RESONATE
Resilient Forests for Society
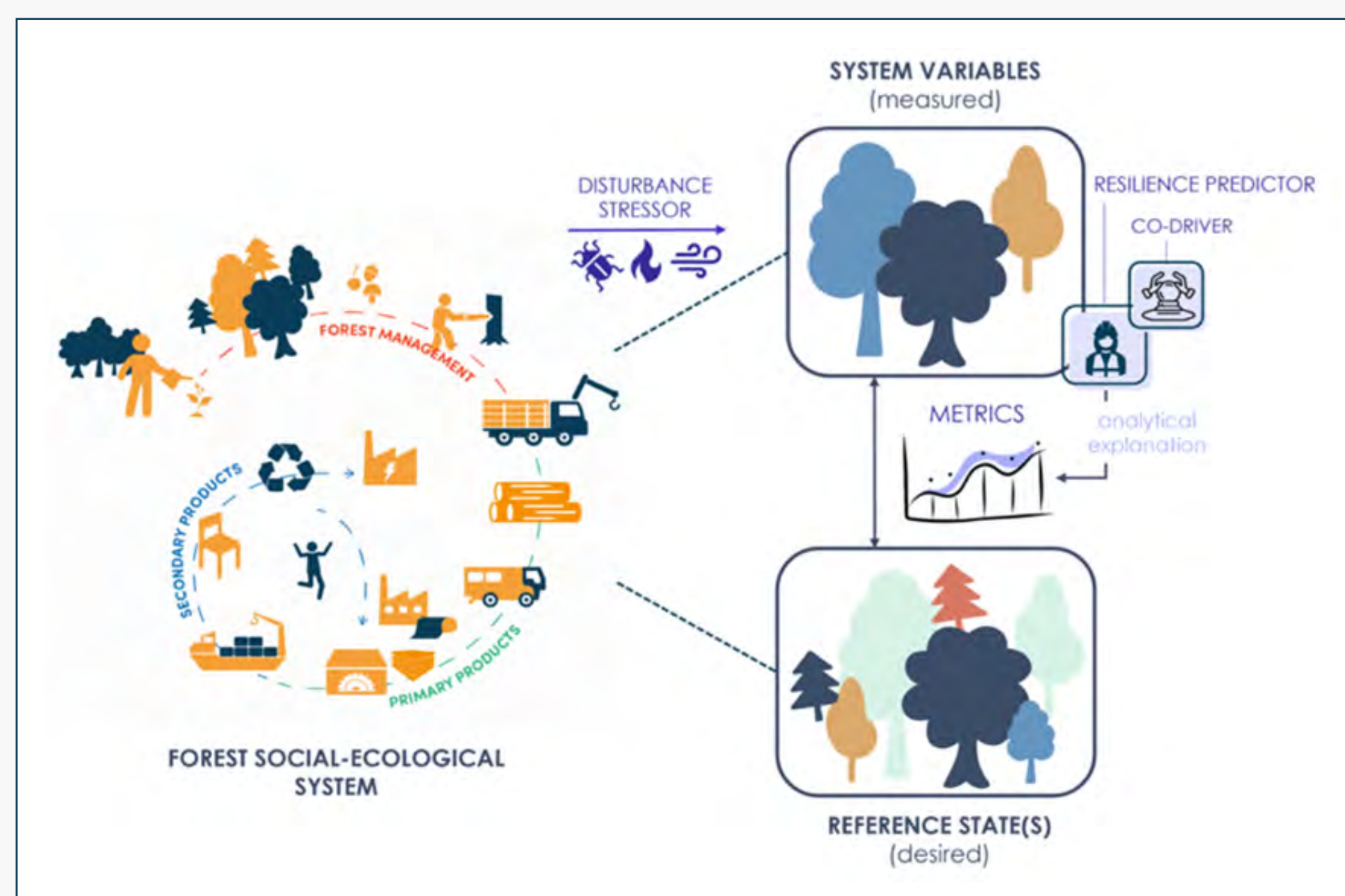
RESONATE aims to generate the needed knowledge and practices **for making European forests, the services they provide, and related economic activities more resilient** to future climate change and disturbances.

