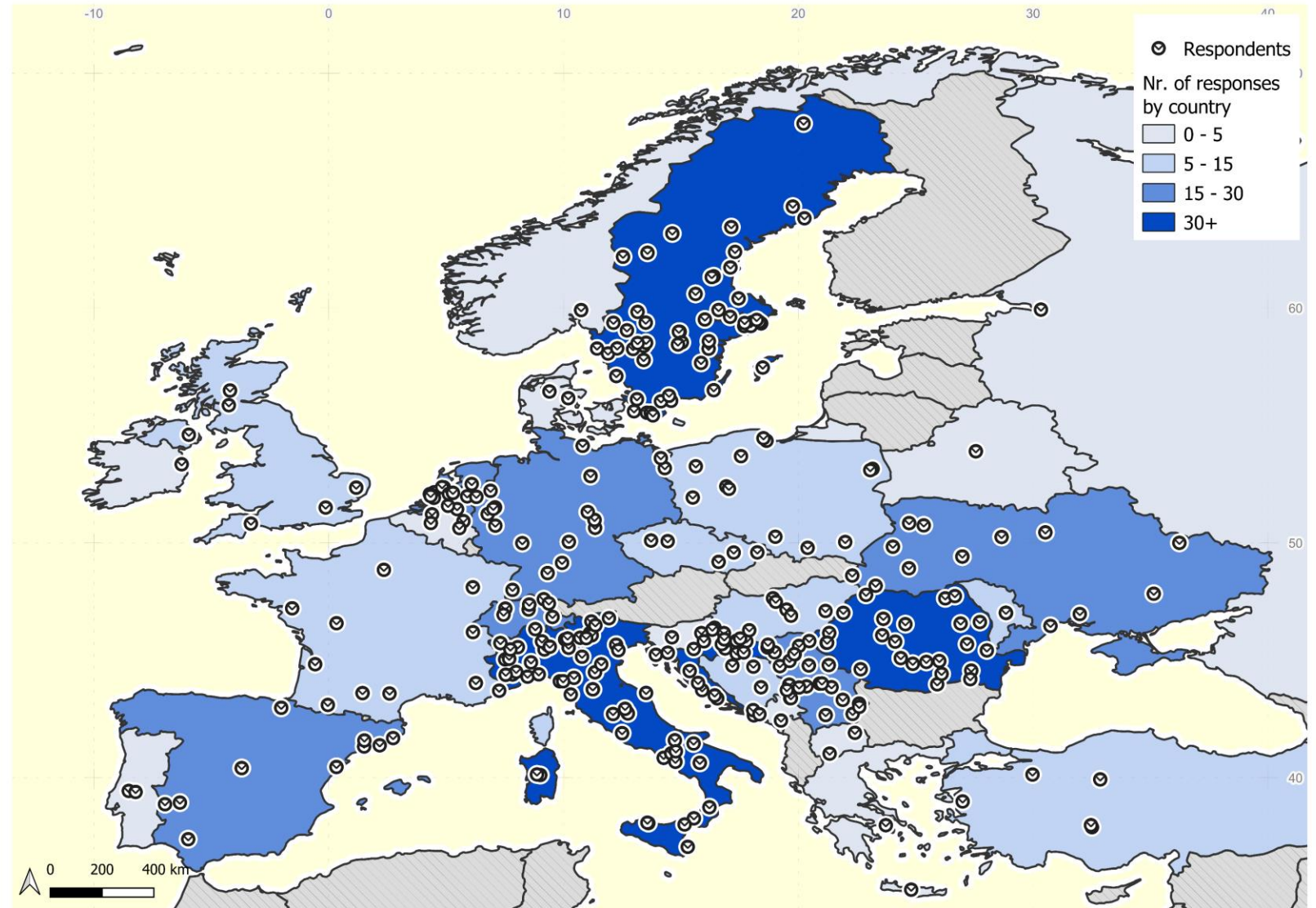


# SURVEY

19 languages

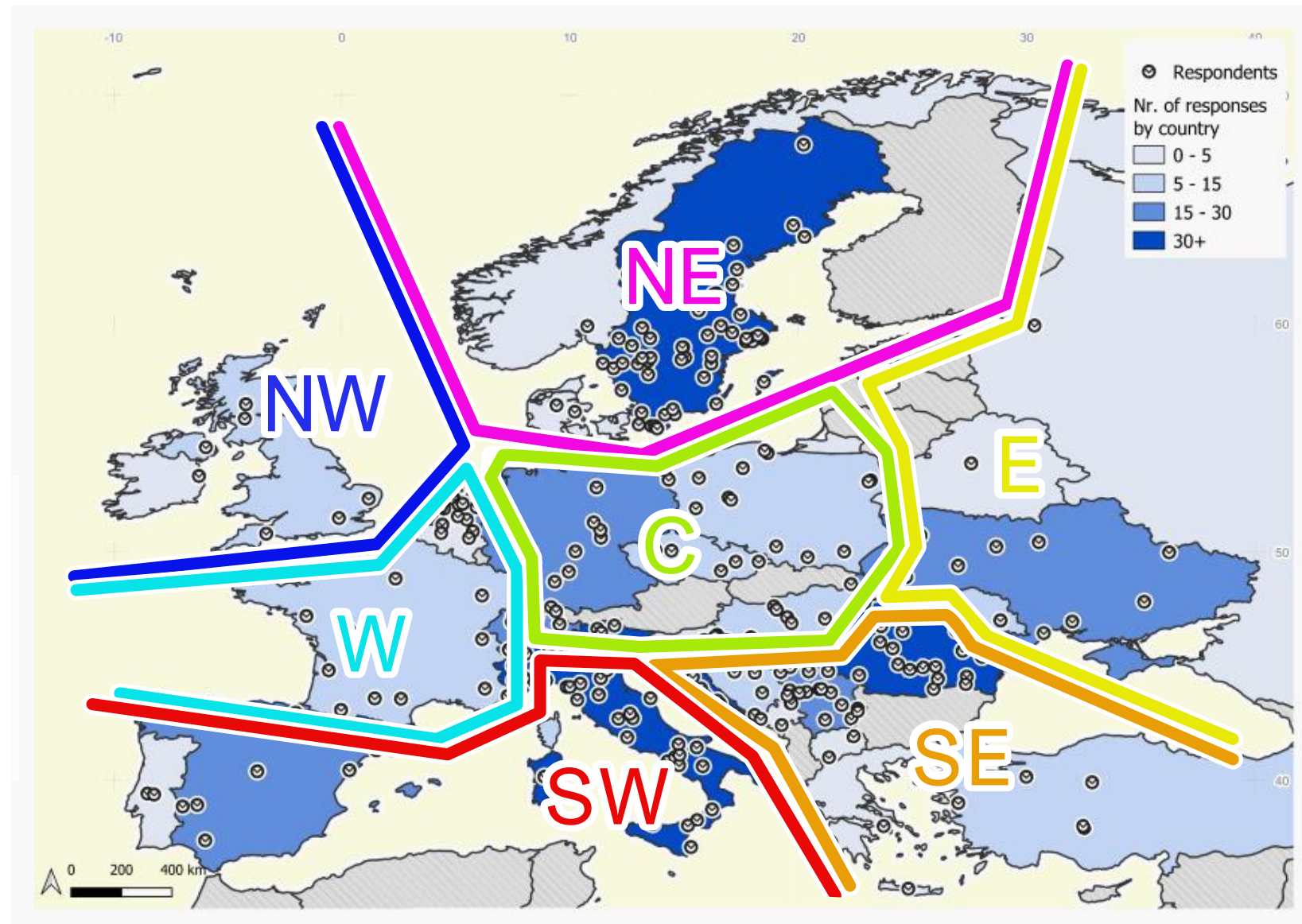
481 responses

30 countries



# SURVEY

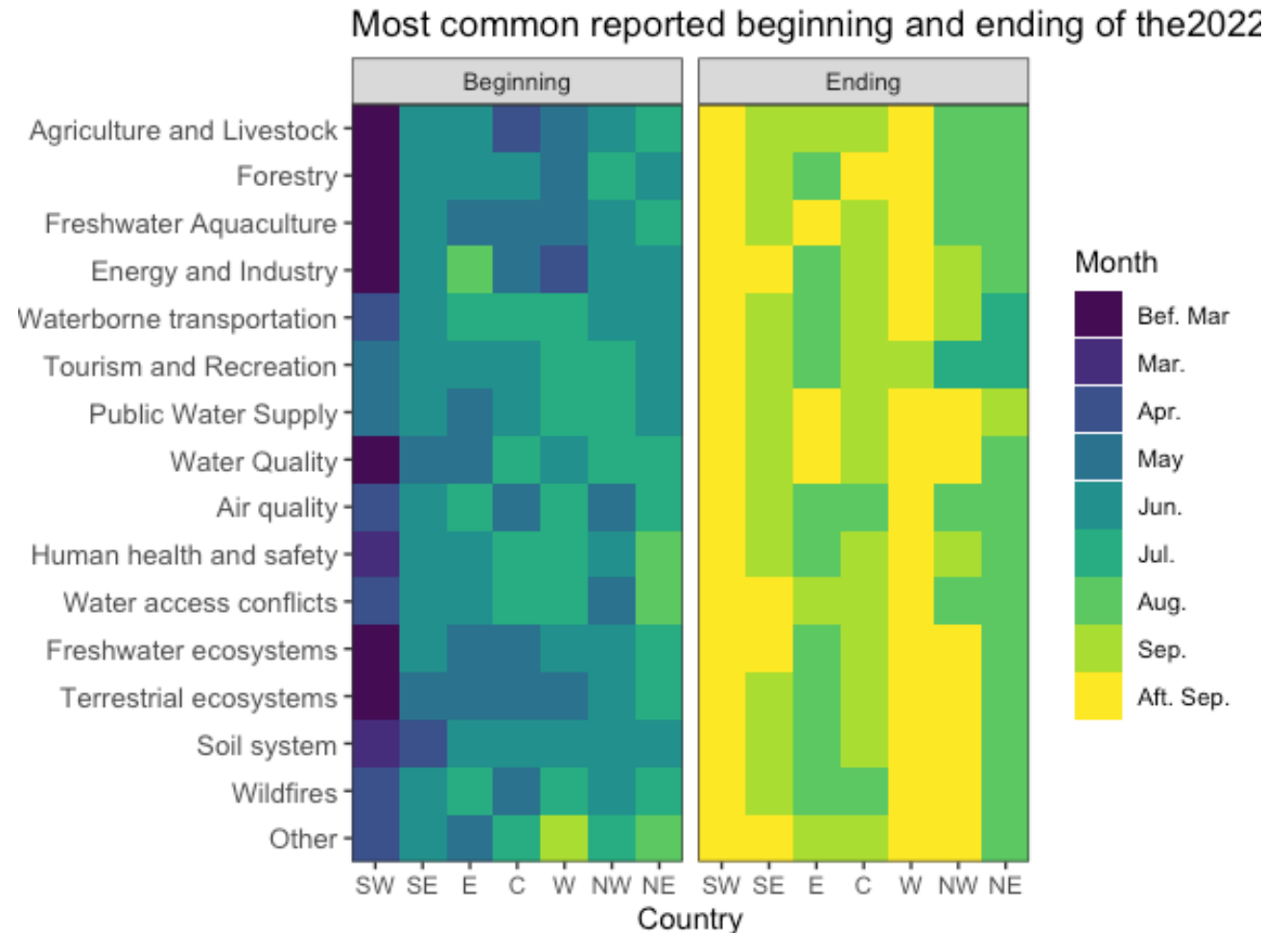
Regions





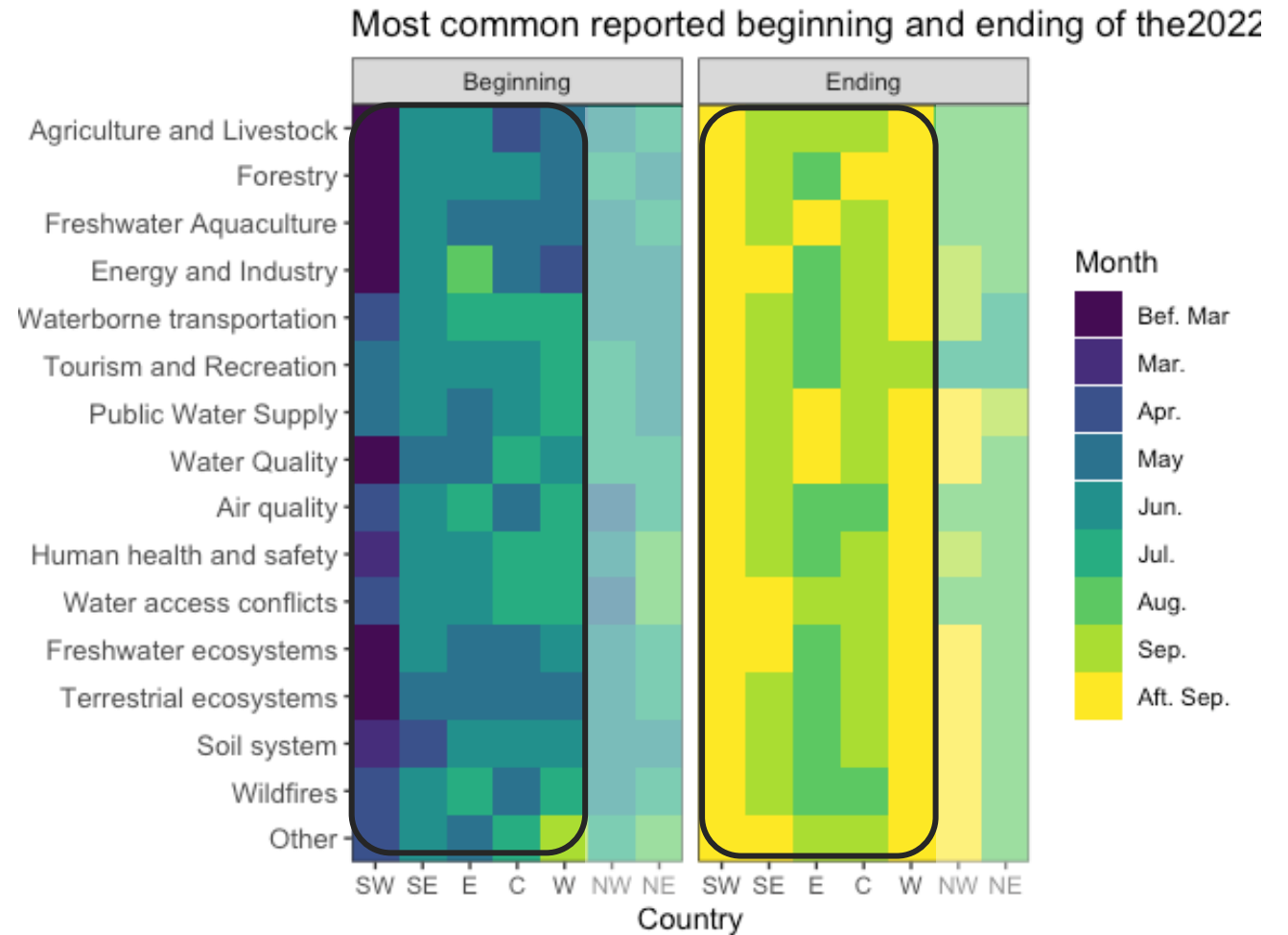
# IMPACTS: Duration

Start and end of the impact?



