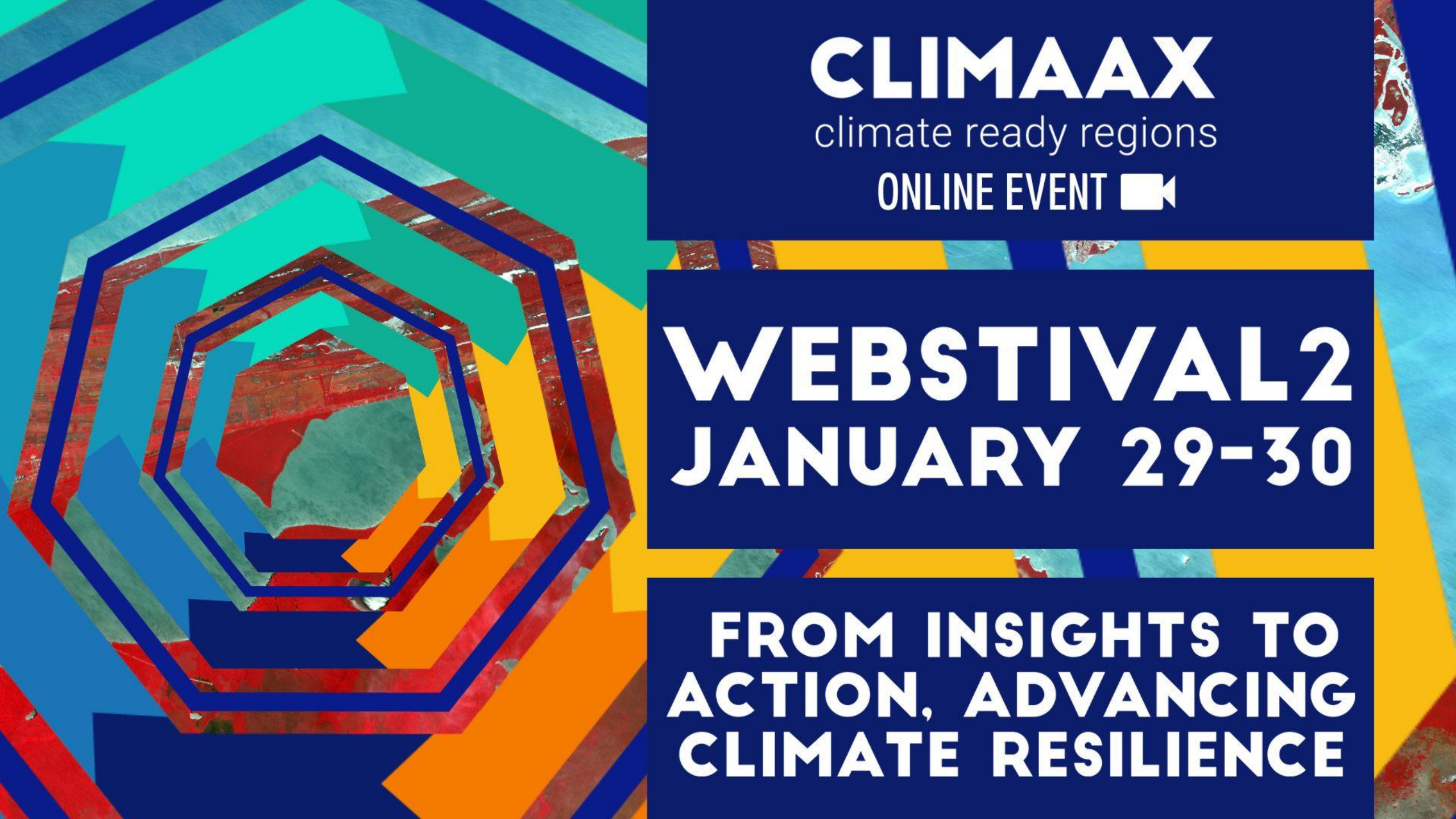
CLIMAAX
climate ready regions
ONLINE EVENT
WEBSTIVAL2
JANUARY 29-30
FROM INSIGHTS TO ACTION, ADVANCING CLIMATE RESILIENCE

WELCOME

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CLIMAAX
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Welcome and agenda-setting