PROJECT SCOPE:

- 48 Months (started in April 2021)
- 20 Partners from 12 different countries in Europe
- 9 Case studies all over Europe
- 1 European scale data analysis and modelling

Our major accomplishments so far:

Operational Resilience Framework

- Assessment of resilience indicators based on stakeholder perception.
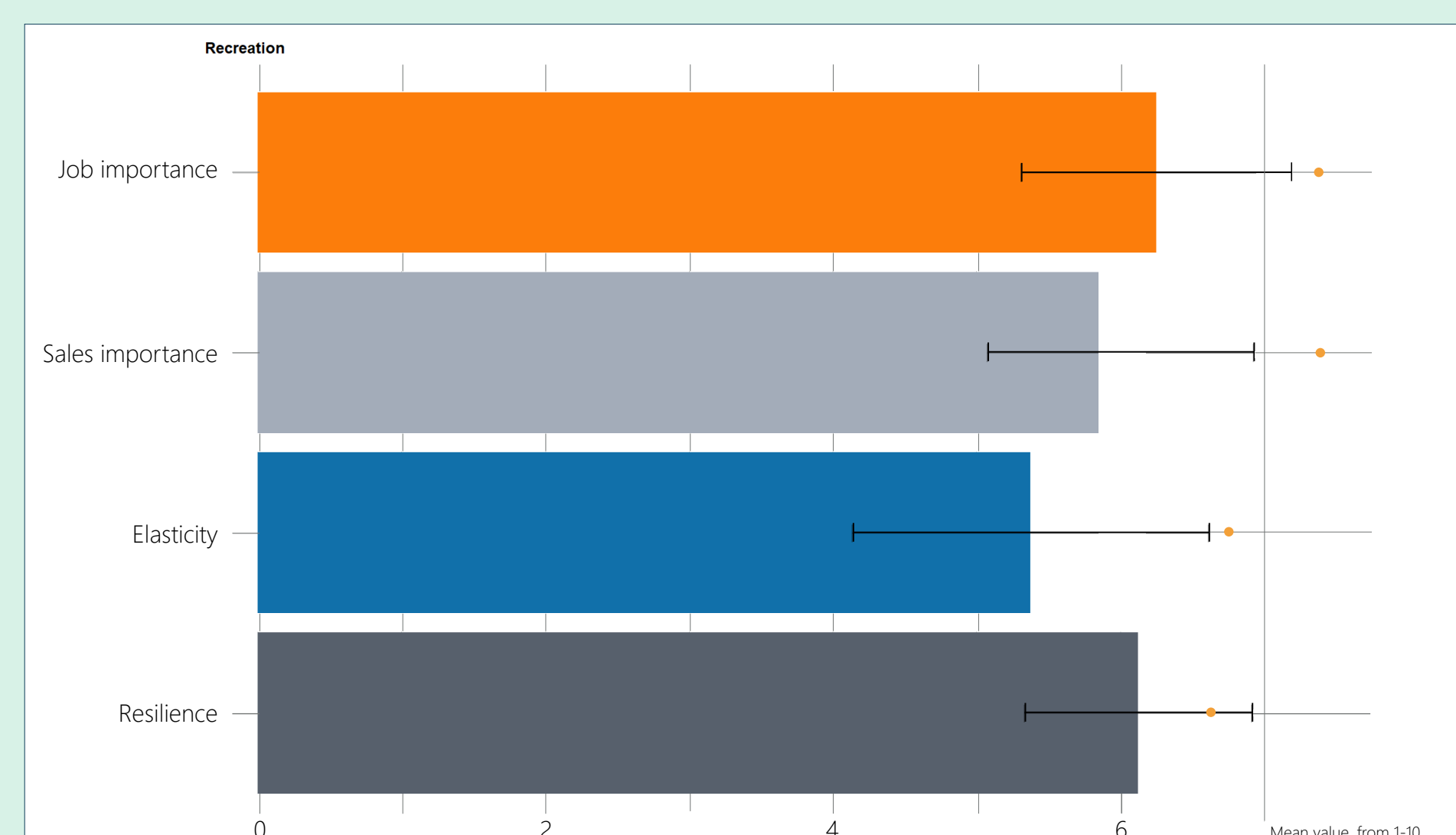- Identification of main trade-offs and synergies among resilience management alternatives.

Operational Resilience Framework (Lloret et al., 2023. RESONATE - Deliverable 1.4.)