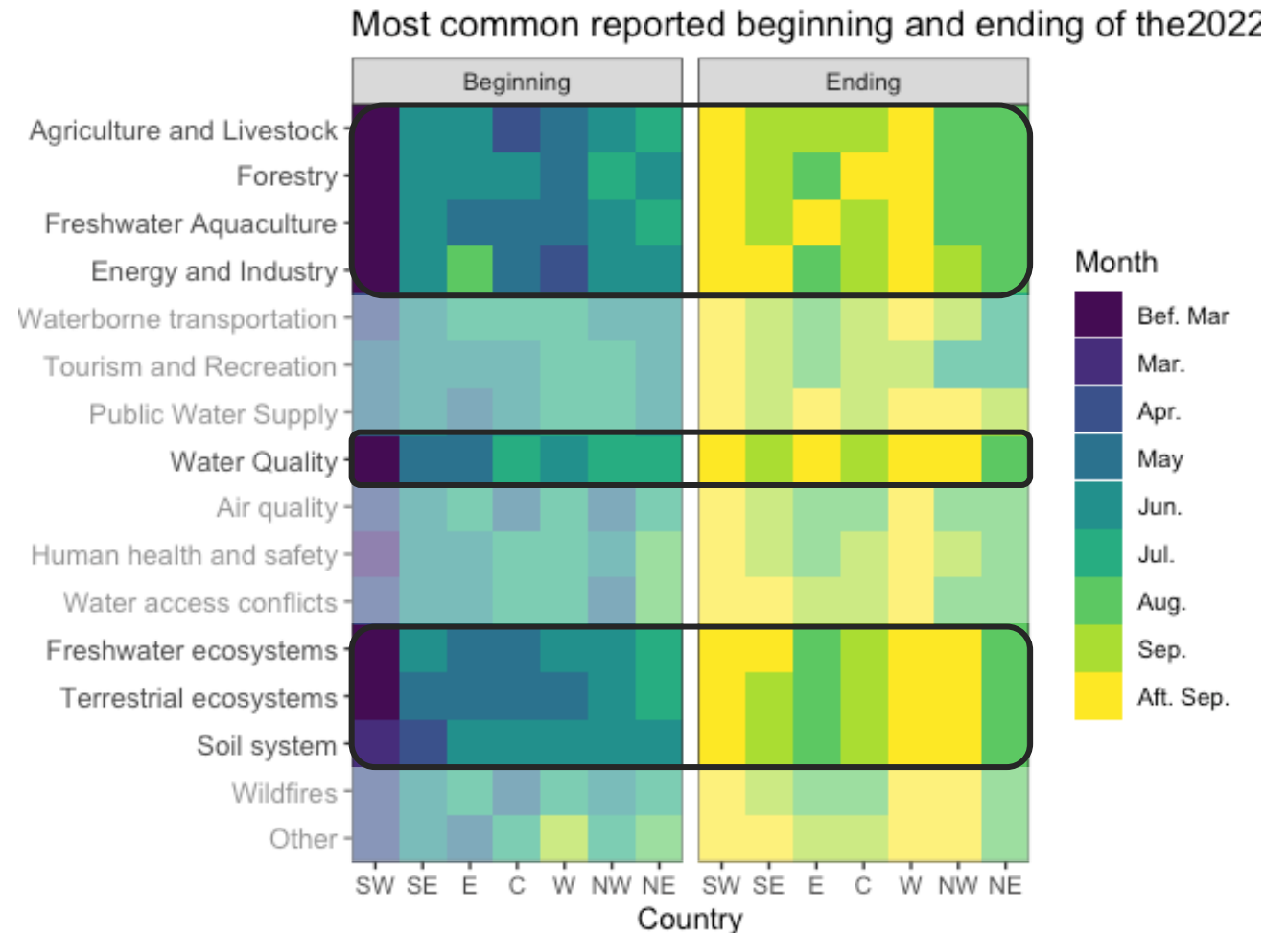
# IMPACTS: Duration

Start and end of the impact?



# IMPACTS: Duration

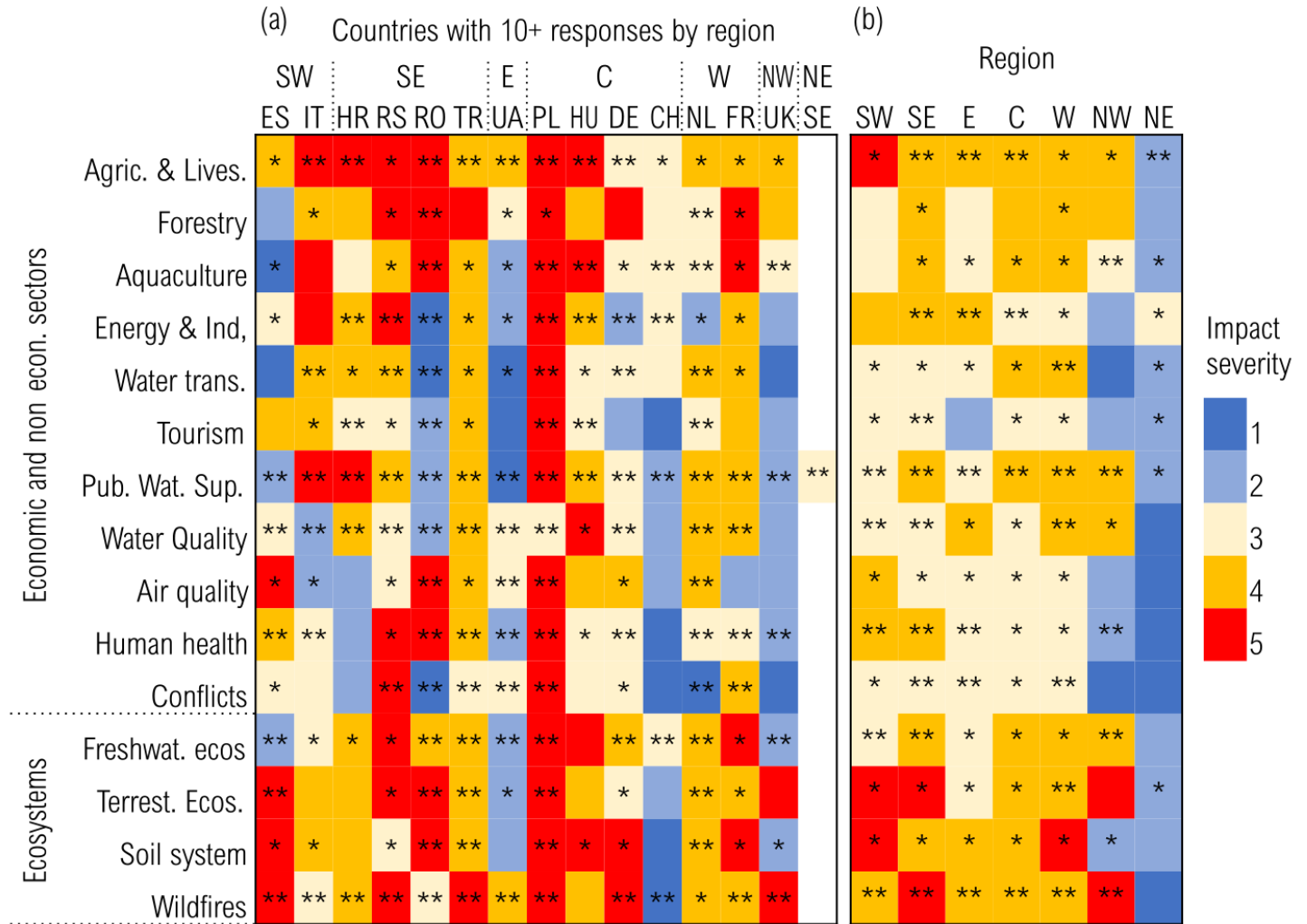
Start and end of the impact?