Jip Lenssen, Project Officer, EURADA

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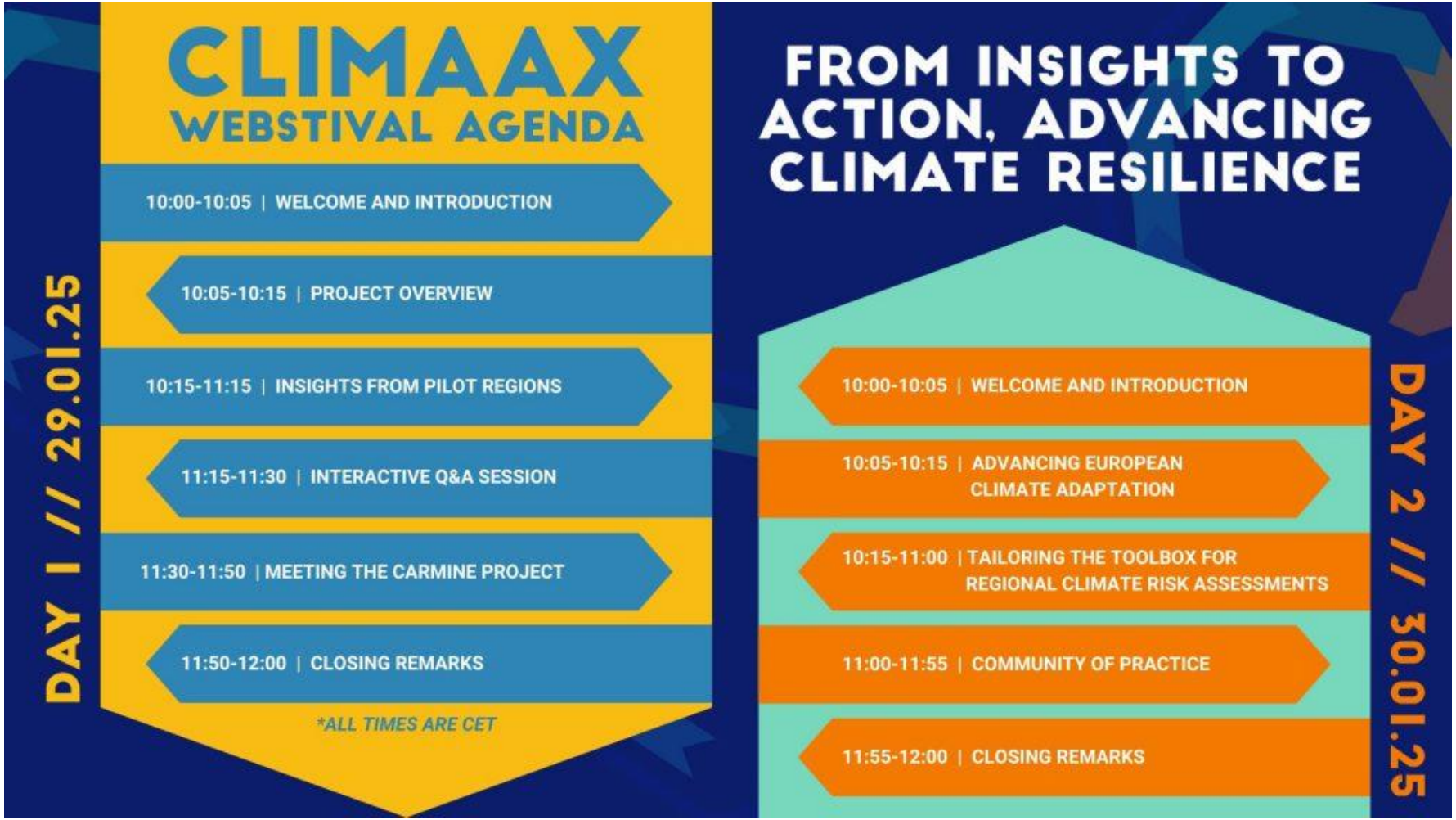
AGENDA



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Housekeeping

This session is recorded

Raise your hand to ask a question during dedicated Q&A moments or write in the chat!

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CLIMAAX
A Comprehensive Introduction

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Project overview

Dana Stuparu
Advisor Climate Adaptation, Deltares

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CLIMAAX

Preparing for regional Climate Risk assessments

Dana Stuparu, project manager (Deltares)

29th of January 2025

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Why the CLIMAAX project?

CLIMAAX supports the EU Mission on Adaptation objective to support at least 150 European regions and communities in their preparation and planning for climate resilience

CLIMAAX main objectives:

- To **co-design a harmonised methodological framework** to assess the climate change risks and impacts at the regional scale across Europe
- Support the implementation of regional climate risk assessments with **the CLIMAAX framework and Toolbox** in > 60 EU Regions, Cities and Communities

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Project team

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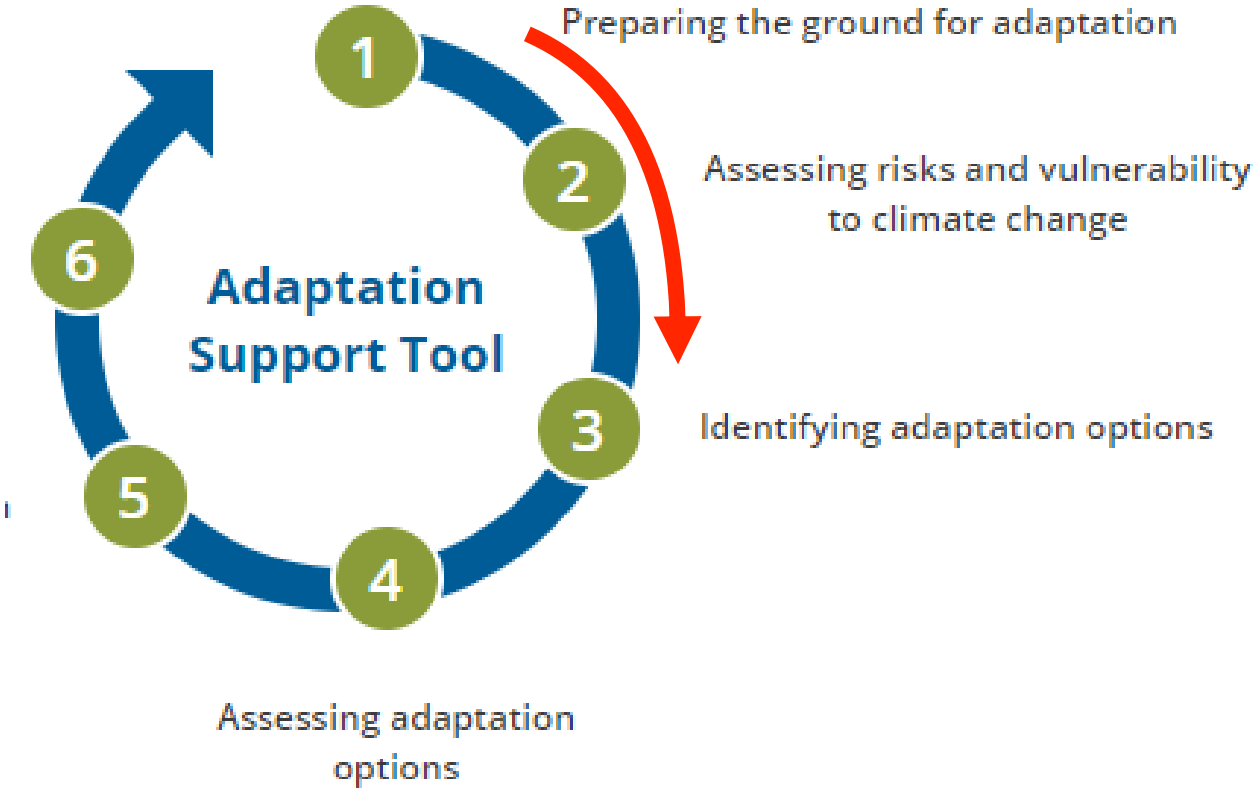
Climate Adaptation



