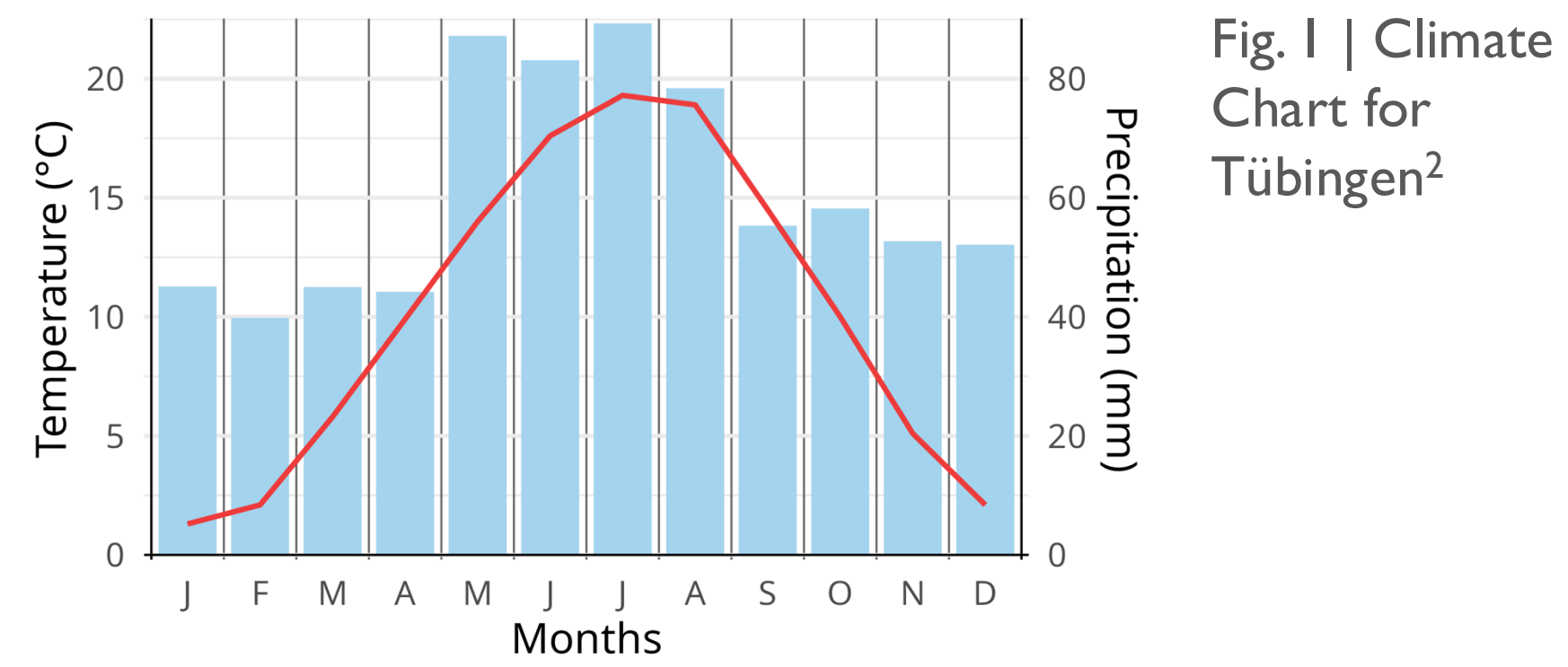


1 | Motivation

- Climate change is driving rising extremes such as droughts and floods in Southern Germany¹
- Rising risks to society, infrastructure, and ecosystems highlight the need for action in water management
- Goals of this study:
 - Analyzing governance networks helps strengthen water resilience and climate adaptation
 - Informed decision-making supports both water resilience and carbon reduction

2 | Area of Investigation

- Focus on the Neckar Valley and the Upper Gäu region near Tübingen
- Located in temperate climate zone



- High hydrogeological sensitivity due to karst systems³ and groundwater dependency
- Mixed water supply models with a high dependency on long-distance water supply