# IMPACTS: Prioritization

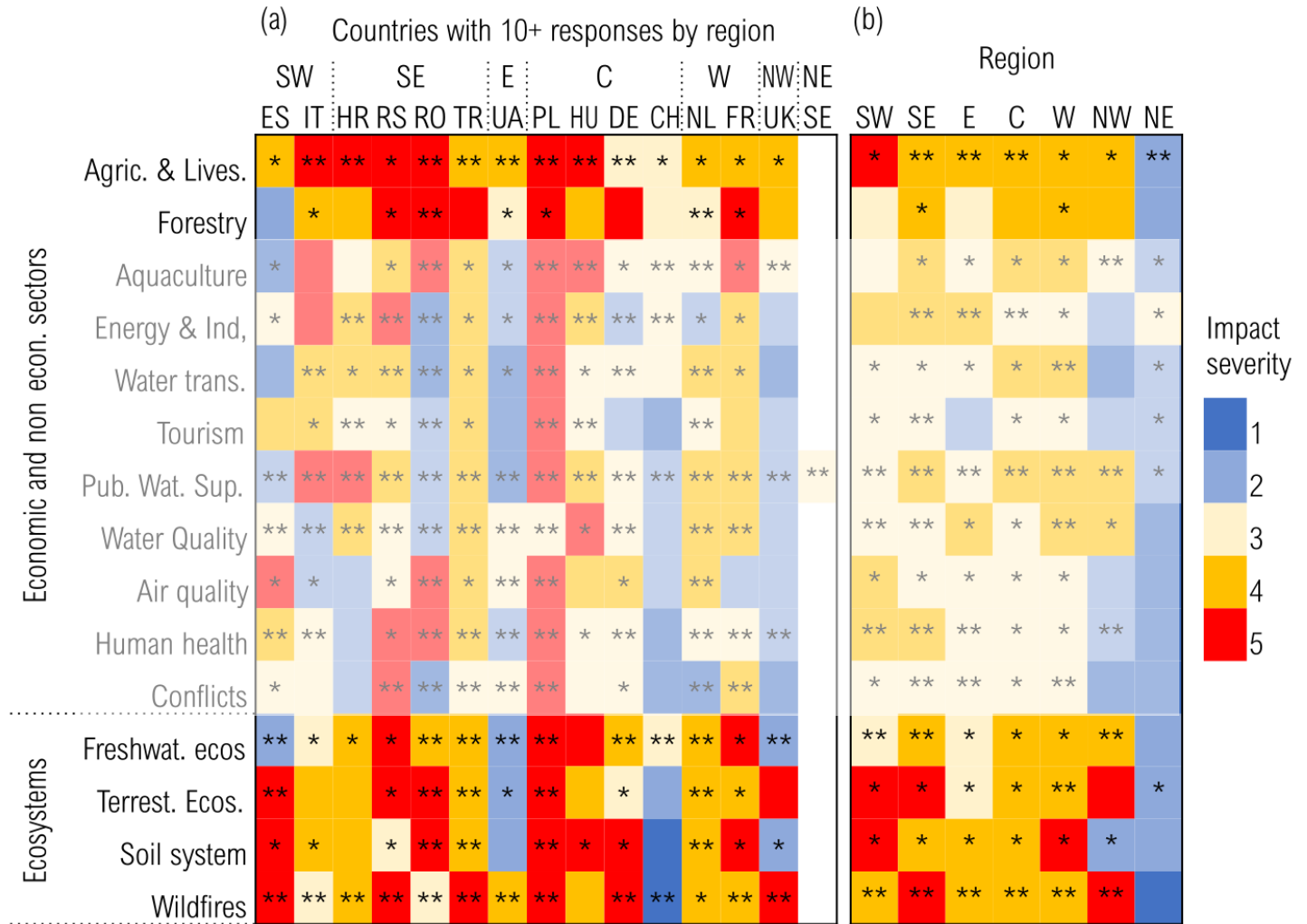
## Impact severity & Prioritization



Legend: \* Medium priority; \*\* High priority

# IMPACTS: Prioritization

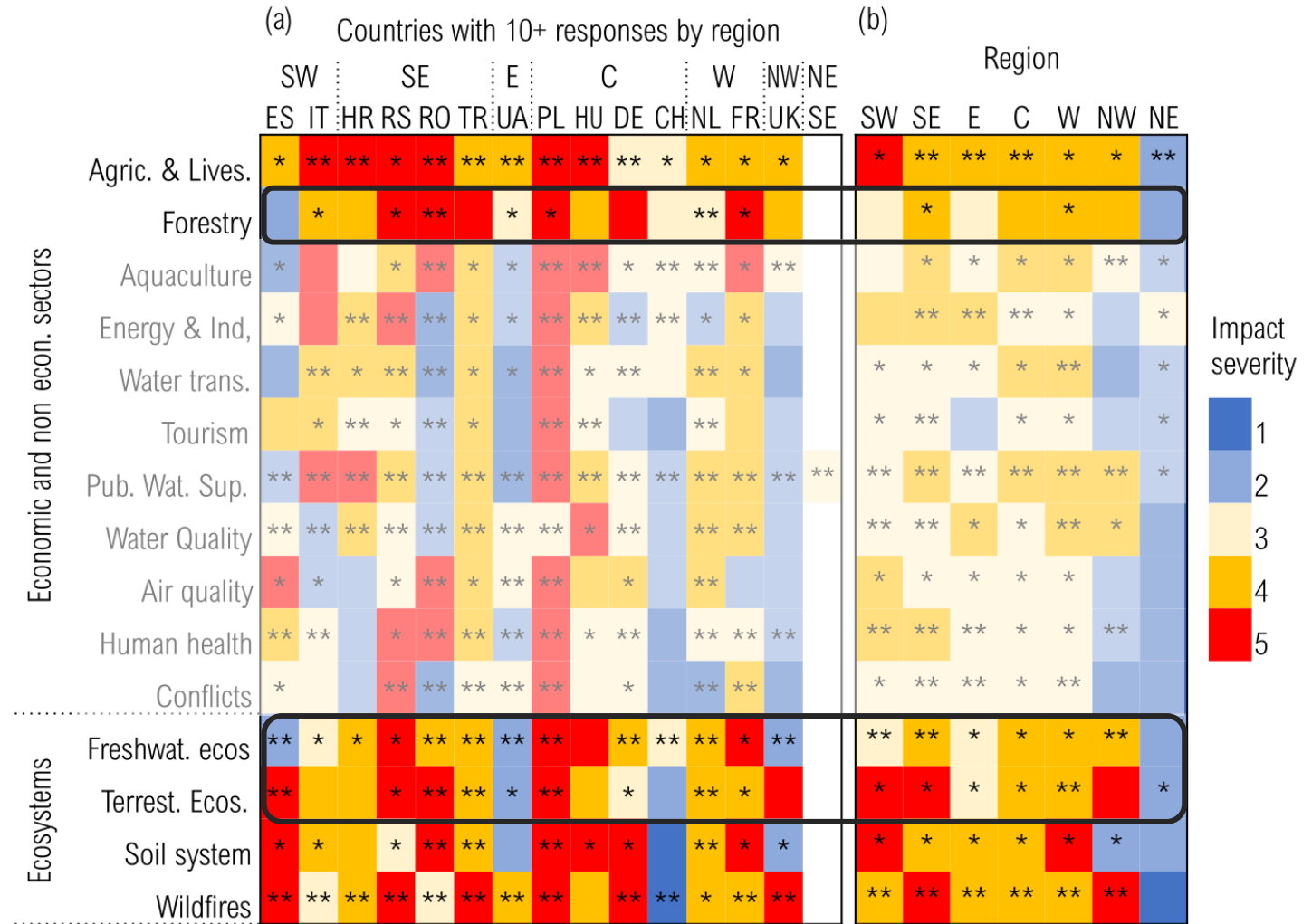
Most impacted



Legend: \* Medium priority; \*\* High priority

# IMPACTS: Prioritization

Most impacted  
&  
Low prioritization

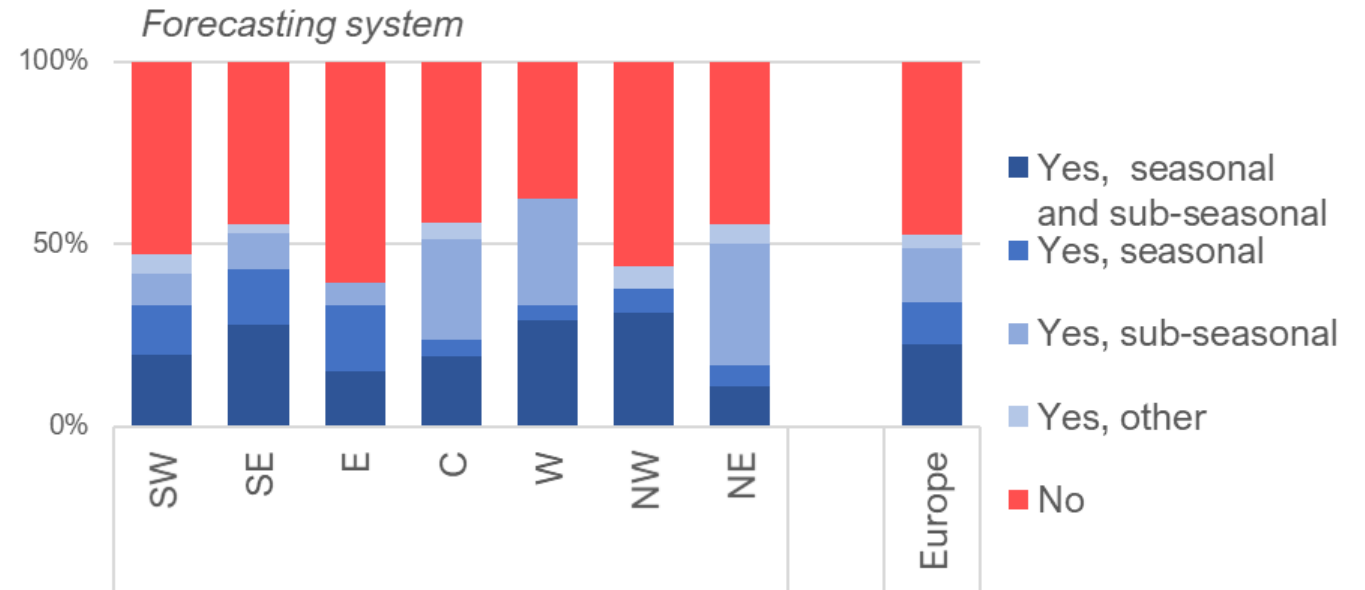


Legend: \* Medium priority; \*\* High priority

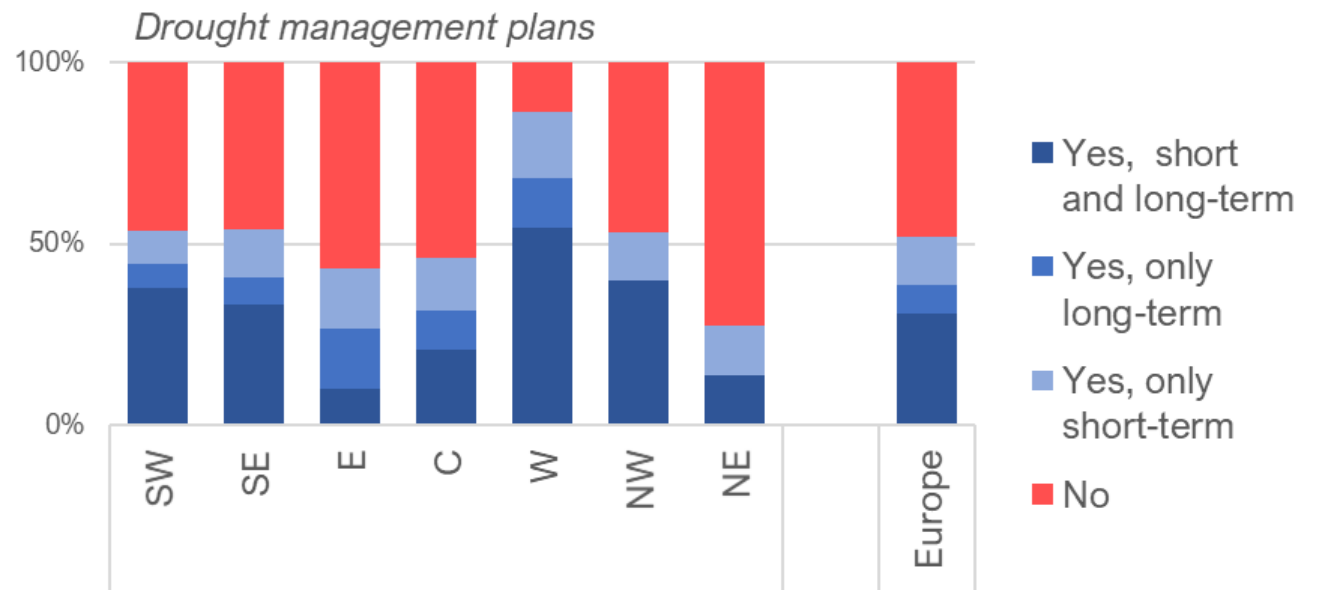


# PREPAREDNESS

Does your organization use a **forecasting system**?

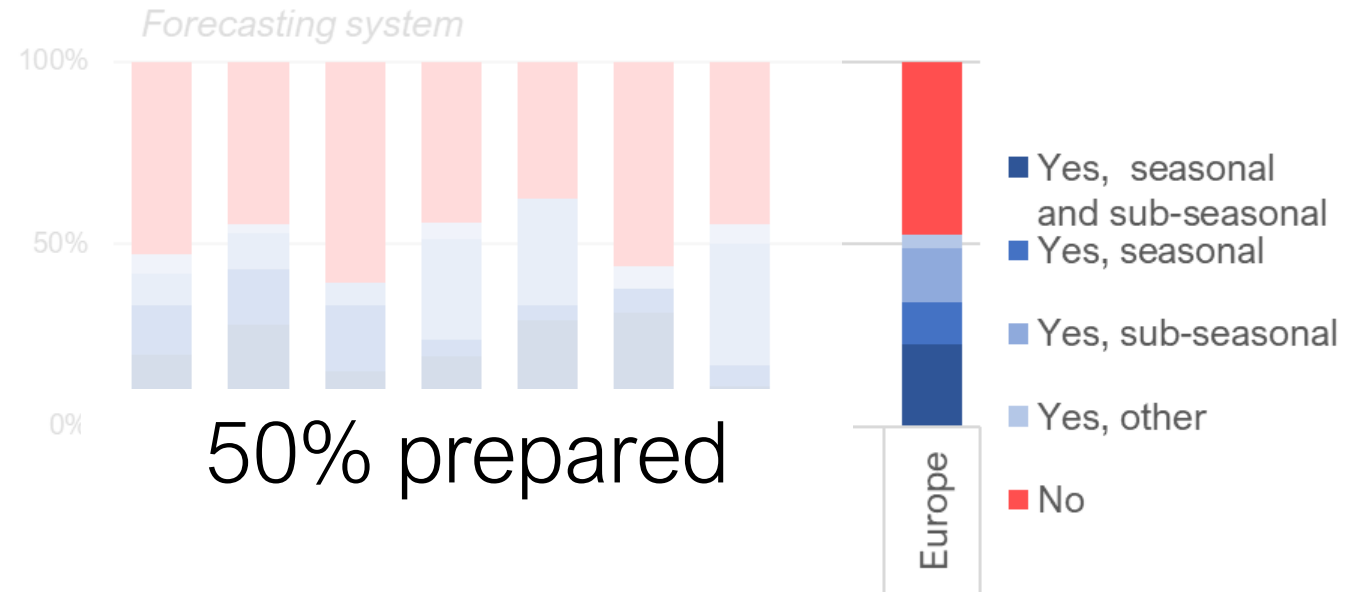


Does your organization have a **drought management plan**?

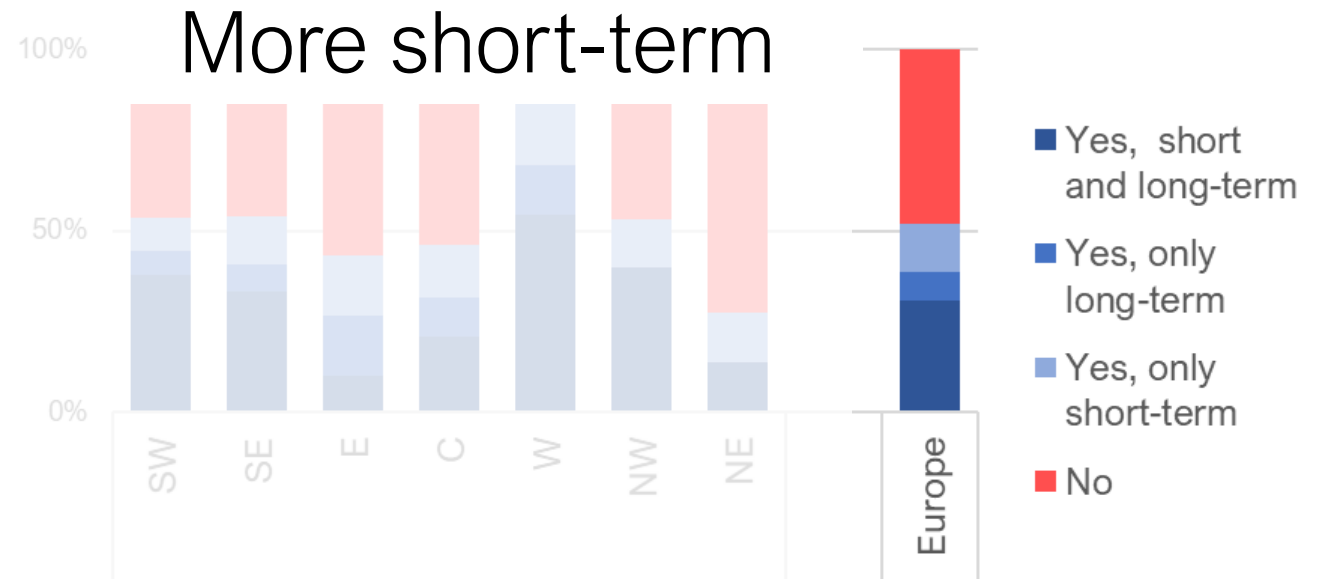


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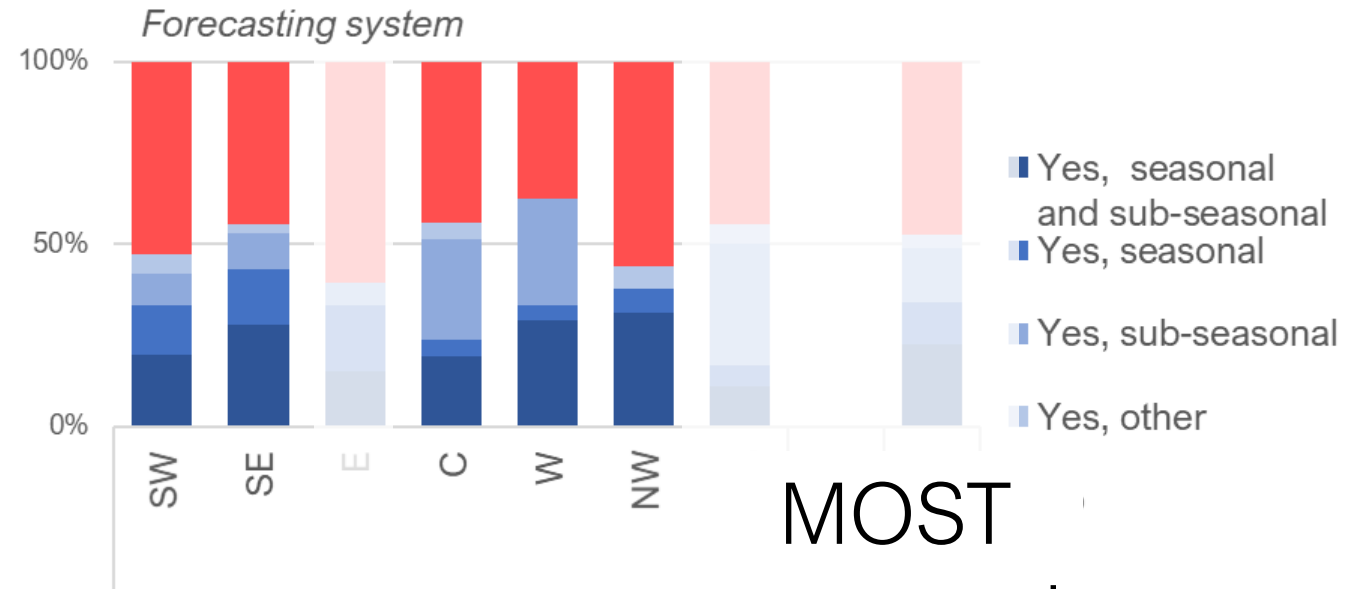