CLIMAAX methodological Framework for Climate Risk Assessment

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CLIMAAX cannot do local studies…

… but can support third parties to do it at their regional/local scale

heatwaves, wildfires, heavy rainfall, floods, droughts…

PHASE 1: COMMON METHODOLOGY applicable at regional/local scale in Europe

- Multi-risk
- Applicable at any interested region/municipality/community
- Enabling to establish a common Risk Assessment benchmark across Europe
- Using as much as possible the common information already available

PHASE 2: REFINED REGIONAL/LOCAL HR ANALYSIS AND RISK ASSESSMENT

- Refinement of the multi-risk assessment carried out in Phase 1
- Using local data / local downscaling of the large scale climate indicators
- Capable to integrate local high-resolution data and approaches
- Enabling to enhance regional /local risk assessments

PHASE 3: EXPLORATION OF LOCAL ADAPTATION STRATEGIES and improved Risk Management Plans

- Explore potential adaptation options and helps to identify relevant actions at local scale to address the risk and vulnerabilities identified
- Analysis of local adaptation options and strategies and improved RMPs
- Guidance on examples of best practices

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Where we are

- **handbook.climaax.eu** is online and contains a well documented CRA Framework + CRA workflows
- Five pilots have conducted CRA for selected hazards
- The 1st Open Call resulted in **32 selected beneficiaries**
- Finalizing the evaluation of the 2nd Open Call
- Active support for regions

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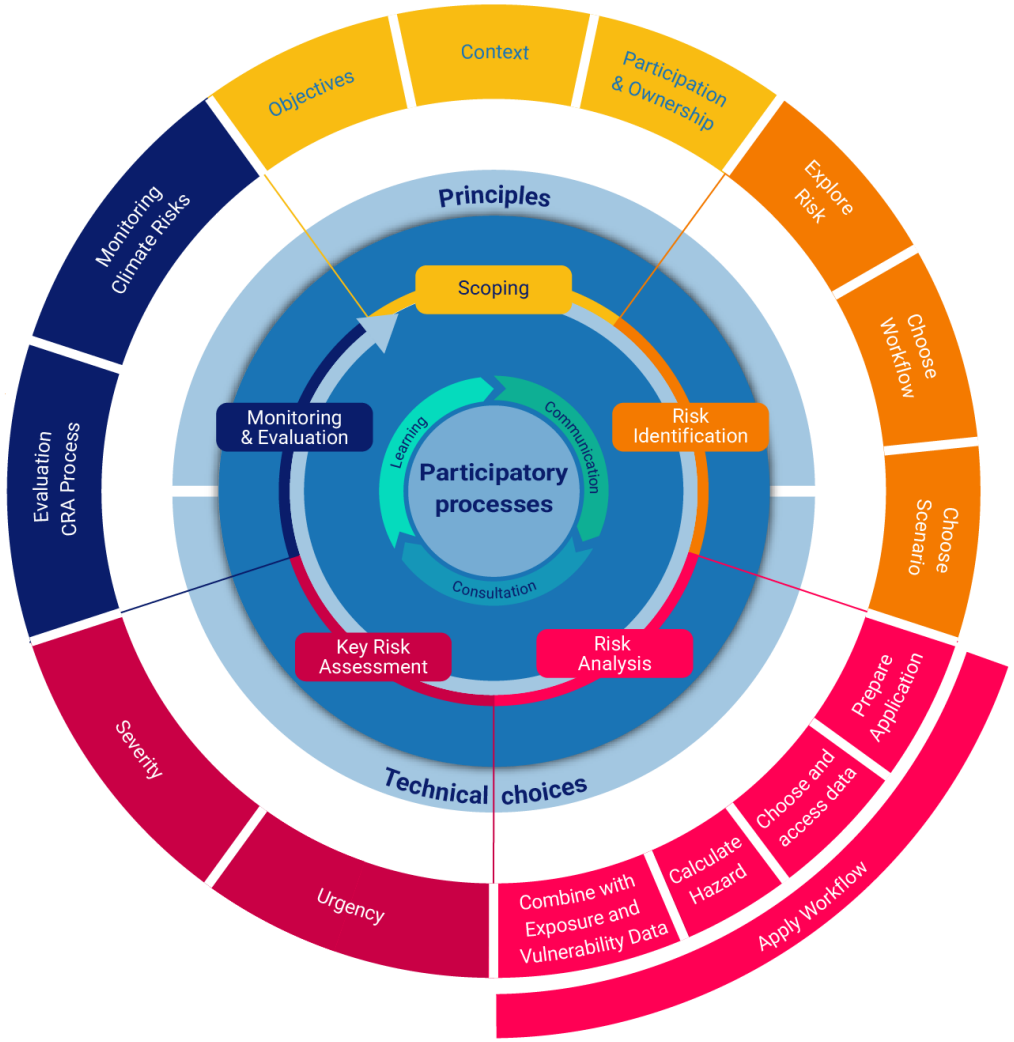
The CLIMAAX Framework



- **Enhance practical implementation** from the latest scientific developments.
- **Support improved coherence across countries and regions** based on generally accepted standard approaches as part of a shared, inclusive and harmonised framework.
- **Structured approach** helpful for systematically preparing for CRA and for contextualizing the results derived from the CLIMAAX risk workflows
- **Allows for flexibility and scalability** in implementation
- Accompanied by a detailed set of **guiding questions** for consultation and users.

