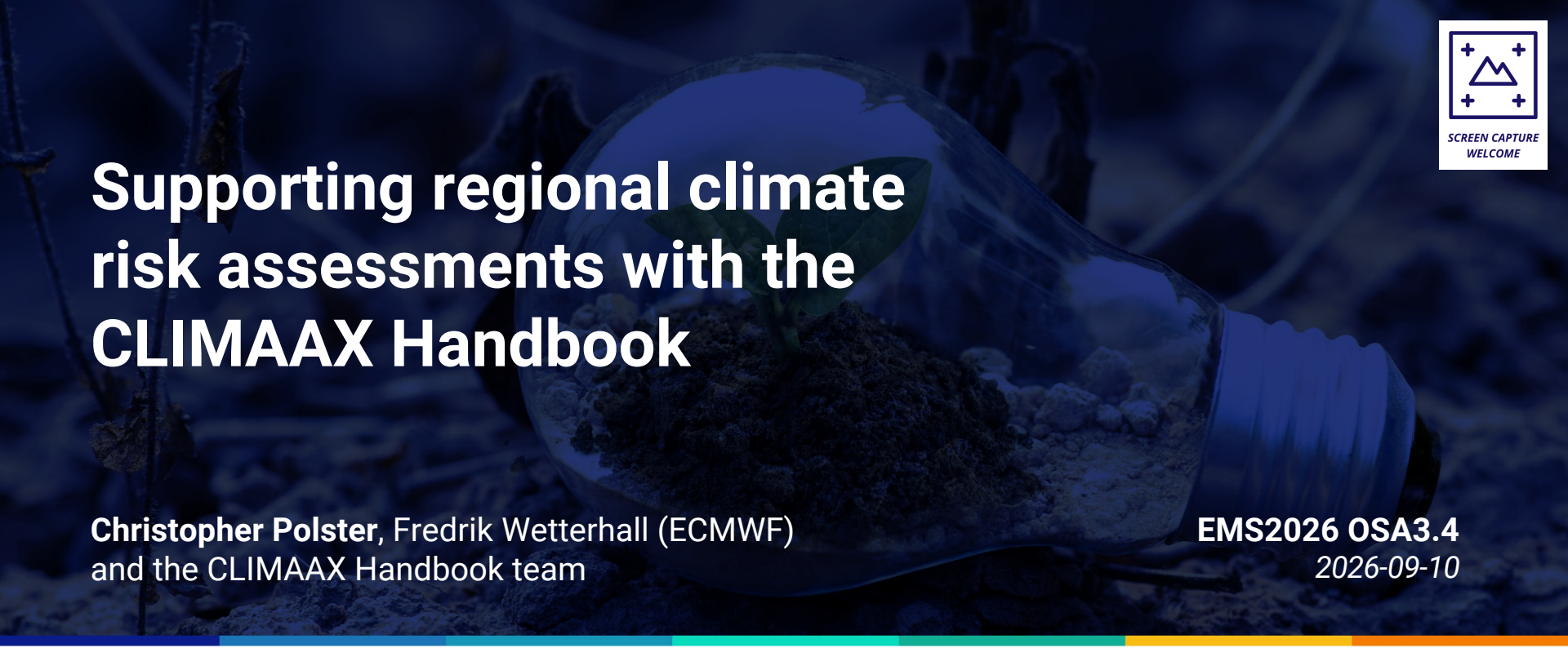


SCREEN CAPTURE WELCOME

Supporting regional climate risk assessments with the CLIMAAX Handbook

Christopher Polster, Fredrik Wetterhall (ECMWF)
and the CLIMAAX Handbook team

EMS2026 OSA3.4
2026-09-10

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CLIMAAX
climate ready regions

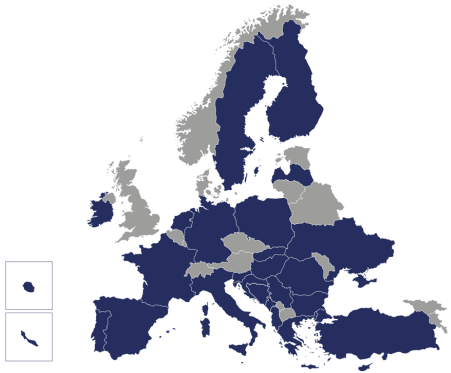
CLIMAte risk and vulnerability Assessment framework and toolboX