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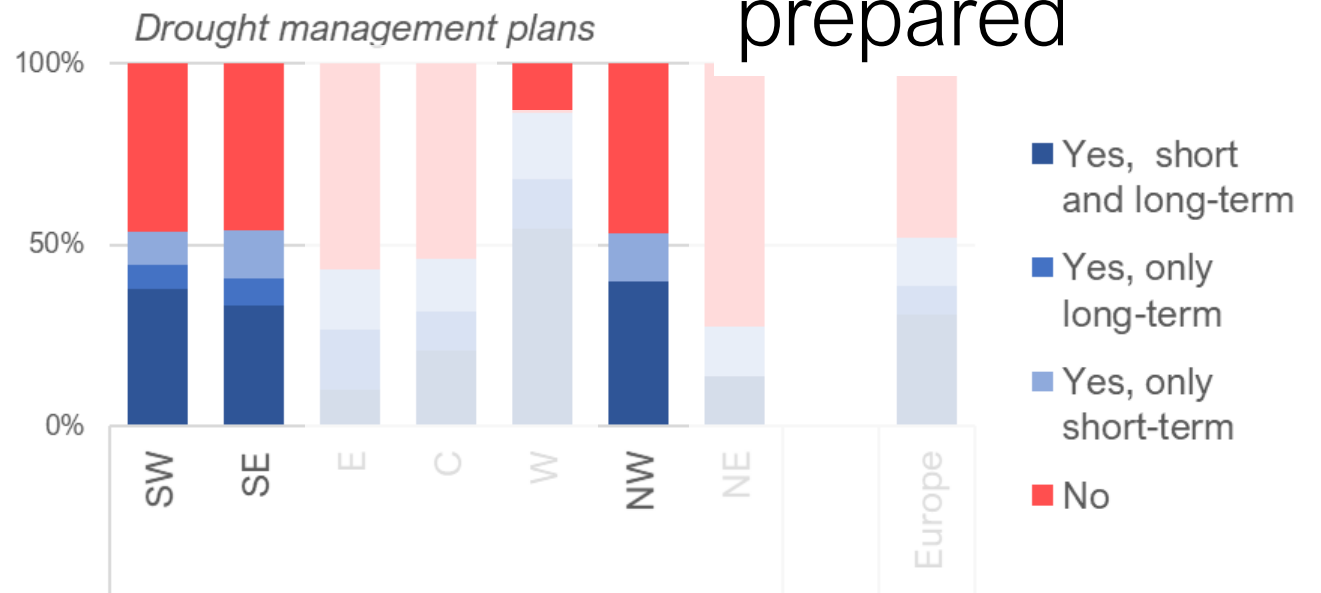
# PREPAREDNESS

Does your organization use a **forecasting system**?



**MOST prepared**

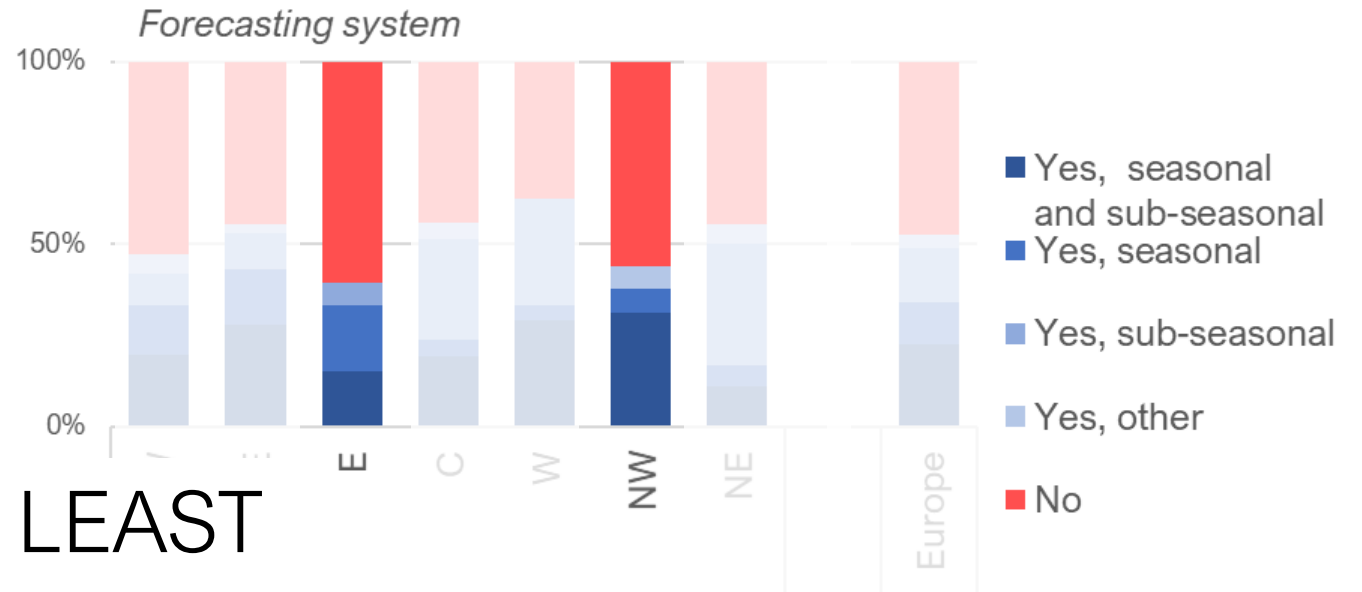
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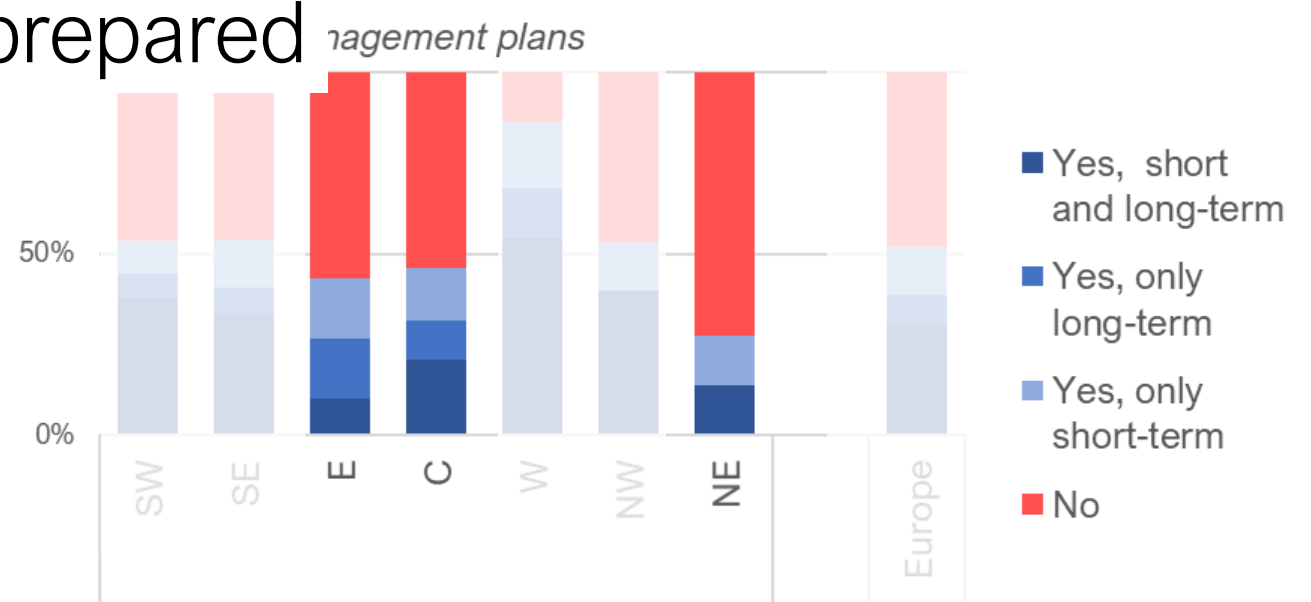
# PREPAREDNESS

Does your organization use a **forecasting system**?



LEAST  
prepared *management plans*

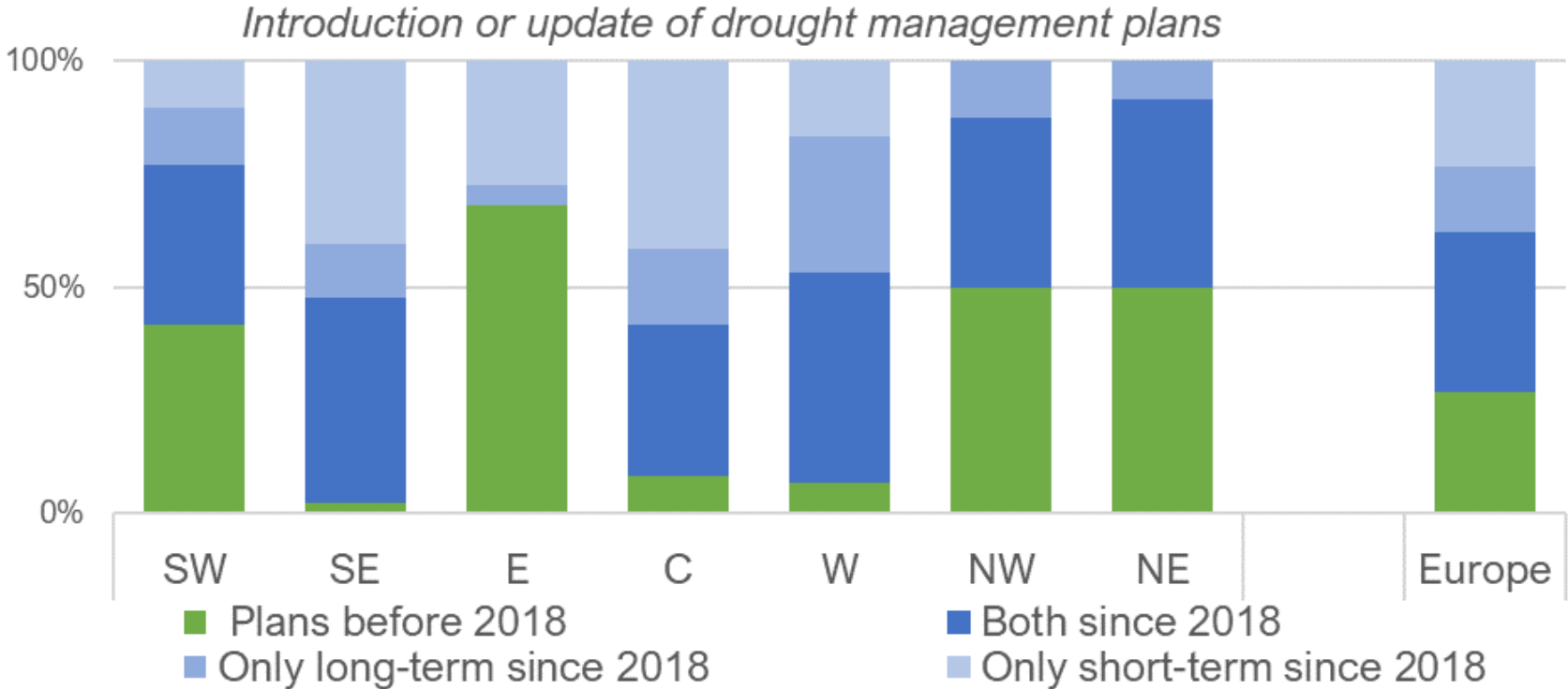
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# PREPAREDNESS



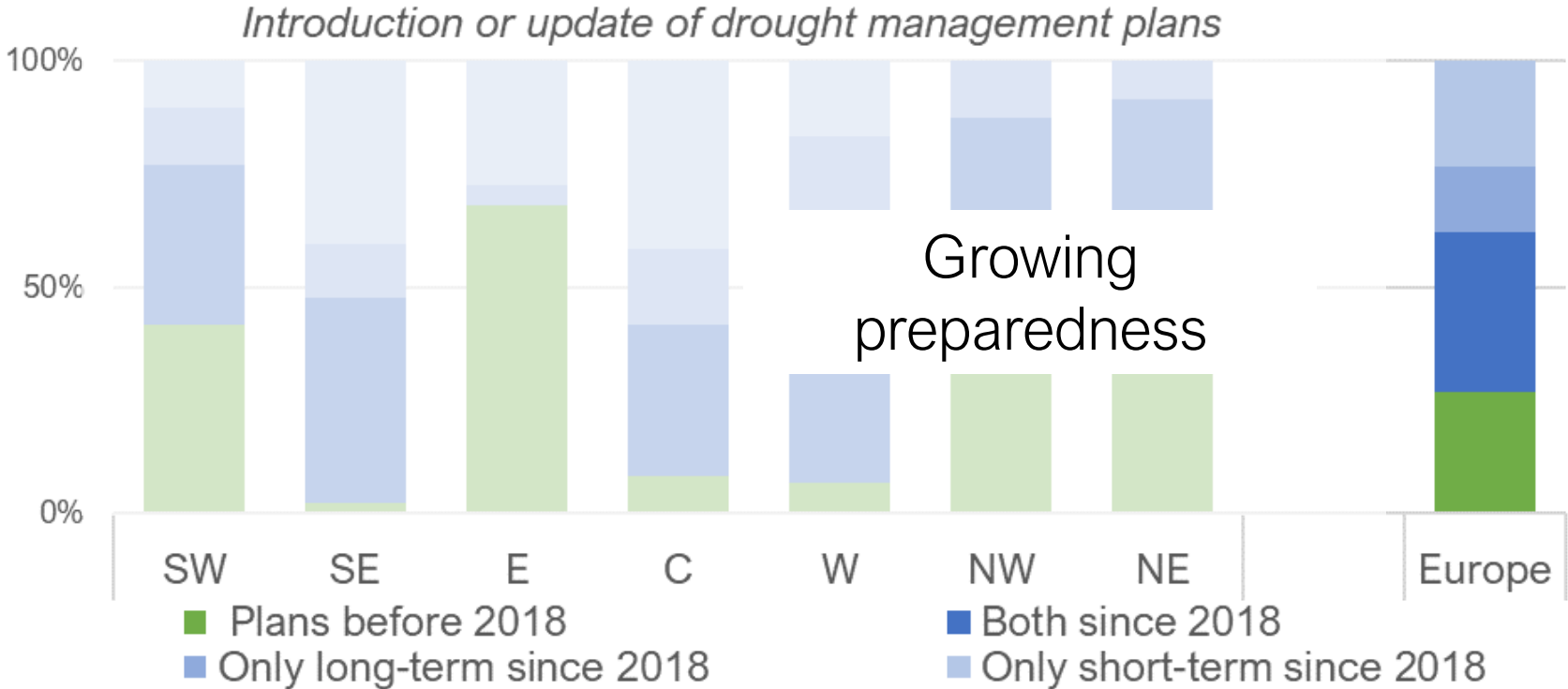
Has your organization introduced or updated its plans after 2018?