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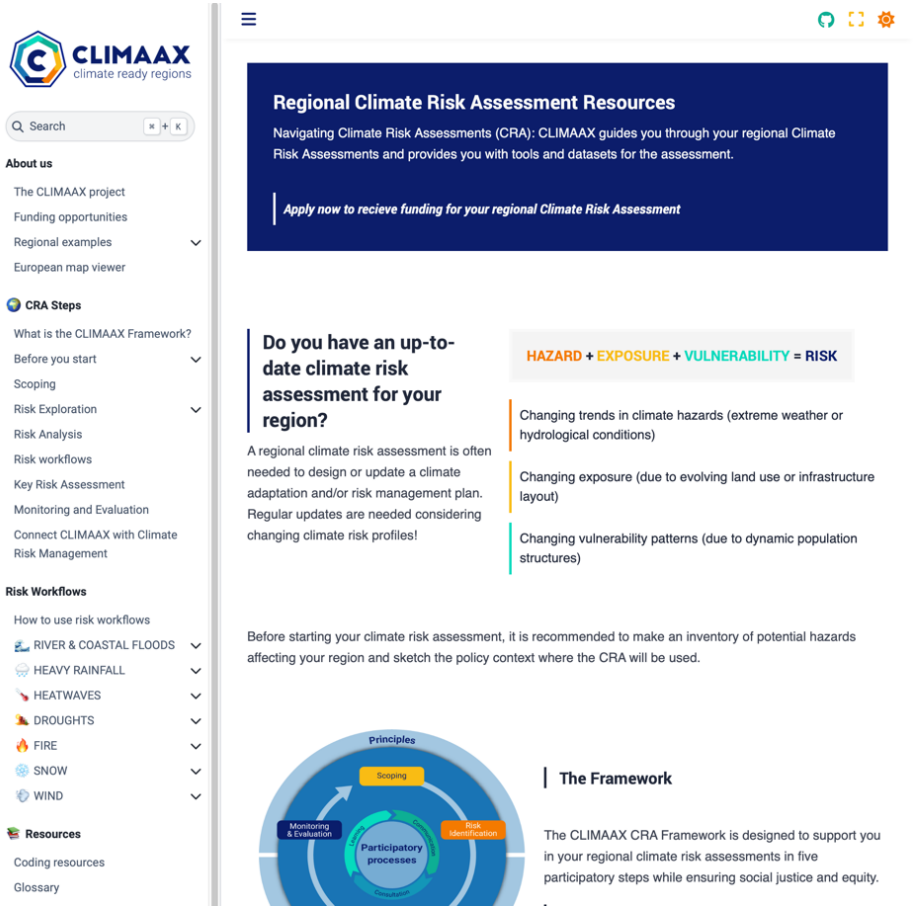
CLIMAAX Handbook

handbook.climaax.eu



CLIMAAX Workflows

- 11 operational workflows for 7 hazards

- 3 risk assessment methods:
  - Exposure assessment
  - Damage assessment
  - Risk index
- Multiple climate scenarios

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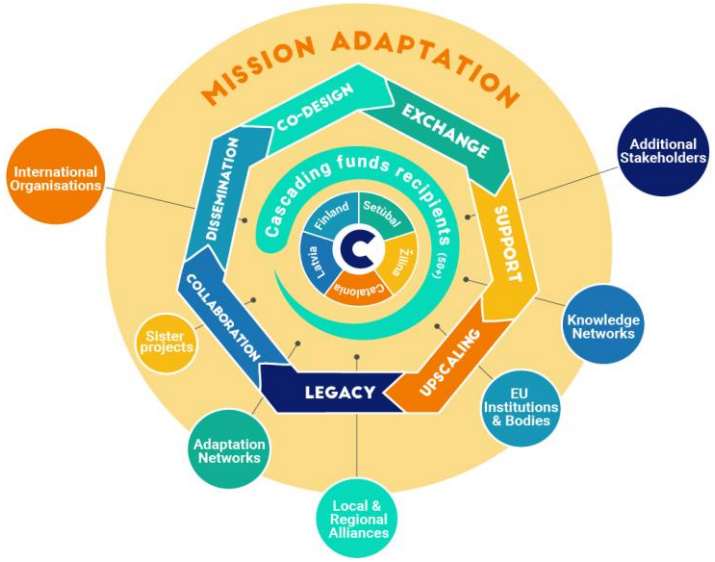
The CLIMAAX Community of Practice



- Consult and inform the project activities, refine the products and information for users.
- Connect to regions participating in related projects

CLIMAAX Support

JupyterHub

Service Desk | **Drop-in Sessions**

Handbook | **GitHub** | **ECMWF Forum**

- Support for implementation and upgrade of tools
- Entry gate for any questions about the framework, the workflows or other difficulties

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The webstival

- Get to know each other better
- **Share experiences** (First day) and **collect feedback** (Second day)

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Panel Discussion: Insights from Pilot Regions

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Pilot Regions: Lessons learned

Ainara Casajús Vallés
Senior Technician at the Ministry of Home Affairs and Public Safety in the Regional Government of Catalonia, Spain

Taina Hanhikoski
Senior Specialist, Ministry of the Interior, Department for Rescue Services, Finland

Dace Zandersone
Data Analyst at Latvian Environment, Geology and Meteorology Centre

Cristina Coelho
Municipality of Setúbal

Michal Žarnay
Innovation Consultant at INOVIA

Žilina City

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CLIMAAX Risk Assessment

Experience from Catalonia

Ainara Casajús Vallés, Senior Technician at the Ministry of Home Affairs and Public Safety in the Regional Government of Catalonia, Spain

CLIMAAX Webstival
30.1.2025

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Catalonia pilot – participation in CLIMAAX project

- Civil protection system – different stakeholders and governance levels
- Projections on how phenomena could potentially change (frequency, duration, intensity) to reinforce preparedness and response.
- Understanding the dimensions of risk separately: hazard, exposure and vulnerability.