- **Mission:** support at least 150 European regions and communities in their preparation and planning for climate resilience

- **CLIMAAX:** support regional climate risk assessments in over 60 EU regions, cities and communities with:
  - **Funding**
  - **Framework**
  - **Tools**

- Project run time: Jan 2023 – Feb 2027





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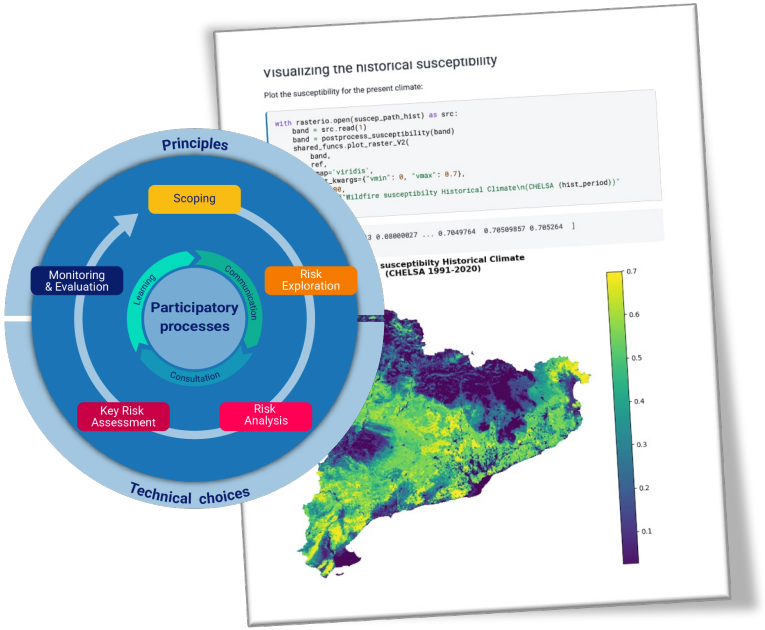
handbook.climaax.eu

- A Handbook for regional climate risk assessment: conceptual **framework and toolbox**

  Risk = Hazard × Exposure × Vulnerability



- Ready-to-go tools with preconfigured defaults and customisation options
- Open source, access for everyone
- Some technical expertise required



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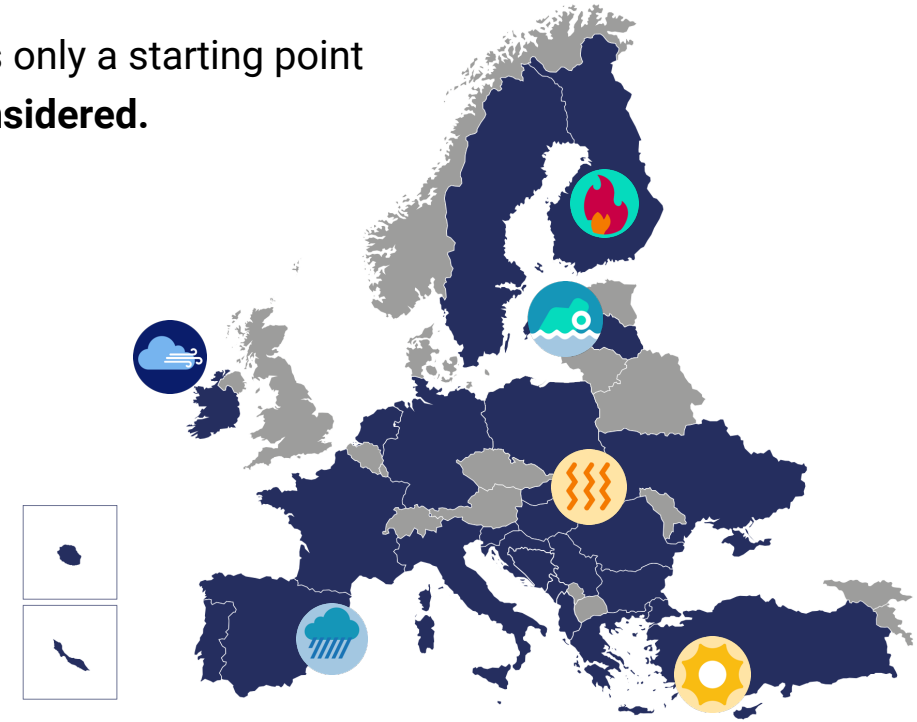
How to make the Handbook work across Europe and across scales?