# PREPAREDNESS



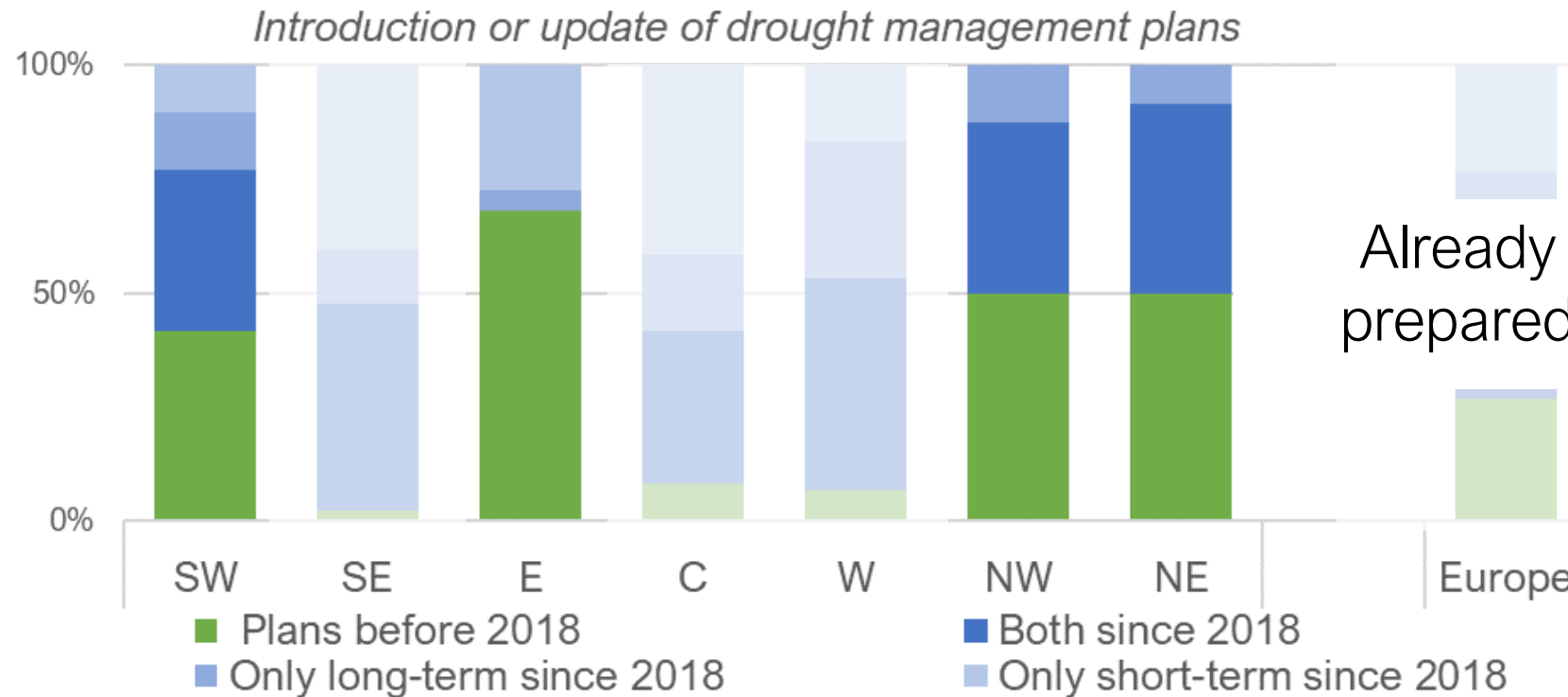
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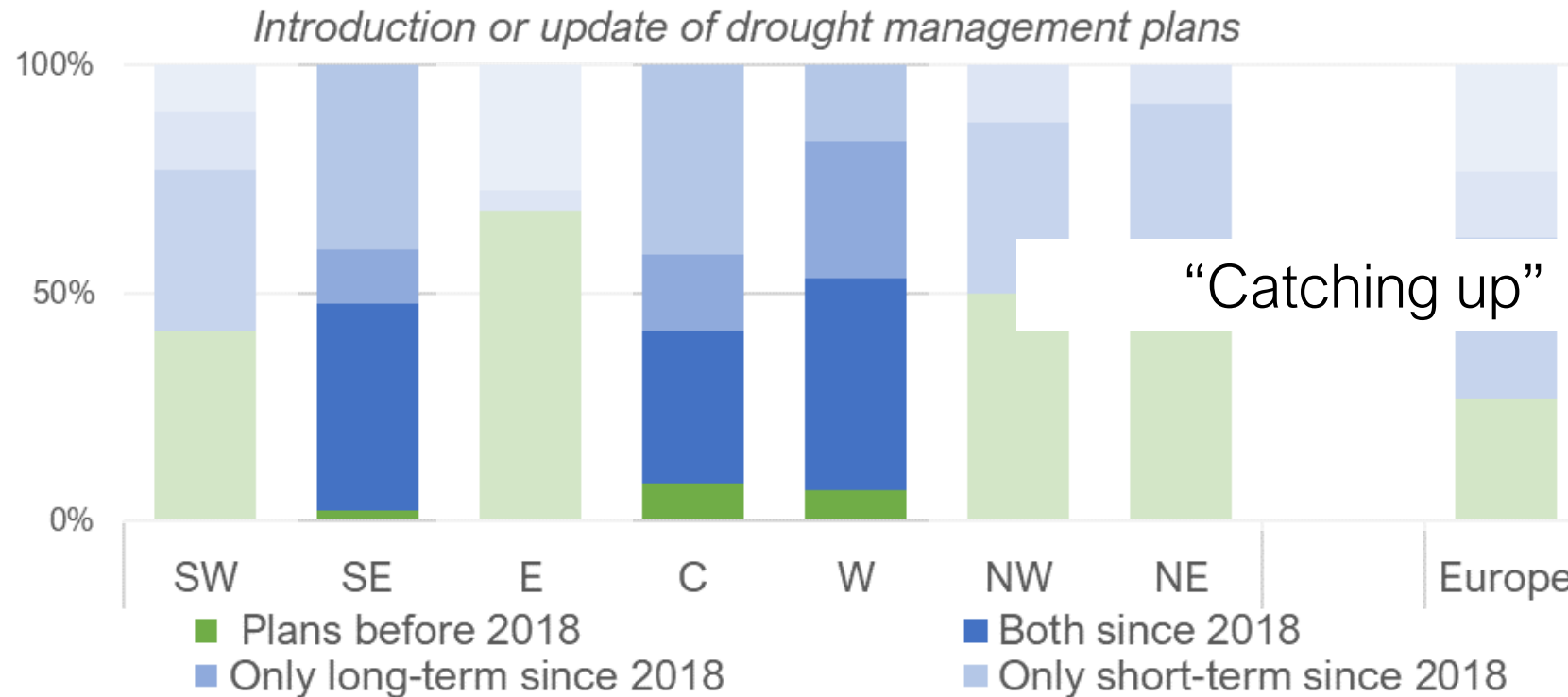




# PREPAREDNESS

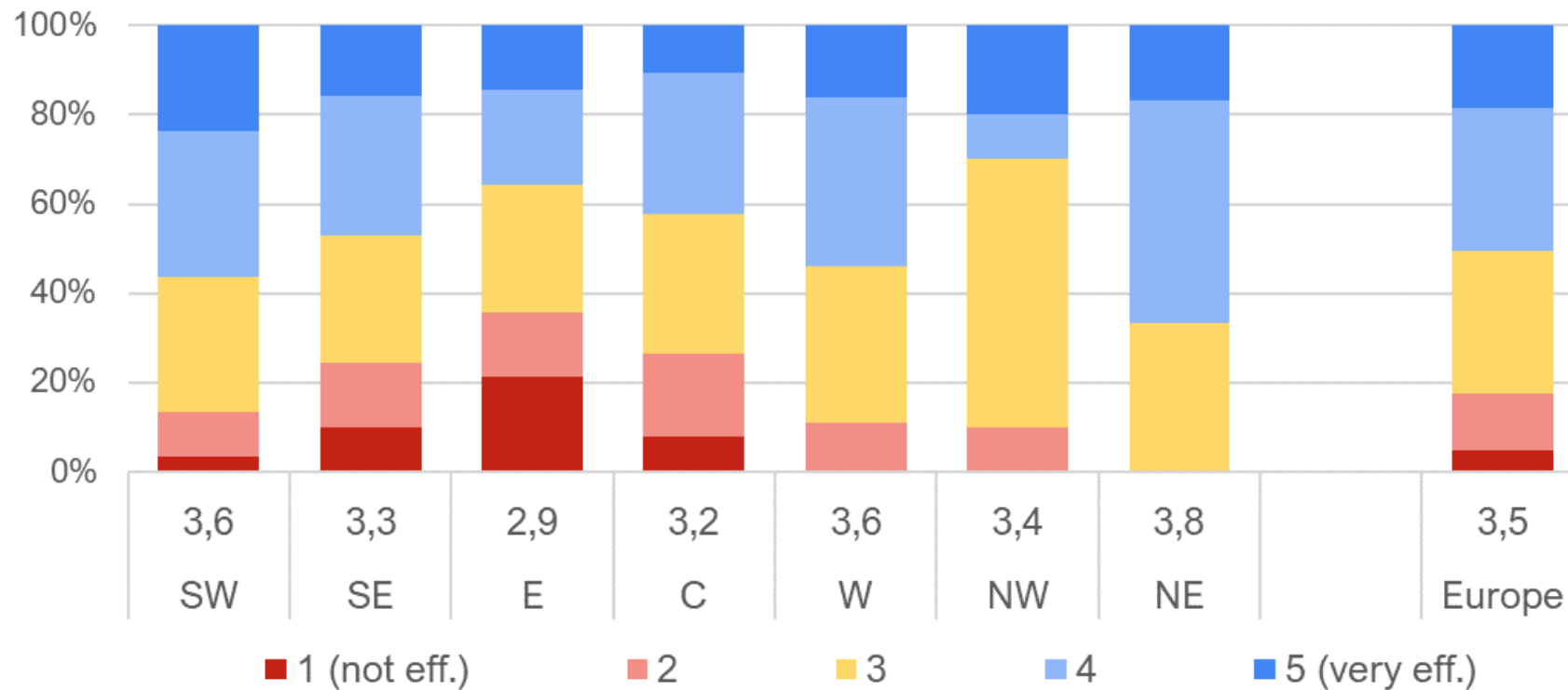


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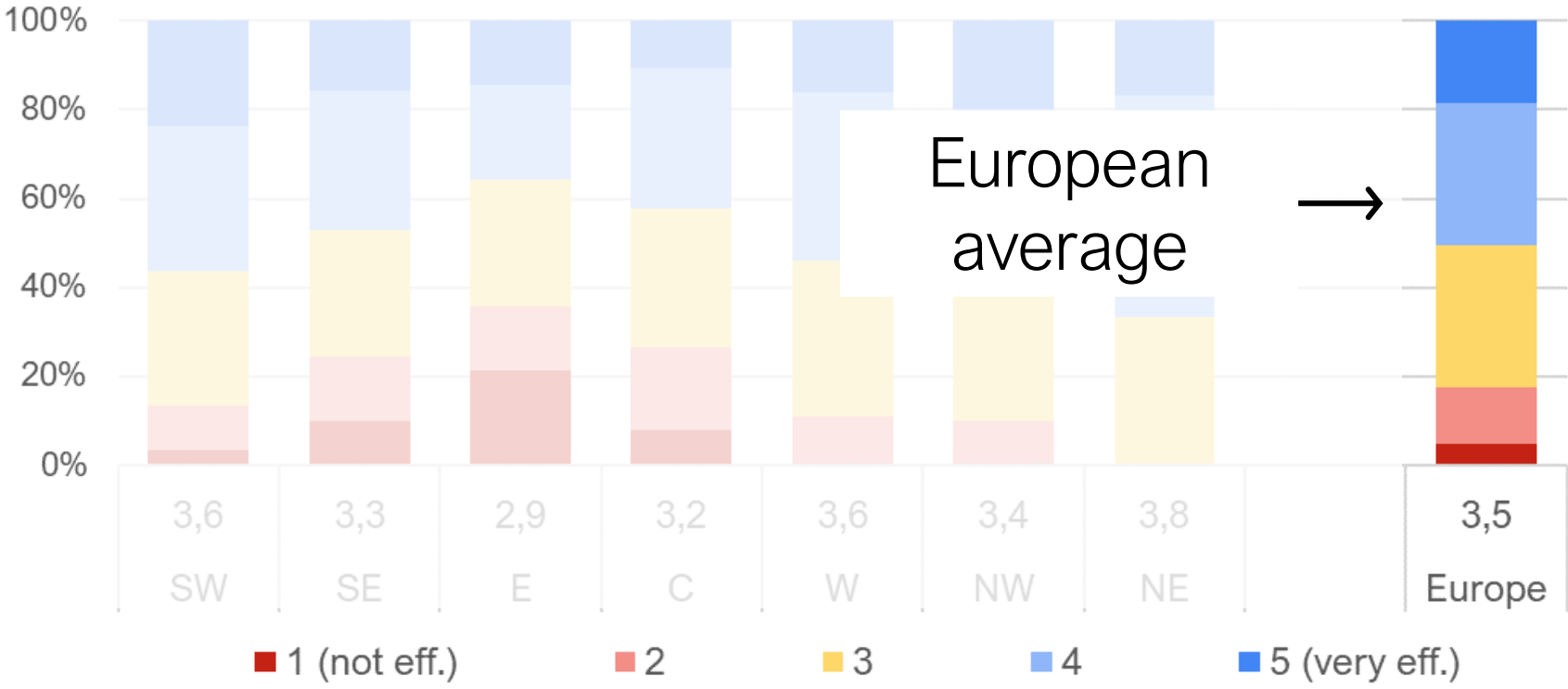
# RESPONSE: Effectiveness

How **effective** were the measures taken by your organization?