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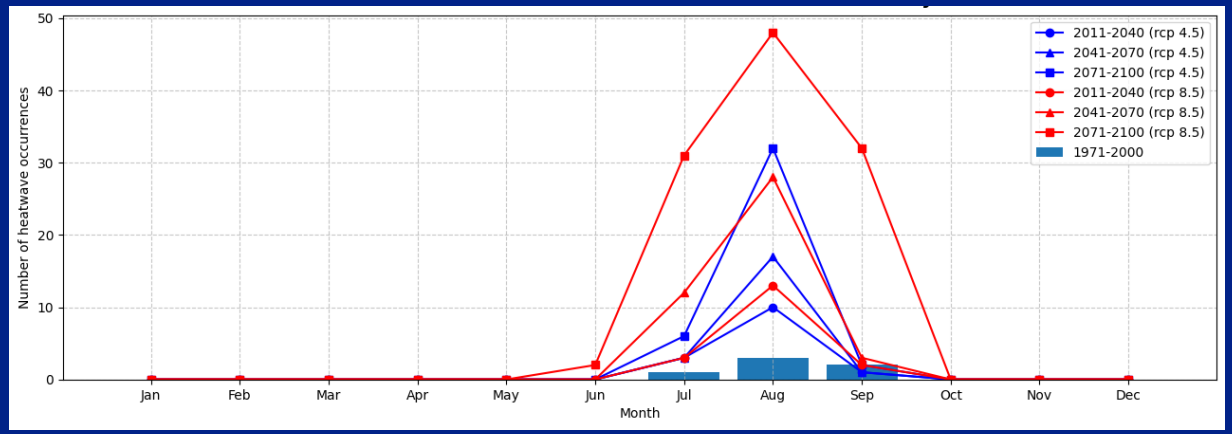
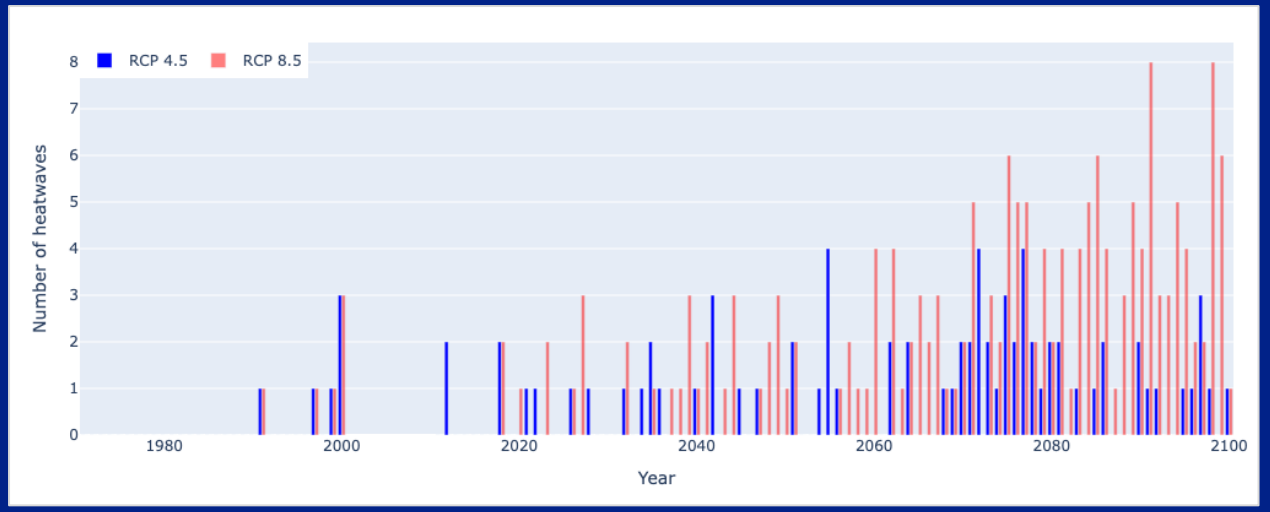
Catalonia pilot – study of heatwaves

- Agreed definition within the region:
  - Daily maximum temperature exceeds the 98th percentile of the reference period for 3 or more days.
  - Summer months.
- Increase of the number of episodes in both RCP 4.5 and 8.5.
- Future study: duration of the episodes.
- Sharing messages and visualisation of results together with stakeholders.

Heatwave occurrence in Barcelona distribution by month



Yearly heatwave occurrence in Barcelona for RCP 4.5 and 8.5



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CLIMAAX Fire Risk Assessment

Experience from Finland

Taina Hanhikoski, Senior Specialist, Ministry of the Interior Finland

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30.1.2025

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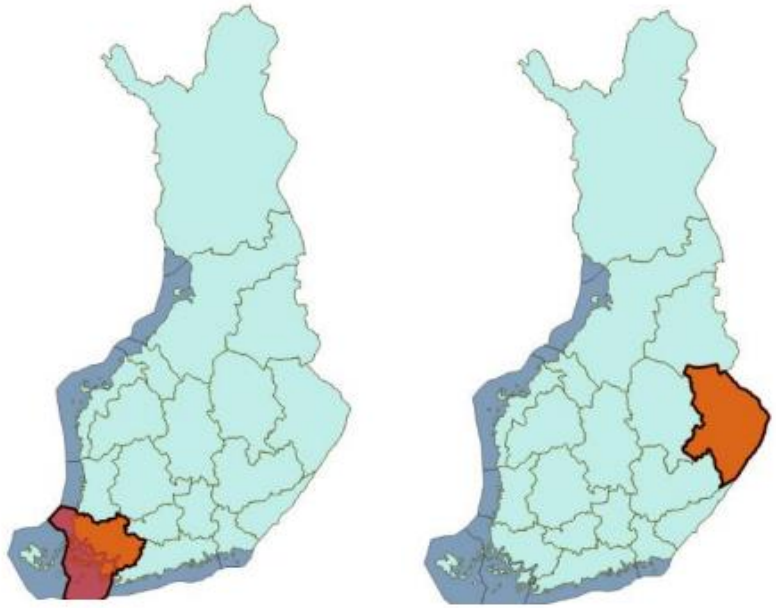
Focus of the Finnish pilot