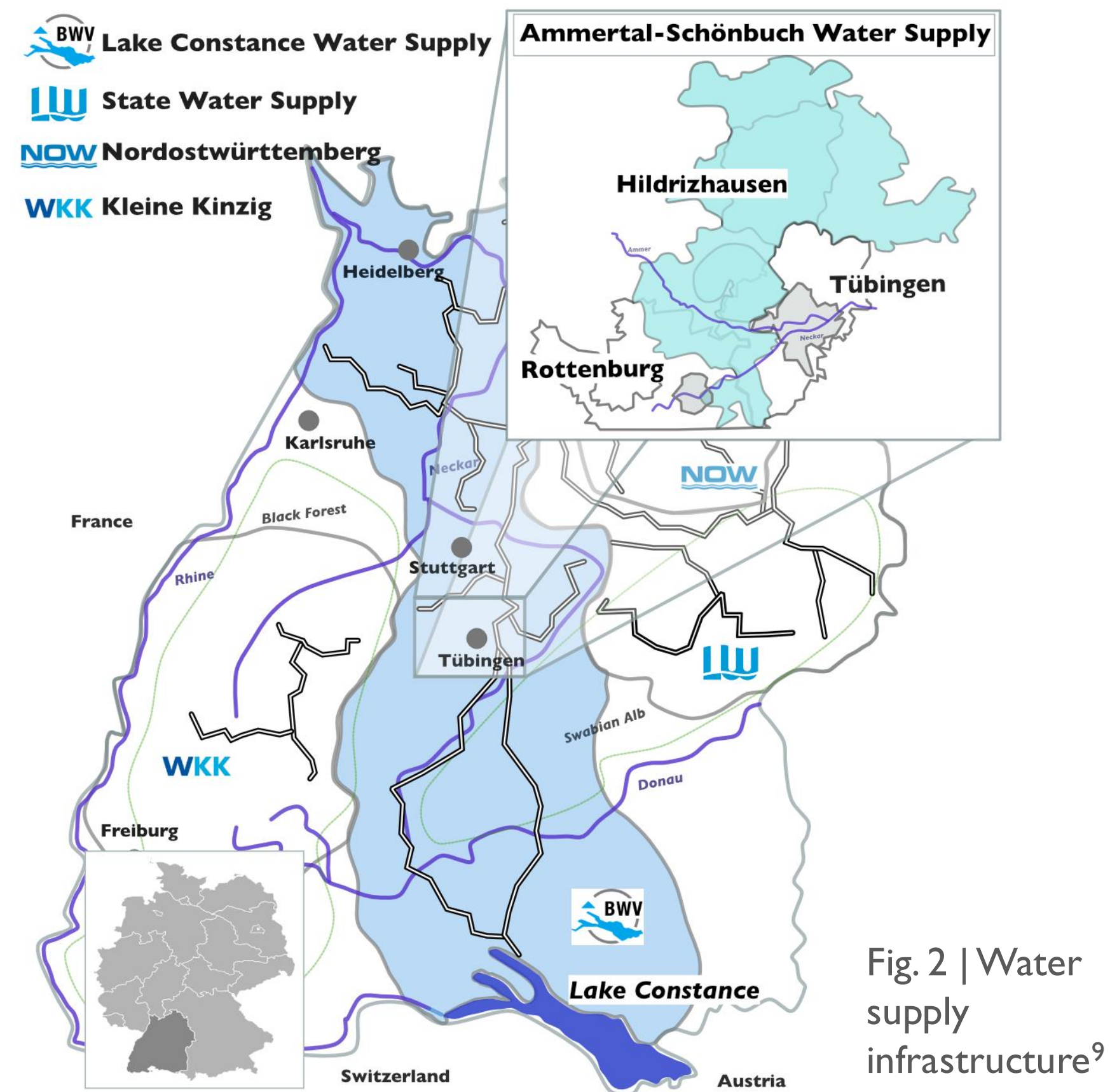


Fig. 2 | Water supply infrastructure⁹

3 | Methods, First Findings and Outlook

- Quasi experiment: Using **Social-Ecological-Technological System⁴ (SETS)** approach to assess drought impacts on water infrastructure and societal response
- **Coupling hydroclimatic impact and media discourse data**
- Time-series analysis of SETS problem framing and response strategies during drought progression