Demand Resilience Ladder

Framework for systematically assessing and quantifying demand resilience, based on qualitative data from an expert survey in eight RESONATE case studies.

- Forest recreation and carbon sequestration appear to be the most resilient ecosystem services.
- Timber production and non-wood forest products are assessed to be resilient due to the number and quality of substitutes.
- Future research will assess demand resilience based on trade data and primary studies of willingness to pay for forest ecosystem services, hopefully enabling us to get more precise estimates.
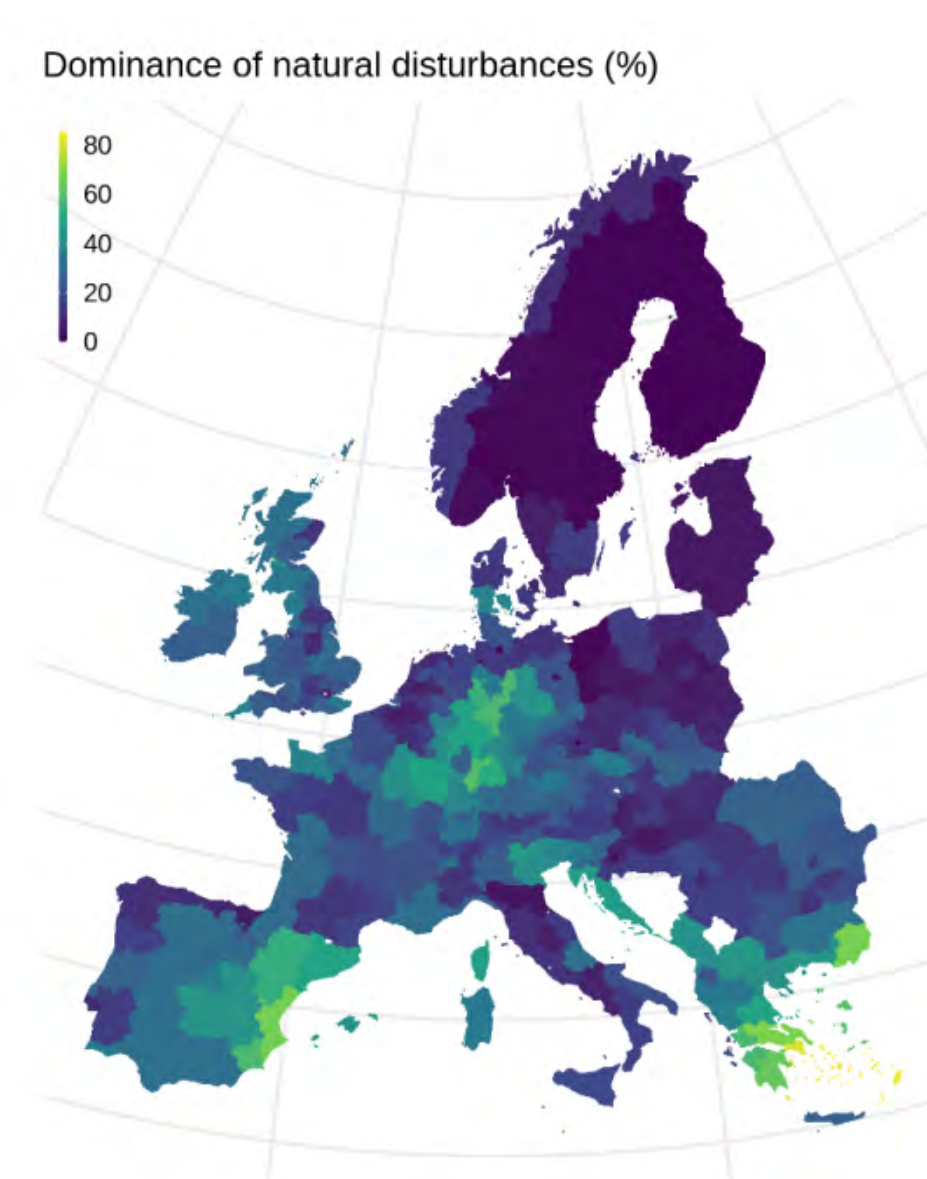