- Forest/wildfire risk – how will it change in the future?
- What will this change mean for
  - Rescue services
  - Forest management/owners
- Focus on two regions
  - South West Finland
  - North Karelia



South West Finland North Karelia

Maps: Ilmastopaneeli.fi

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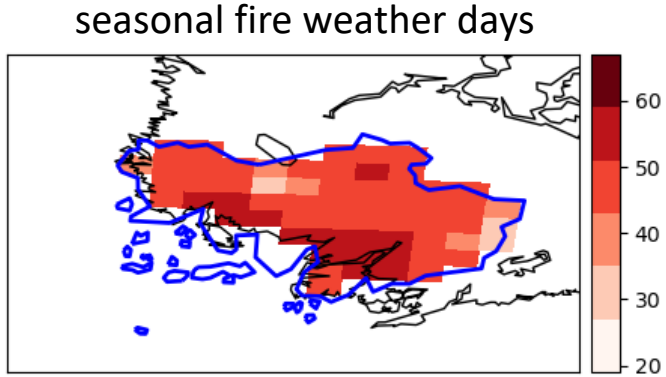
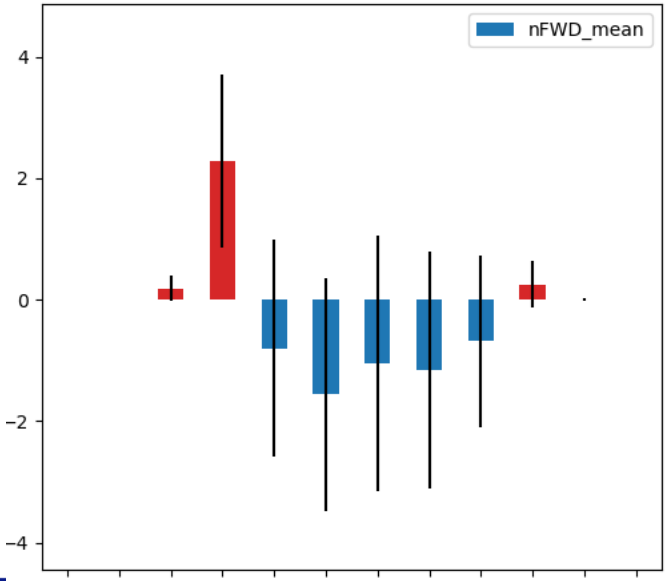
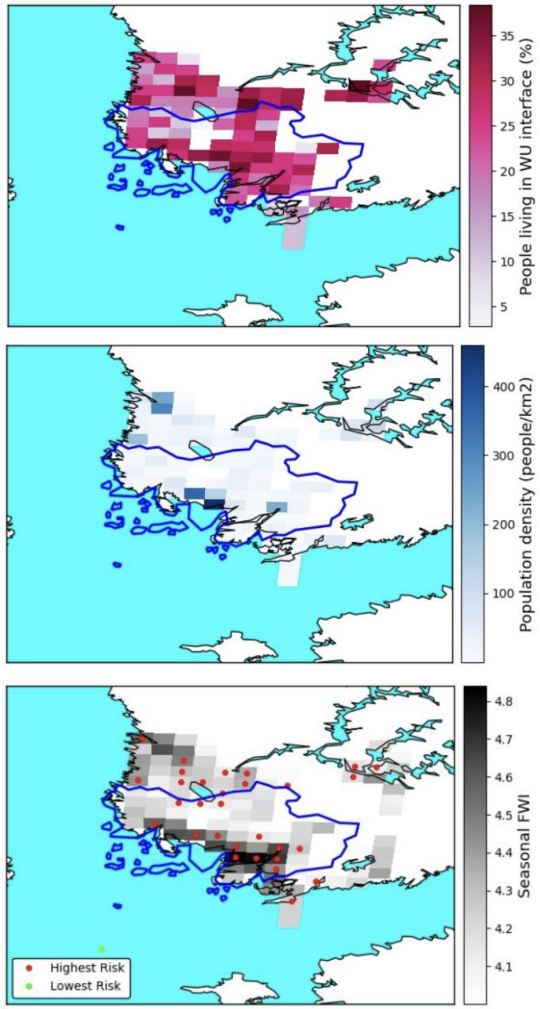
Hazard/risk analysis

seasonal fire weather days



change in fire weather days/month





- The risk analysis is based on the **fire weather index (FWI)**, which is based on meteorological model parameters
- Days which exceed a given **FWI threshold** are **called fire weather days (FWD)**
- In Finland (Southwest Finland), we see an increase in FWD in the spring → fire season length increases
- For **vulnerability**, we use a range of indicators, e.g., **people living nearby forests, population density**, ...
- **Risk** is calculated as combination of fire danger and vulnerabilities.
- The tool identifies areas of highest/lowest risk