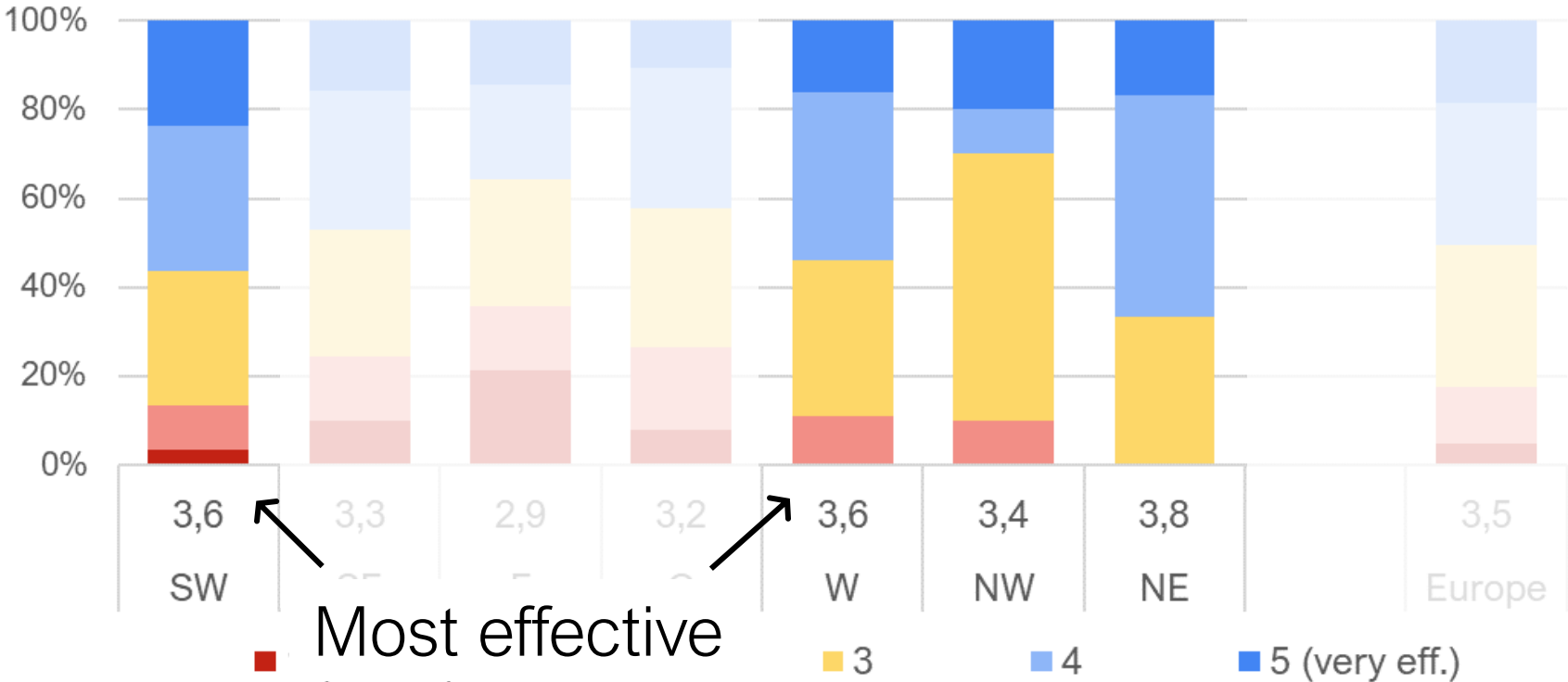
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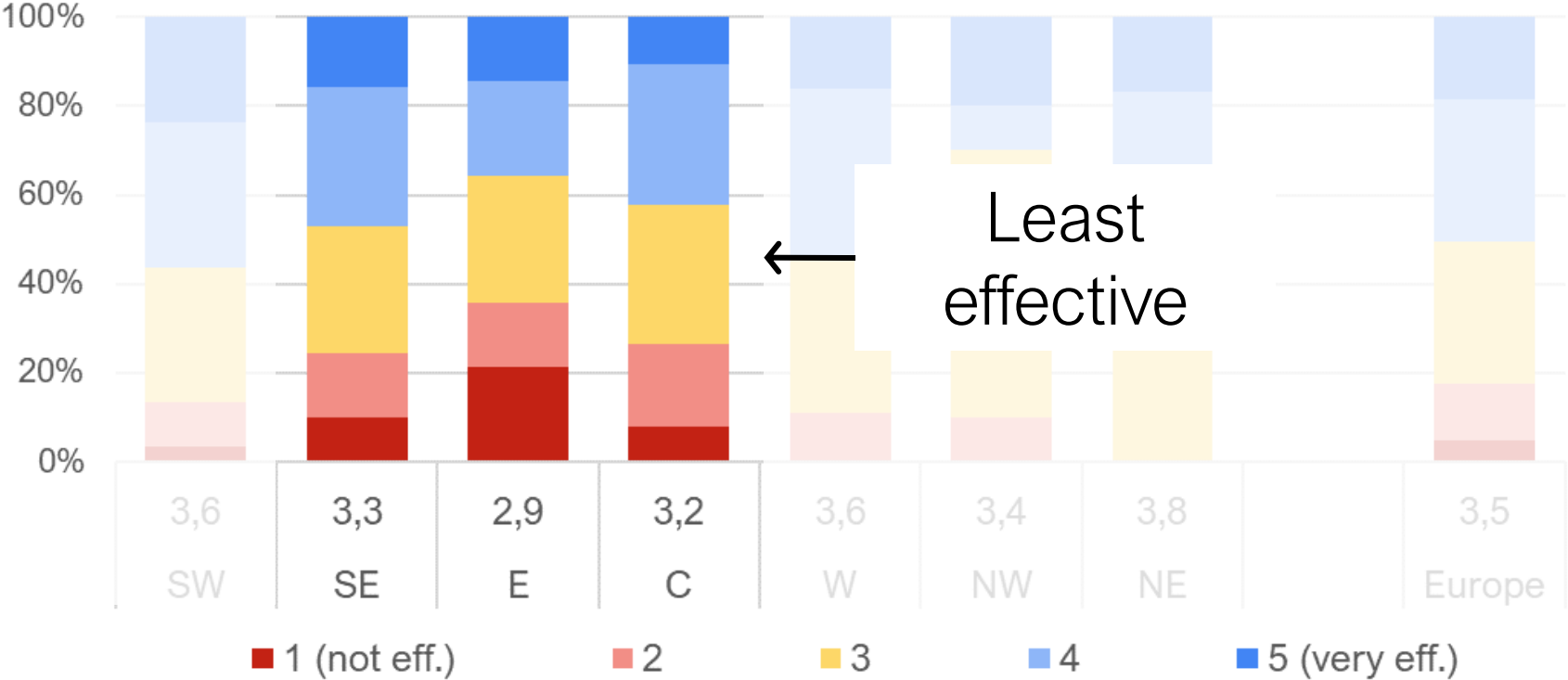
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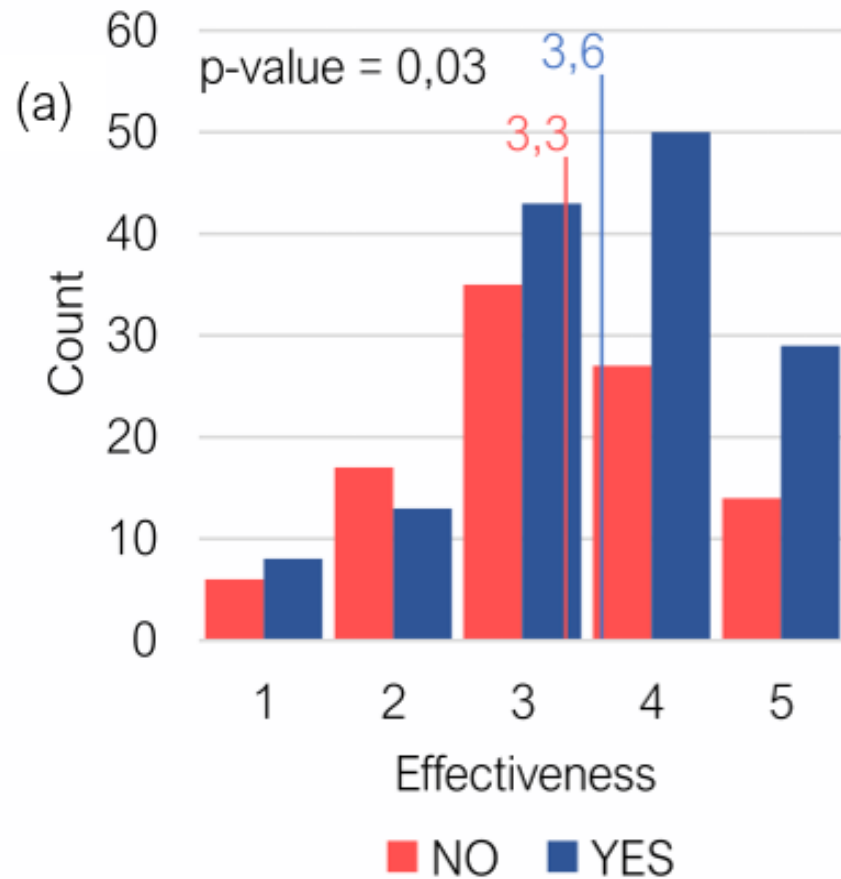


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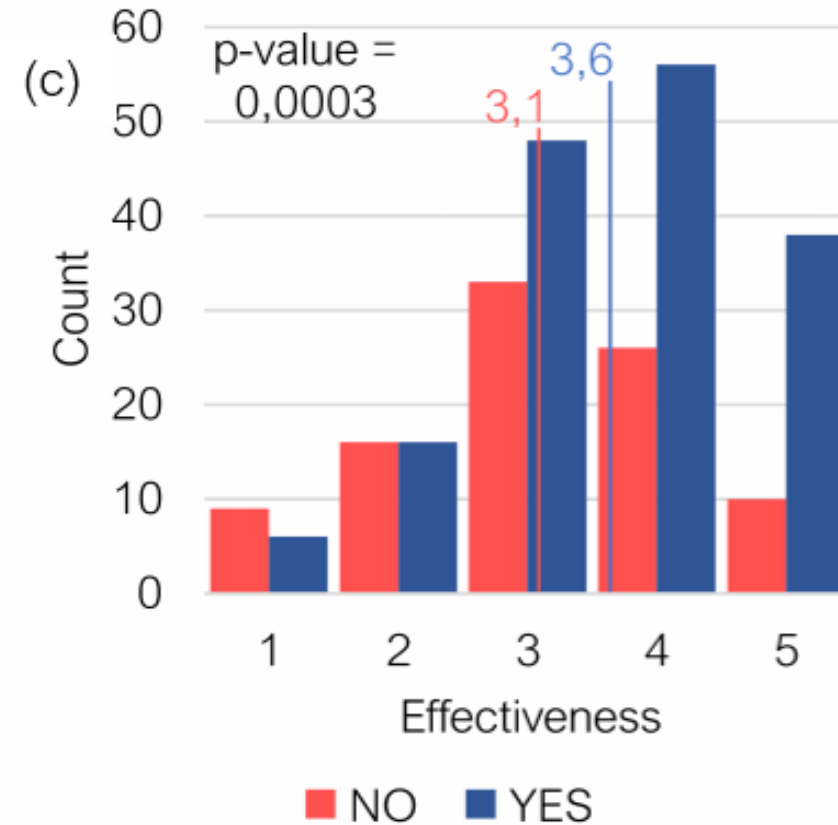
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# RESPONSE: Effectiveness



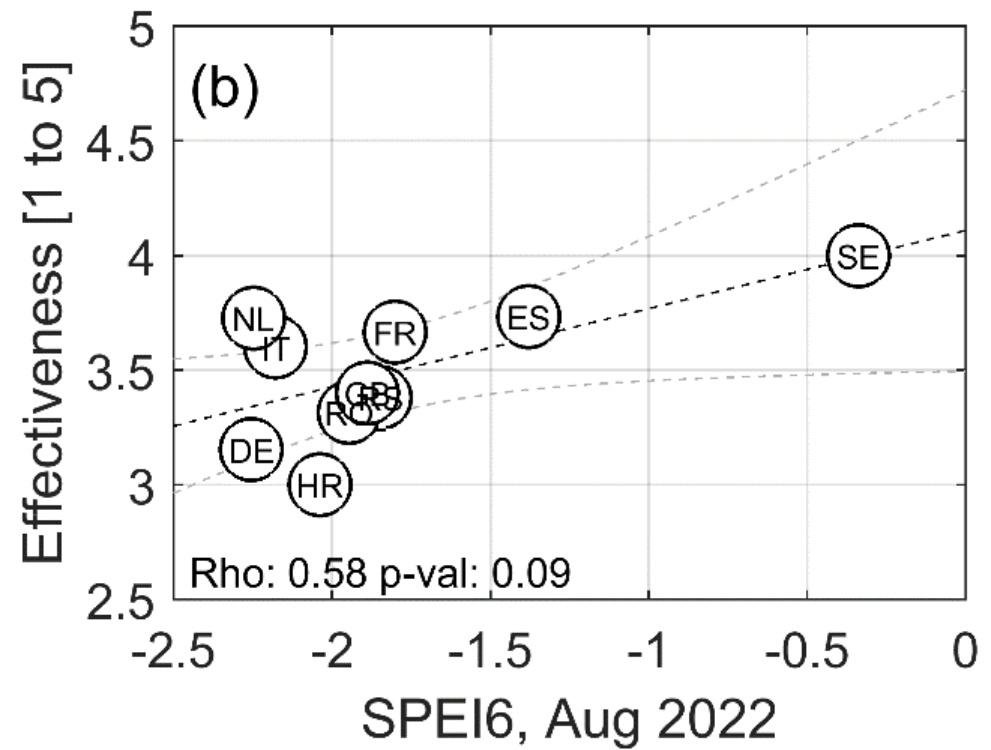
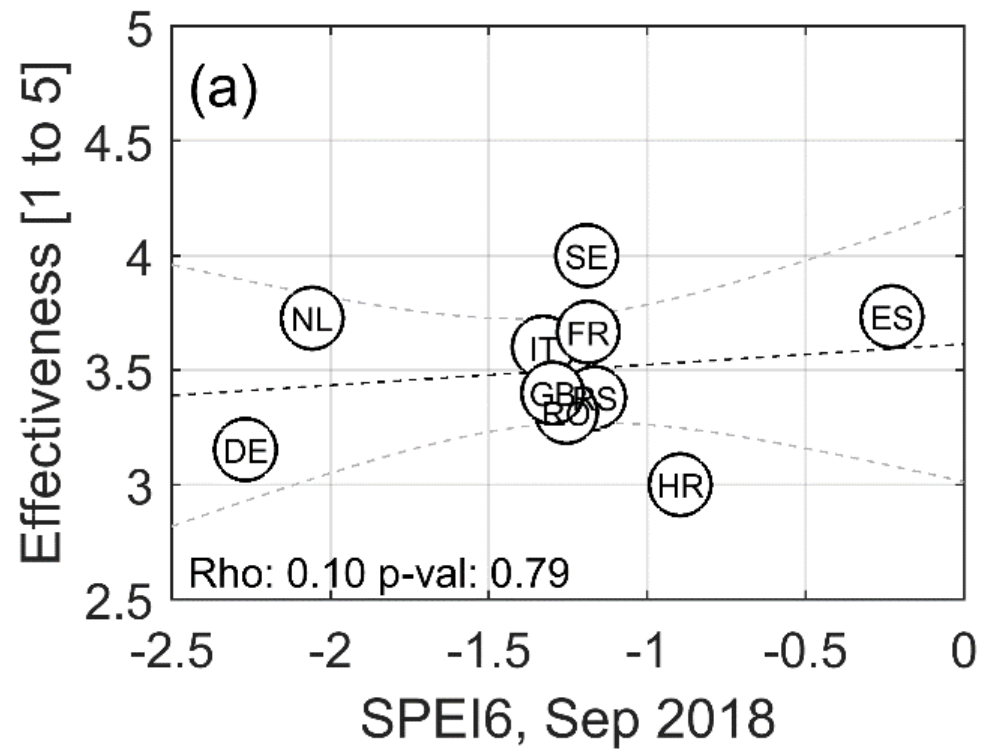
Forecasting