Average assessment of recreation stated resilience, elasticity, and importance for turnover and jobs on a scale from 1-10 (1= not resilience/not elastic/not important). The orange dot indicates the average confidence in the assessment on a scale from 1-10 (1= low confidence). (Lautrup et al., 2024. RESONATE - Deliverable 4.6.)
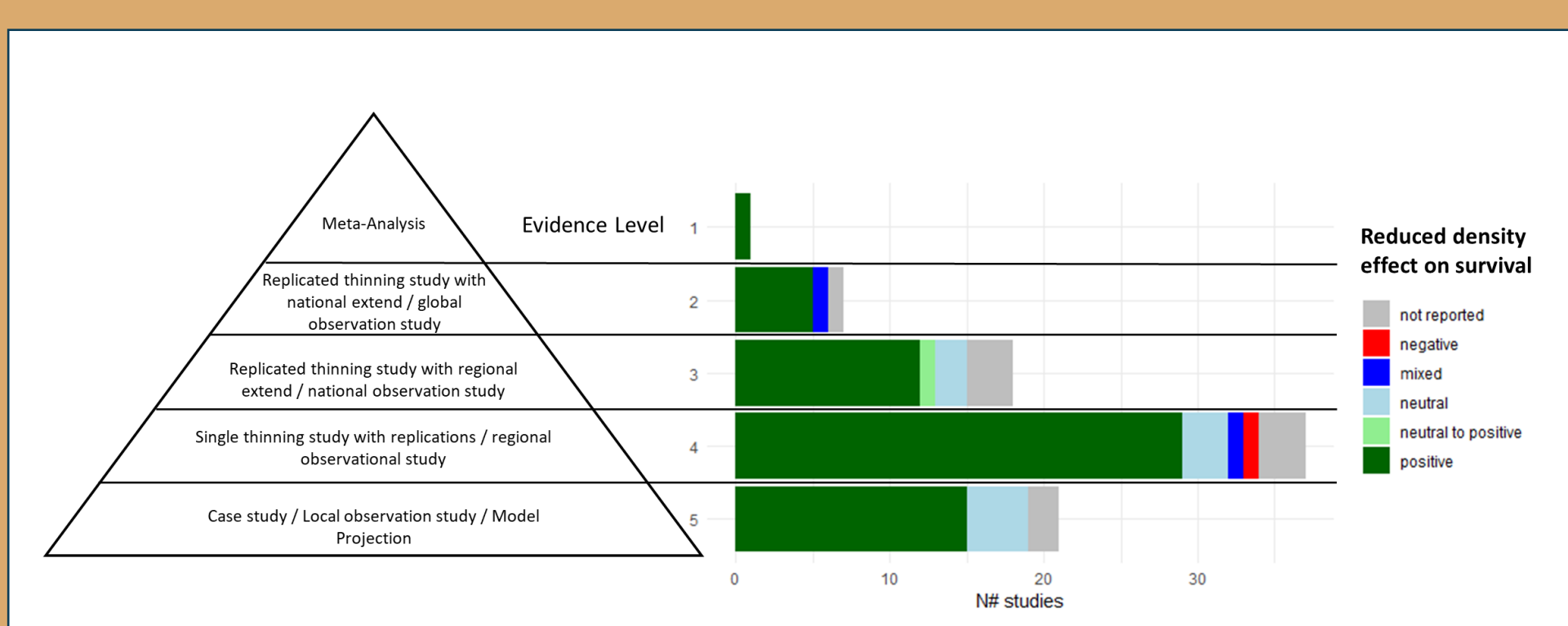
Resilient Forests

- Online map of disturbance hotspots
- Report on Europe´s forest disturbance regimes and their changes over time.
- Silvicultural options to enhance resilience.