Discourse Network Analysis⁵ of 470 local newspaper articles

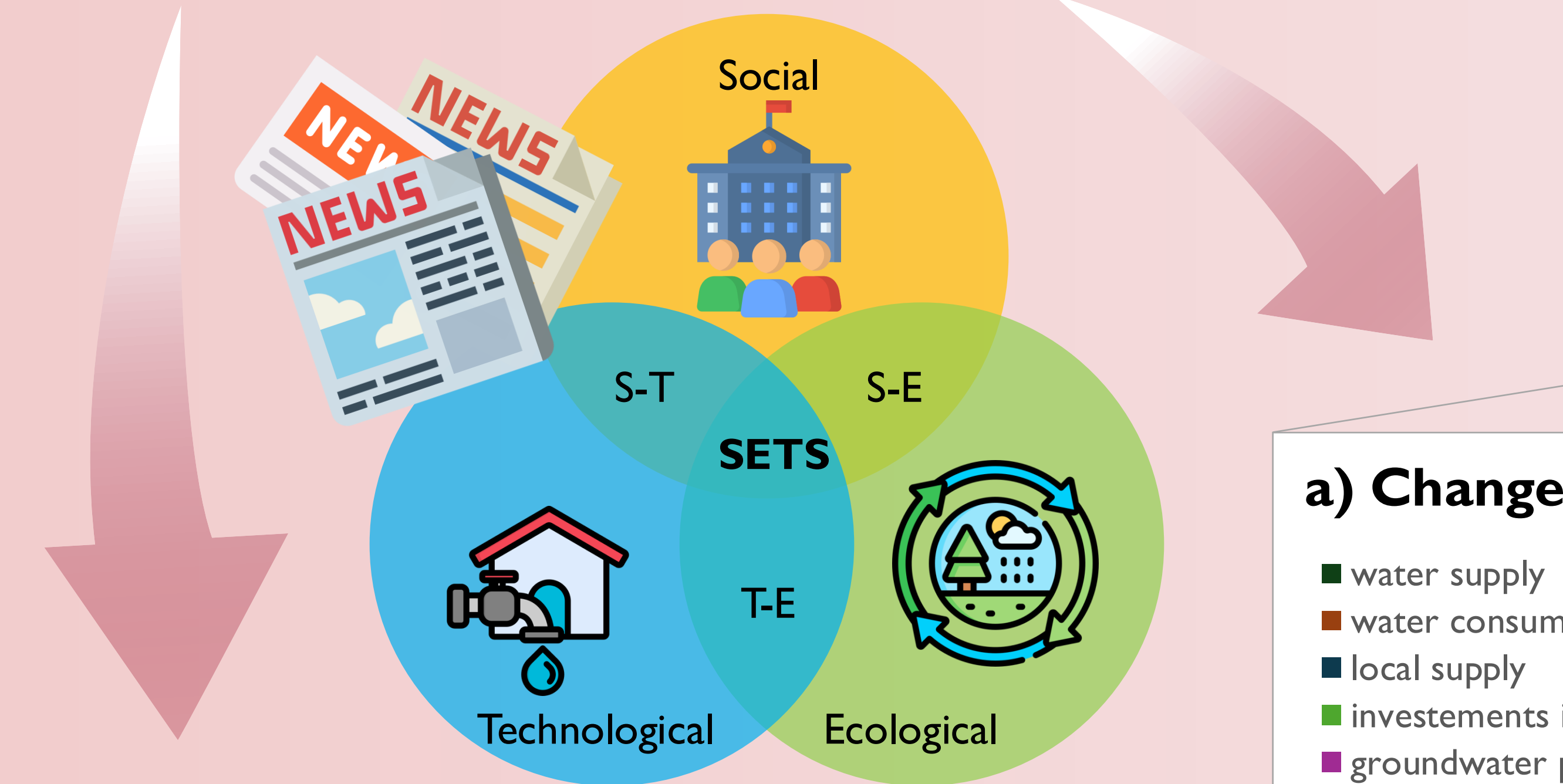


Fig. 3 | Concept of Social-Ecological-Technological Systems (SETS) and interactions⁸

Hydroclimatic impact

→ Multi-year drought (2016–2022), 2019 as a stress test for water supply systems⁶