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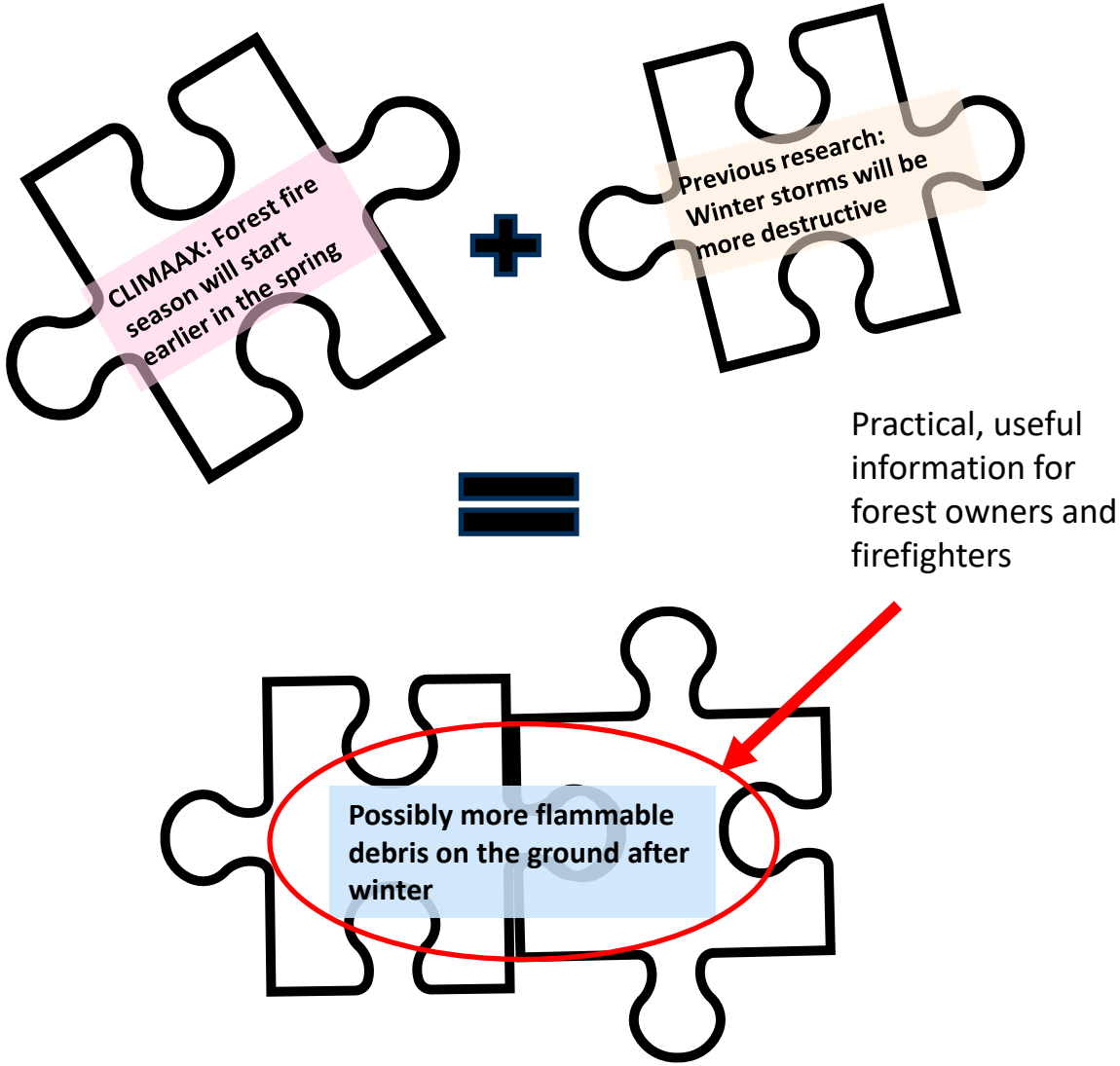
Some thoughts about the process & interpretation of the results

- What do we actually know from the results?
  - CLIMAAX gives us valuable puzzle pieces
  - Connecting them with other valuable pieces to create the full picture
- Visualization is the key
  - Target groups
  - Clear interpretation
- Replicability of the process – it is not a one time thing, but needs updating
  - Be prepared for this



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Thanks very much –
Kiitos paljon!

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CLIMAAX Flood Risk Assessment

Coastal floods

Dace Zandersone
Data analyst/climate group team lead

Latvian Environment, Geology and Meteorology Centre
30.01.2025.

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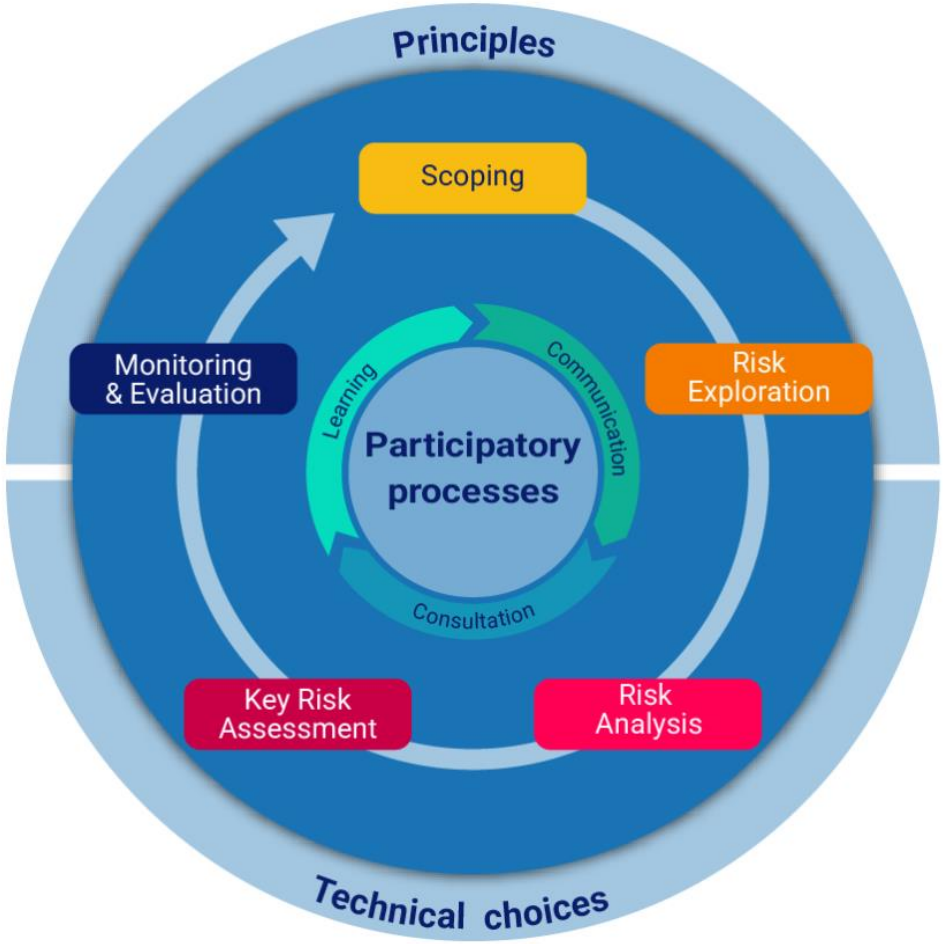
Climate risk assessment