Top-down European-scale assessment is only a starting point

Local context and expertise must be considered.

Local dimensions of CRA:

- Hazards
- Exposure and vulnerability
- Requirements
- Relevant stakeholders
- Capacity
- …



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How to make the Handbook work across Europe and across scales?

Our answer:

Standardised flexibility

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Standardised flexibility — examples

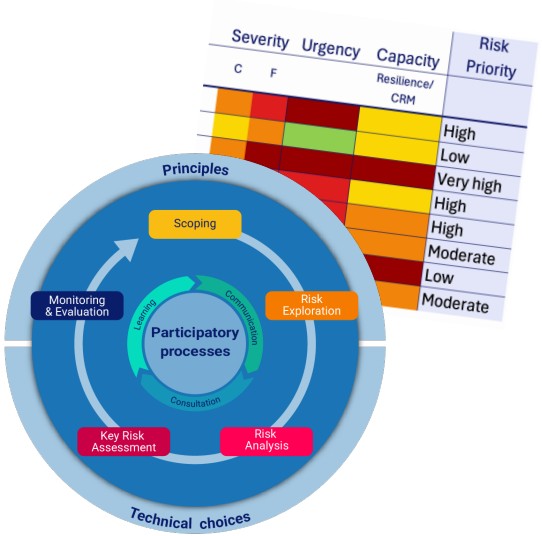
Connecting conceptual and quantitative guidance, but retaining flexibility for regional requirements

Design:

- Framework and workflows in one Handbook
- Standalone parts linked in specific steps

Experience:

- Mapped well onto consortium expertise
- Parts still strengthen each other



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Standardised flexibility — examples

Connecting conceptual and quantitative guidance, but retaining flexibility for regional requirements

Desi
- F
- S

Expe
- M
- Parts still strengthen each other

Bachmann et al. (2026)
10.1088/2515-7620/ae9d06

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Standardised flexibility — examples

Standardising the scientific approach, but retaining flexibility for local data/requirements

Design: step-by-step risk construction, exchangeable workflow parts

Experience:

- Gap between European datasets and regional requirements
- Regions have successfully customised workflows
- Decoupling implementation from datasets is non-trivial

Risk = Hazard
× Exposure
× Vulnerability

Reflection: we could have standardised interfaces/metadata more strongly

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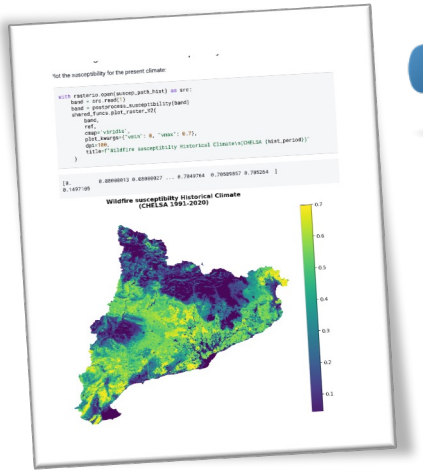
Standardised flexibility — examples

Standardising the software environment, but retaining flexibility to implement methods, hazards, etc.

Design: Python and Jupyter notebooks, open source

Experience:

- Great for development and reuse
- Open-source approach supports regional ownership
- Notebooks perceived as more difficult than they are



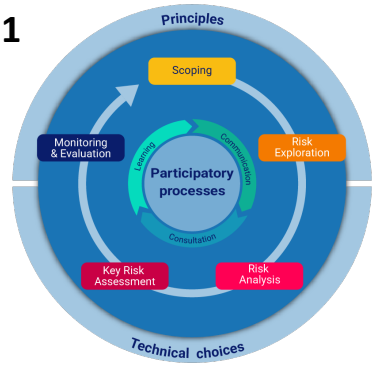
Reflection: we could have standardised packages further