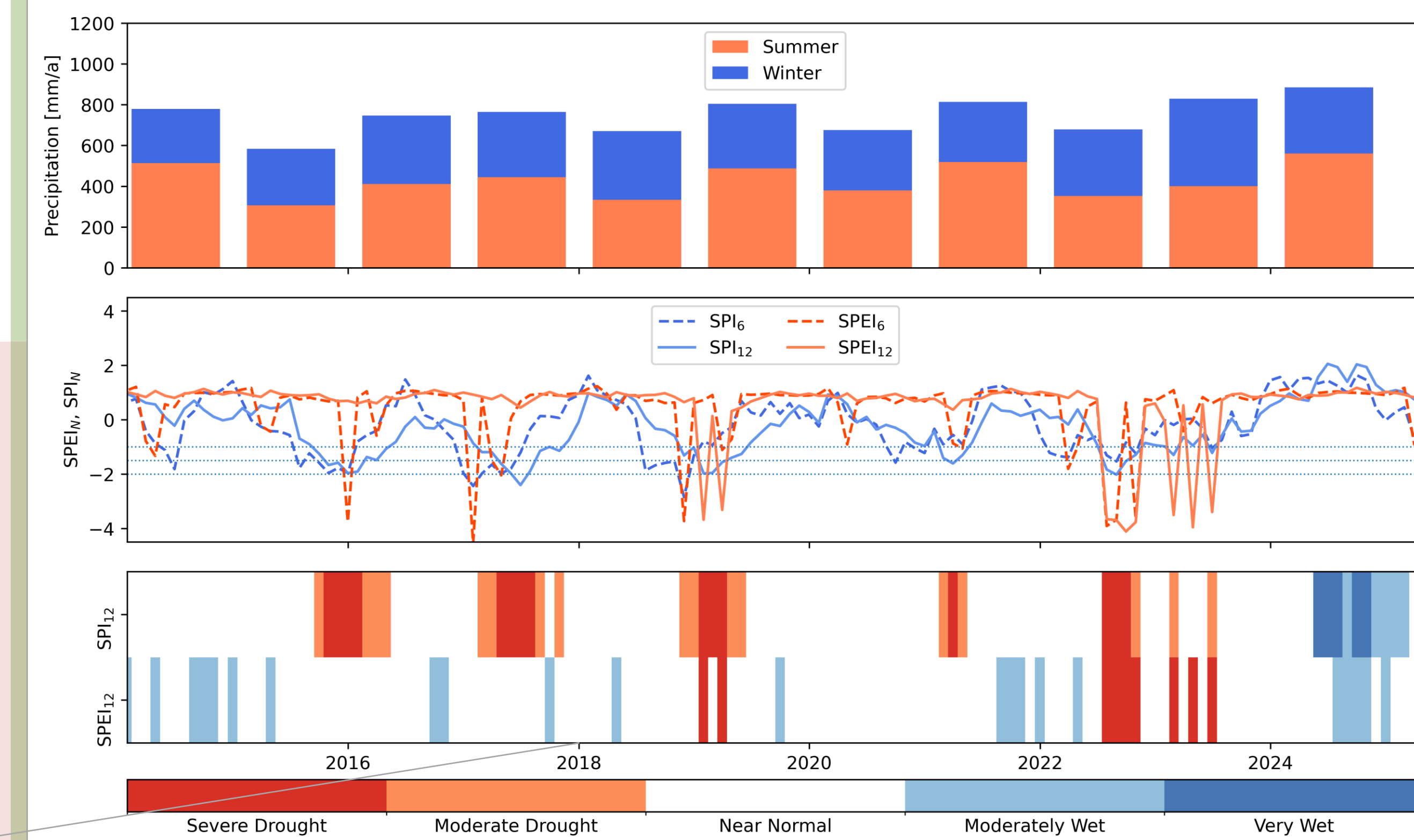


Fig. 4 | Drought classification after Standardized Precipitation Index and Standardized Precipitation Evaporation Index for Jan 2014–Apr 2025 based on data from weather stations evaluated with GWN-BW⁷

a) Changes in public discourse

- water supply
- water consumption
- local supply
- investments in infrastructure
- groundwater protection
- costs of infrastructure investments
- drinking water shortage
- costs of water
- groundwater scarcity