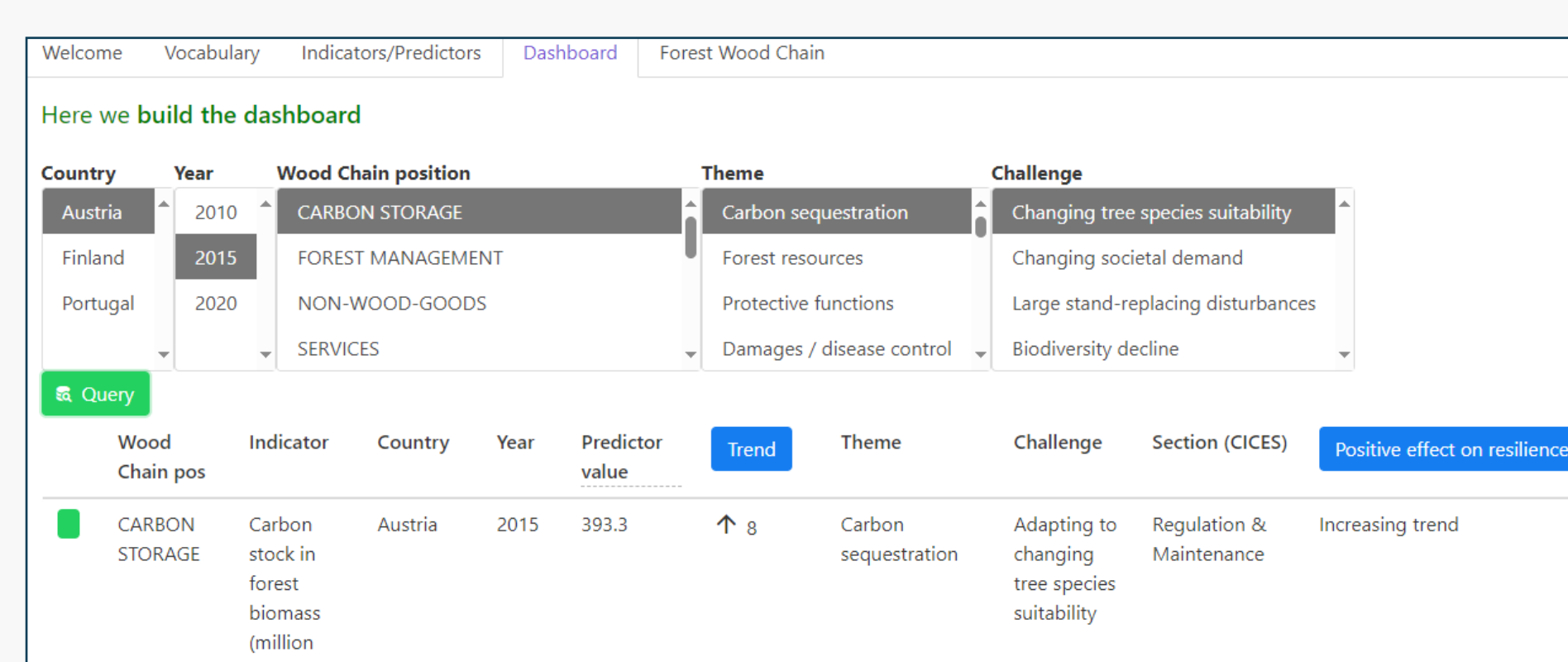#### Dominance of natural disturbances in Europe over the period 1986-2020

Map of disturbance hotspots (Senf and Seidl 2022. RESONATE- Deliverable 2.1.)

Majority of studies show that thinning enhances resilience (Willig and Bauhus 2023. RESONATE - Deliverable 2.4.)

Resilience Dashboard

Develop a resilience dashboard as an operational tool to monitor and indicate how to enhance future resilience of socio-ecological forest systems at regional scales. With this dashboard we will be targeting a range of forest sector stakeholders along the value chain.

Resilience dashboard (Ludvig et al., 2023 RESONATE - Deliverable 5.1.)

Resilient forest value chains under changing conditions

Activities with potential to enhance forest value chain resilience:

- Diversification of product portfolios is key
- Investments in innovation pay off
- Increasing efficiency supports being prepared for disturbances
- Engaging in networks and public private partnerships
- Working with research and forward-looking partners

(Hoeben and Stern, 2023. RESONATE - Deliverable 3.5.)

Communications and stakeholder engagement

- Stakeholder engagement to inform and validate RESONATE research
  - Creation of a Stakeholder Advisory Board with 17 members from diverse forest value chain actors to provide continuous feedback on and input to RESONATE's research activities and outreach.
  - One in-person and three online workshops engaging over 150 stakeholders, with targeted participants representing forest managers, wood processing industry and public officials to gather input to concrete RESONATE research tasks and their further implementation.
- Development of guidance material via publications in forest practitioners' magazines in different languages
- Organization and moderation at LIGNA Trade Fair events
- Website: https://resonateforest.org/
- "Resilience Modules" for educational use: upcoming...