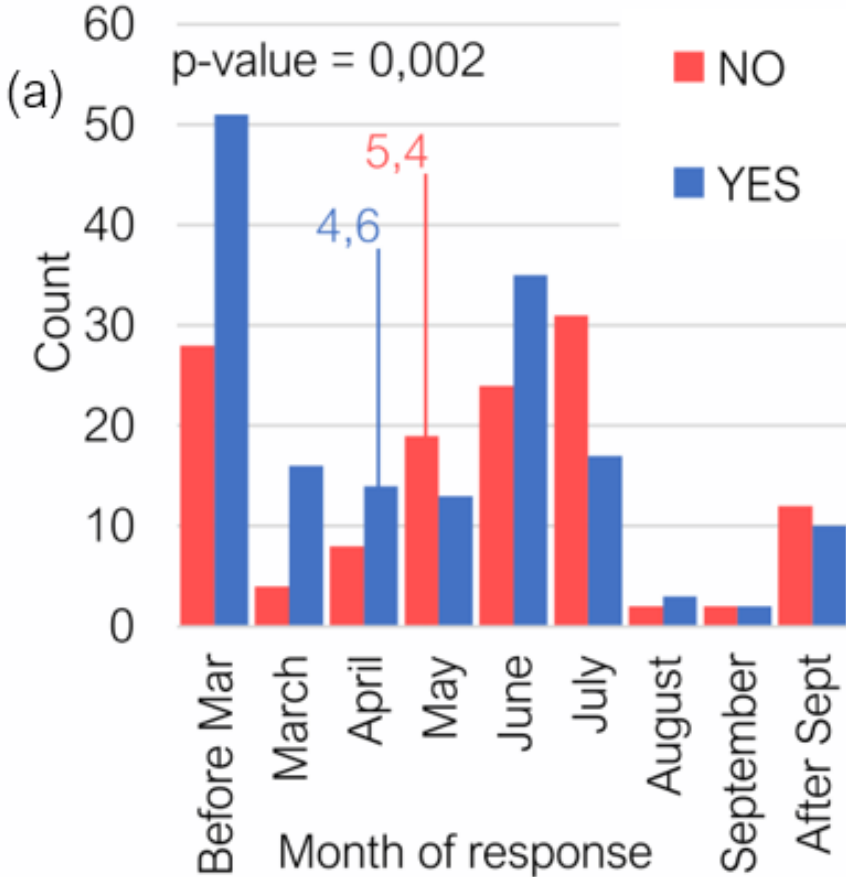
Drought mgmt plans

# RESPONSE: Effectiveness

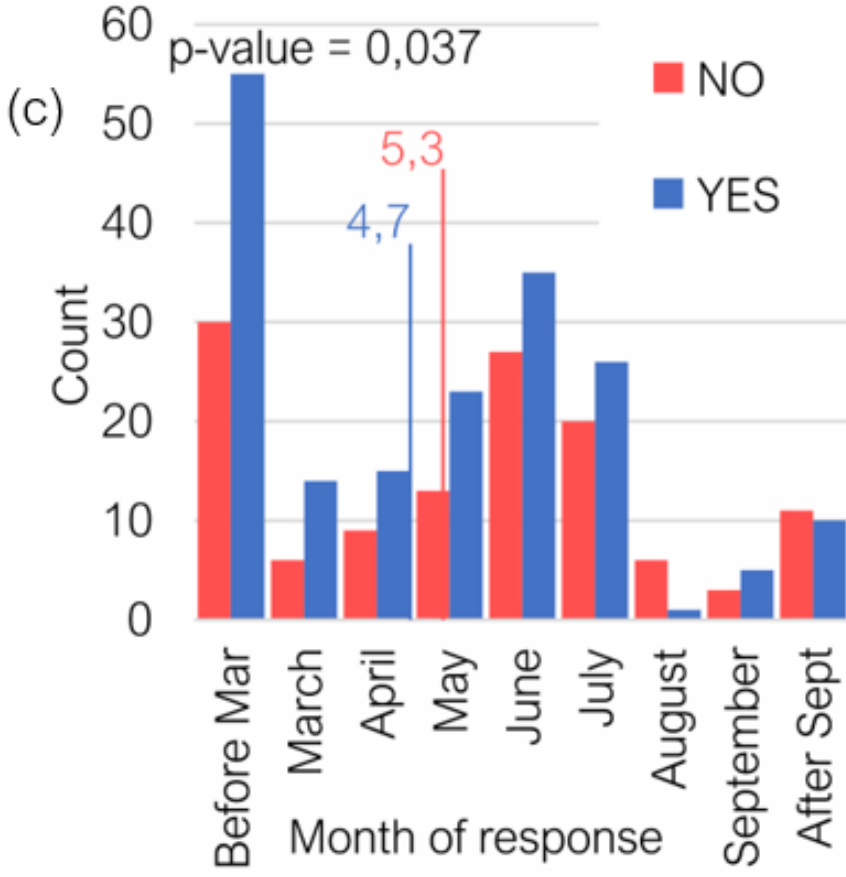
Correlation between effectiveness and intensity of drought (SPEI6)



# RESPONSE: Timeliness



Forecasting

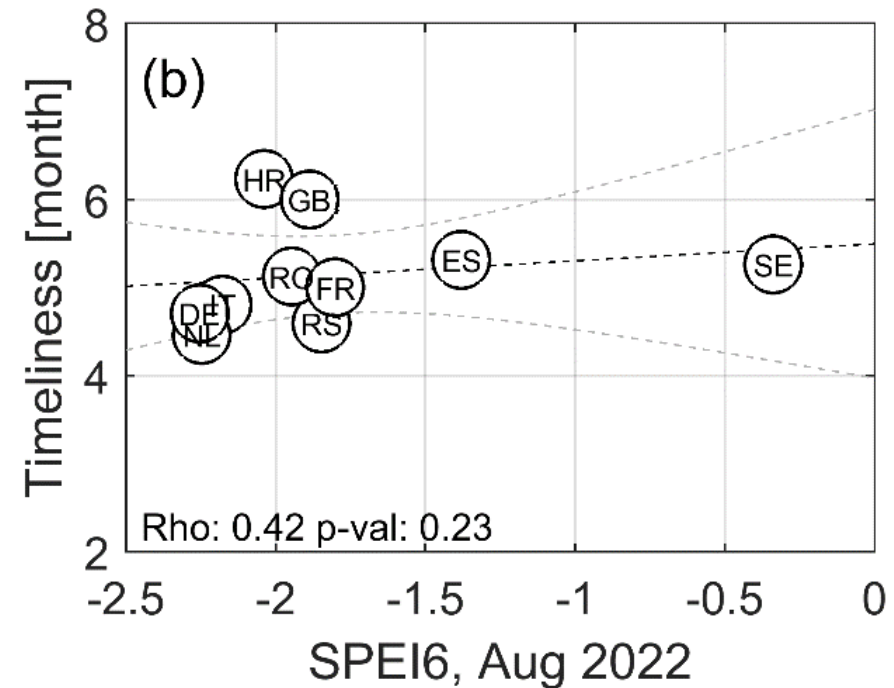
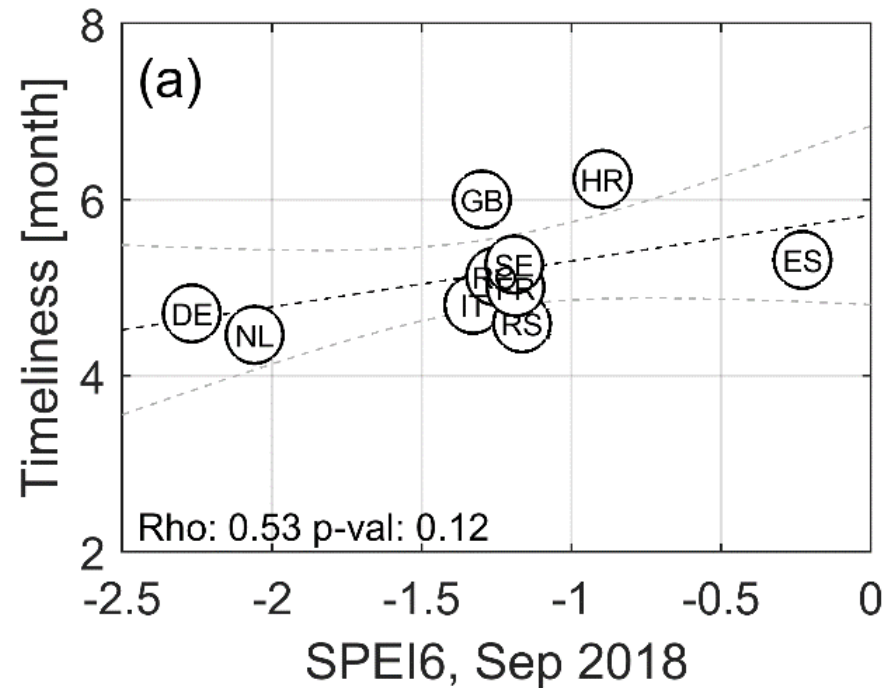


Drought mgmt plans



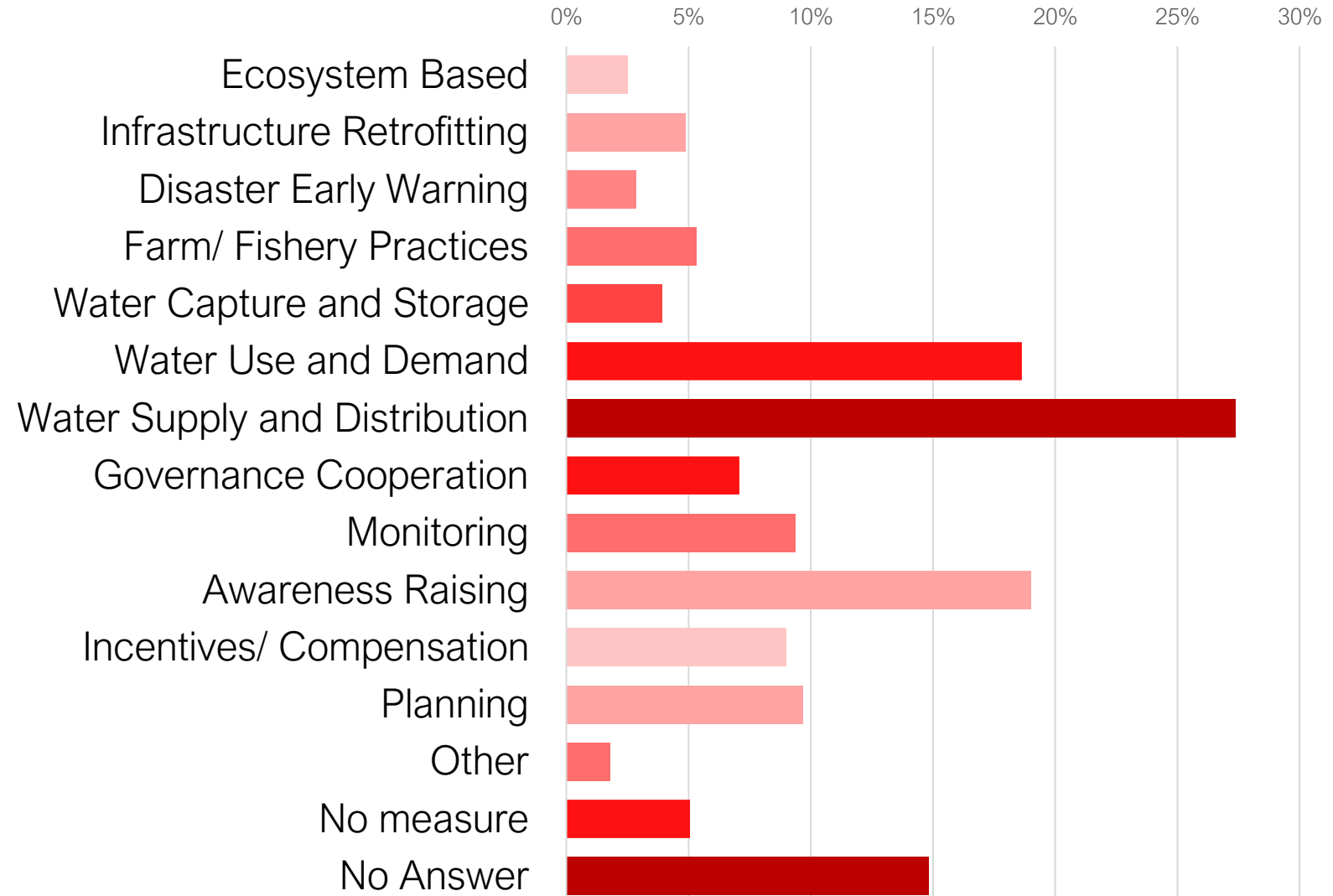
# RESPONSE: Timeliness

Correlation between timeliness (month of response) and intensity of drought (SPEI6)