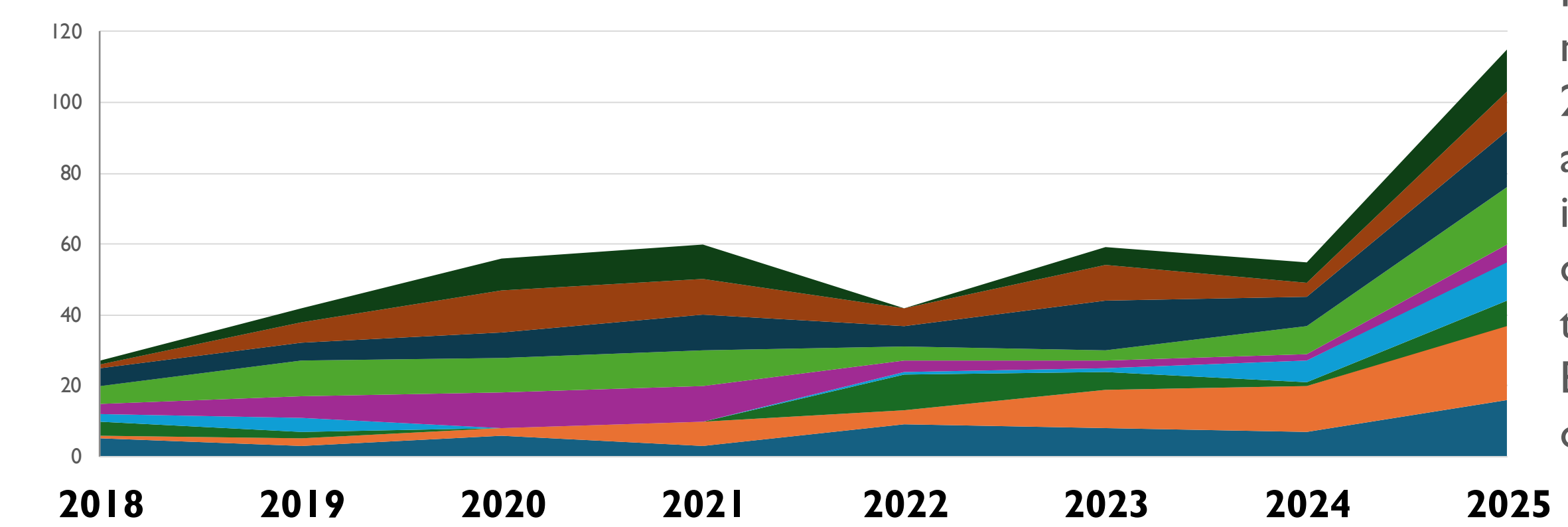
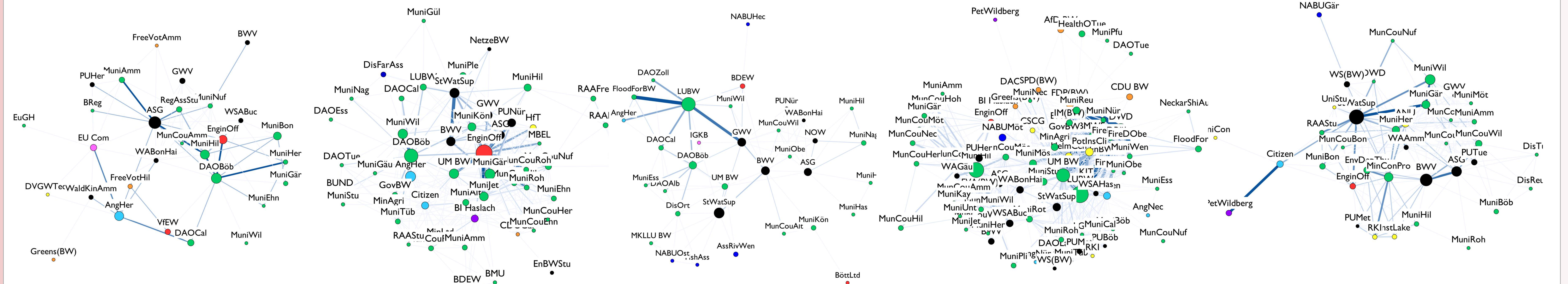


Fig. 5 | Manual analysis of 470 newspaper articles for Jan 2018–Dec 2025:

- a) Frequency (n) and changes in discussed topics; b) network of actors that are connected through shared arguments; c) Expected changes in discourse on SETS interactions

b) Changes in actor constellations



c) Outlook: Changes in public discourse on system interactions

- Classify stakeholder statements into SETS categories
- Analysis of SETS interactions in public discourse