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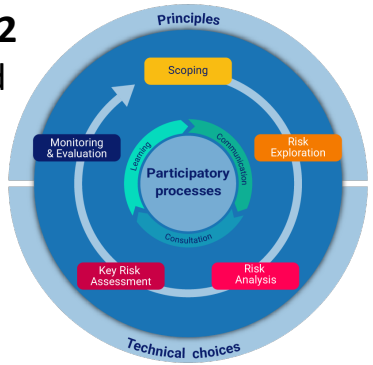
Going operational

- **1.5 years initial co-development** with pilot regions
- **67 more regions have since been funded**

Phase 1



Phase 2
refined

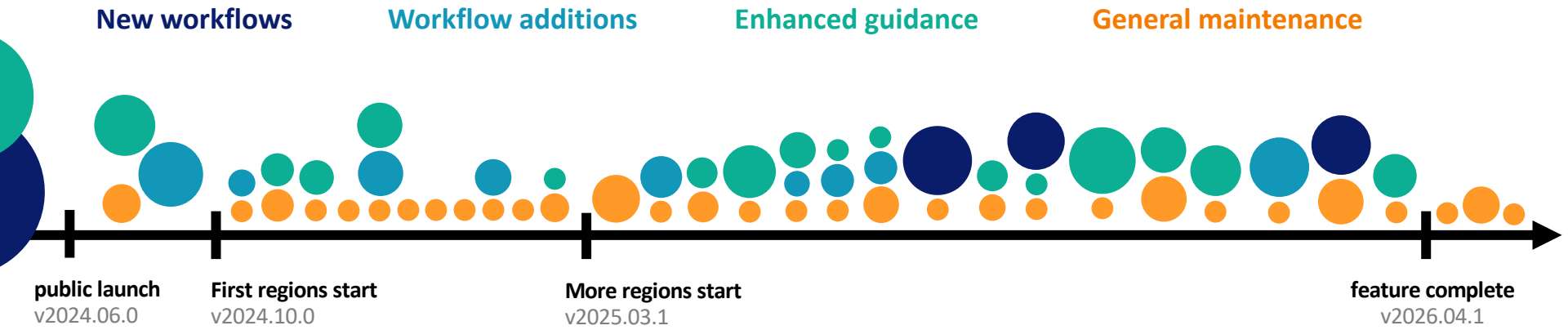


Phase 3
adaptation plan

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Going operational

- **1.5 years initial co-development** with pilot regions
- **67 more regions have since been funded**



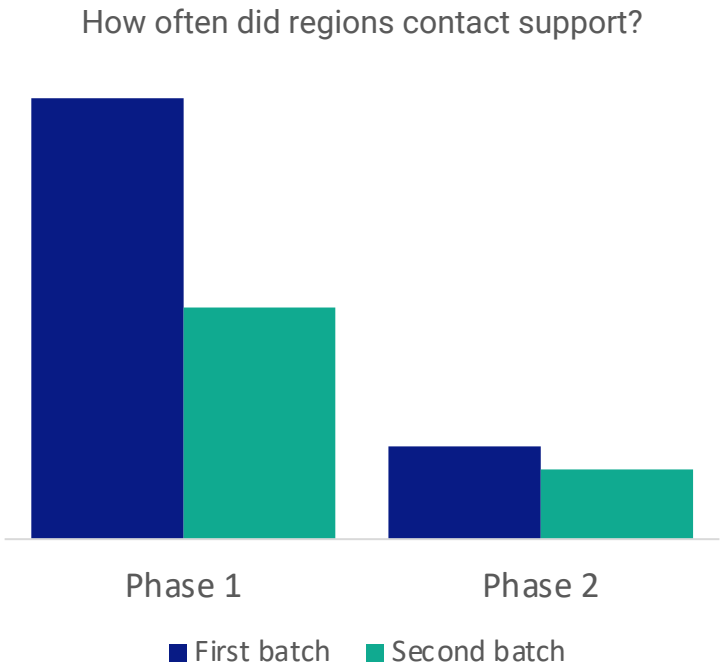
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Support

- **Guidance, not outcomes**
- **Backstop** for unclear, broken or missing features

- **Lower-than-expected demand**
- Mainly used for technical onboarding

- **Community of Practice**: regions supporting each other



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The Handbook is ready for reuse, tried and tested

github.com/CLIMAAX



- **Framework** with universal conceptual guidance
- **Workflow** methodology and implementations

- **Examples from regions encapsulate experience**

CLIMAAXPLORER coming soon...

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