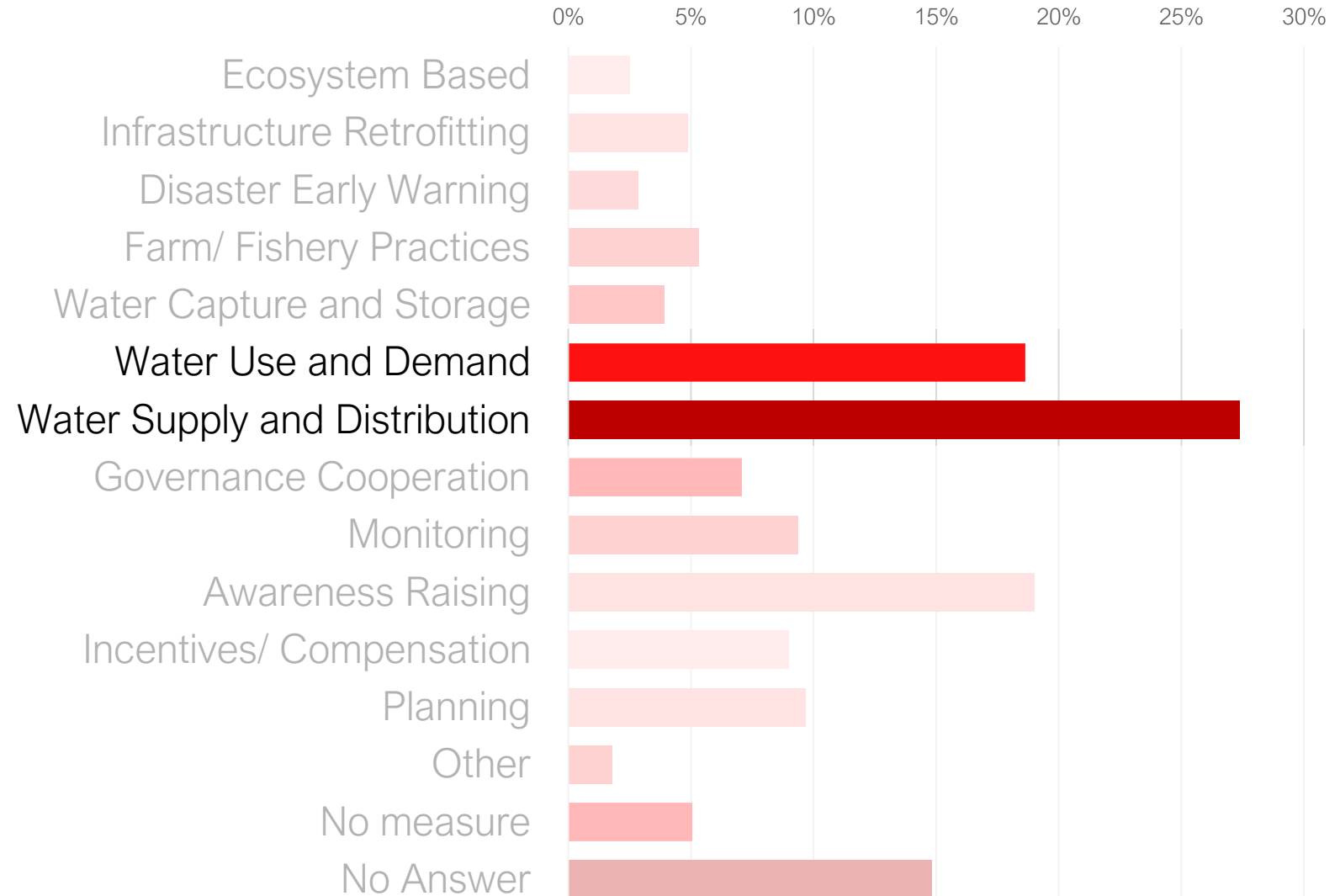
# RESPONSE: Measures taken

*Classification based on  
IPCC AR 6 Ch. 16 –  
Climate adaptation*



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# RESPONSE: Measures taken

*Classification based on European Commission's  
Blueprint to Safeguard Europe's Water Resources (2012)*

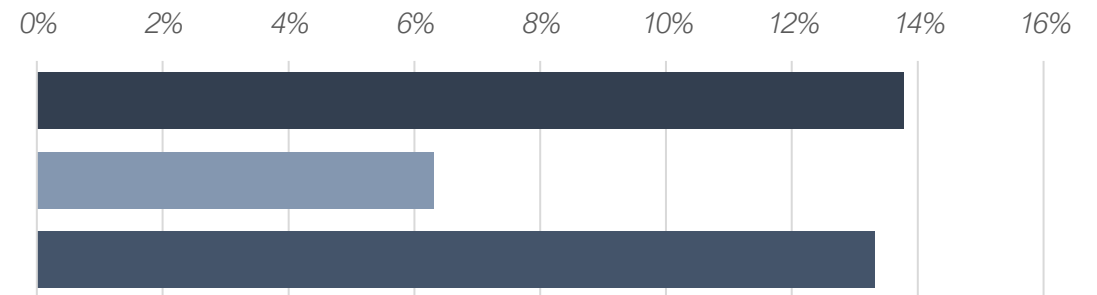
*According to EC Blueprint*

*Higher priority*

*Lower priority*



Decrease Demand  
Prioritization and Efficiency  
Increase Supply

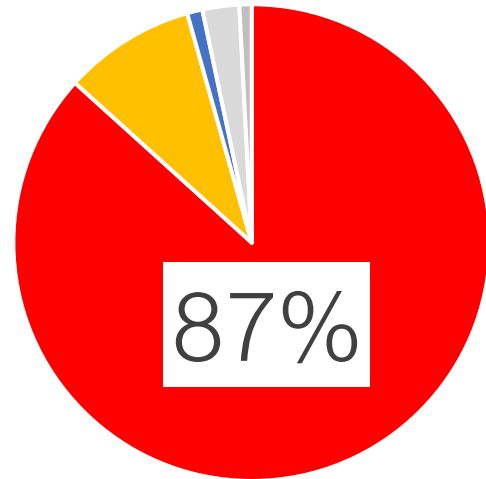




# ADAPTATION: Drought Risk

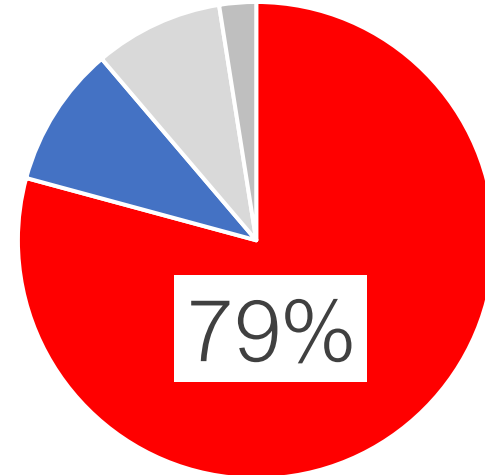
Drought risk is...

- Increasing
- Unchanged
- Decreasing
- I don't know



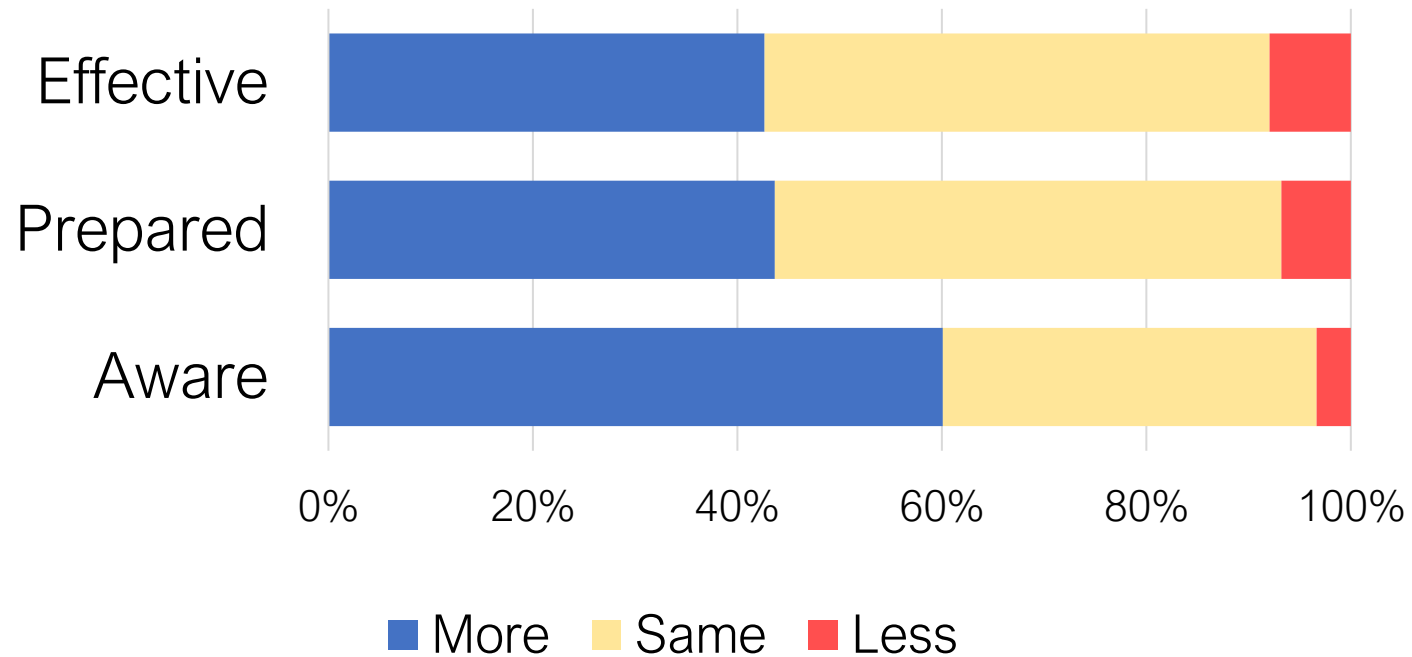
Is drought risk management is becoming more important?

- Yes
- No
- I don't know



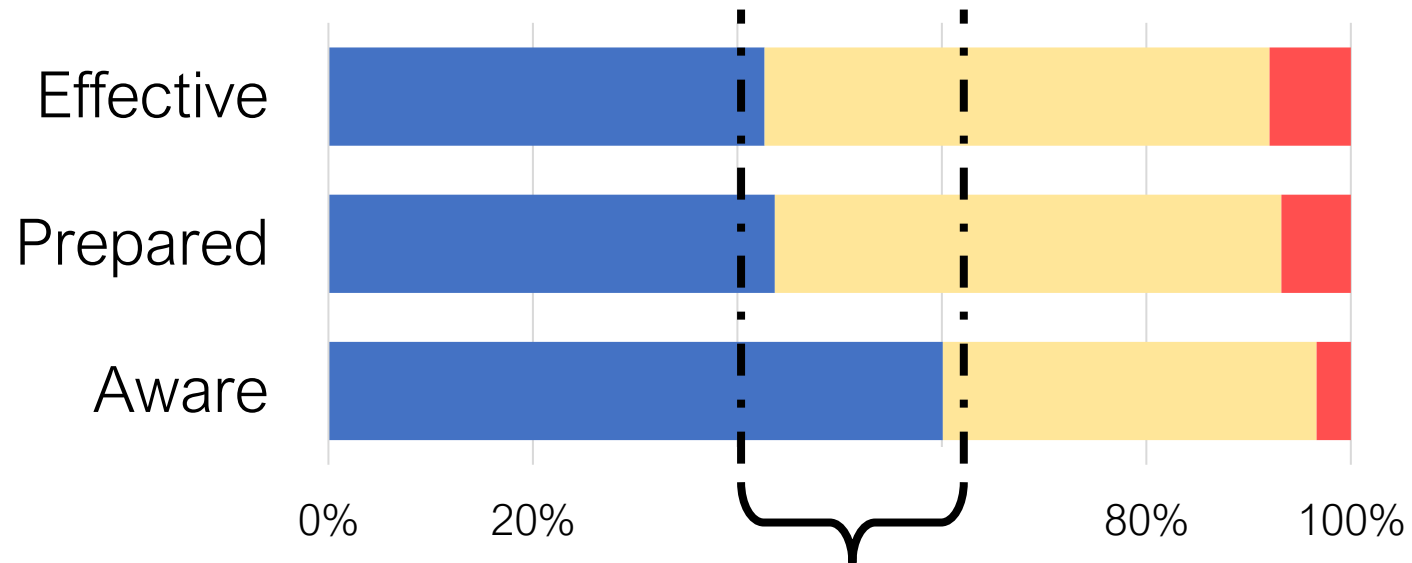
# ADAPTATION: Management

Compared to 2018-2019, your organization was...



# ADAPTATION: Management

Compared to 2018-2019, your organization was...



MAINSTREAMING GAP

# TO RECAP...

- DROUGHT RISK IS INCREASING
- PREPAREDNESS IS KEY
- LARGE SCALE & CROSS BOUNDARY
- LONG DURATION
  - OF THE METEOROLOGICAL DROUGHT
  - OF ITS IMPACT ACROSS SECTORS
- SHORT-TERM FOCUS
- REGIONAL DIFFERENCES



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# TO RECAP..

- DROUGHT RISK IS INCREASING



- LONG DURATION
  - OF AGRICULTURAL DROUGHT
  - OF ITS IMPACTS ON SECTORS



# Need for *EU DROUGHT DIRECTIVE!*

- LARGE SCALE & CROSS BOUNDARY

DIFFERENCES

# A EUROPEAN DROUGHT DIRECTIVE



## Principles of Drought Risk Management

- Manage risk, not hazard.
- Drought is a continuum.
- Prioritize environmental needs.
- 1<sup>st</sup> Reduce demand, 2<sup>nd</sup> improve efficiency, 3<sup>rd</sup> increase supply.

## Guidance for Drought Risk Management

- Provide definition of drought.
- Provide international coordination (Based on WFD).
- Prioritize drought preparedness.
  - Ensure the development and provision of drought-related climate services
  - Guide development and implementation for DMPs.





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Centrum för naturkatastrofslära



Thank you very much...





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... and thank you to the whole Dita team!

Riccardo Biella (CNDS - UU)  
riccardo.biella@geo.uu.se