SCOPING:

- Latvian coastline is more than **500 km long**
- It is composed of **loose, sandy sediments** which are especially **vulnerable to coastal erosion**
- Climate projections outline that **sea level** will **increase in near future** which likely will **intensify erosion processes**

Coastal erosion outlined after storm surge (2018, LSM)

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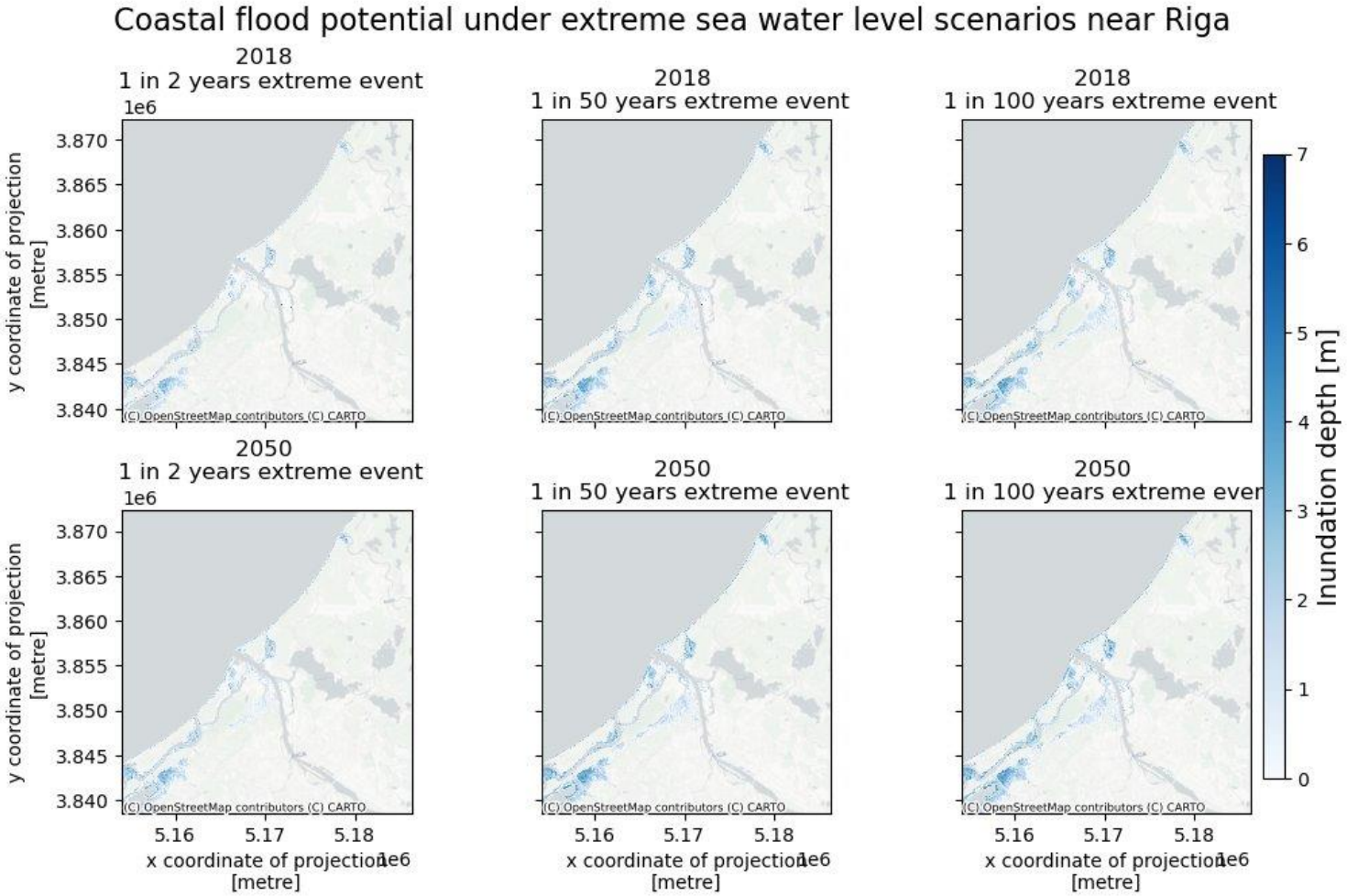
Coastal floods: HAZARD



Latvia is naturally subject to both **coastal accumulation and erosion**.

As erosion accelerates and natural barriers weaken, coastal areas become **more vulnerable to the impacts of rising sea levels**.

This increases the **risk of coastal flooding,** particularly during storm surges or high tides.

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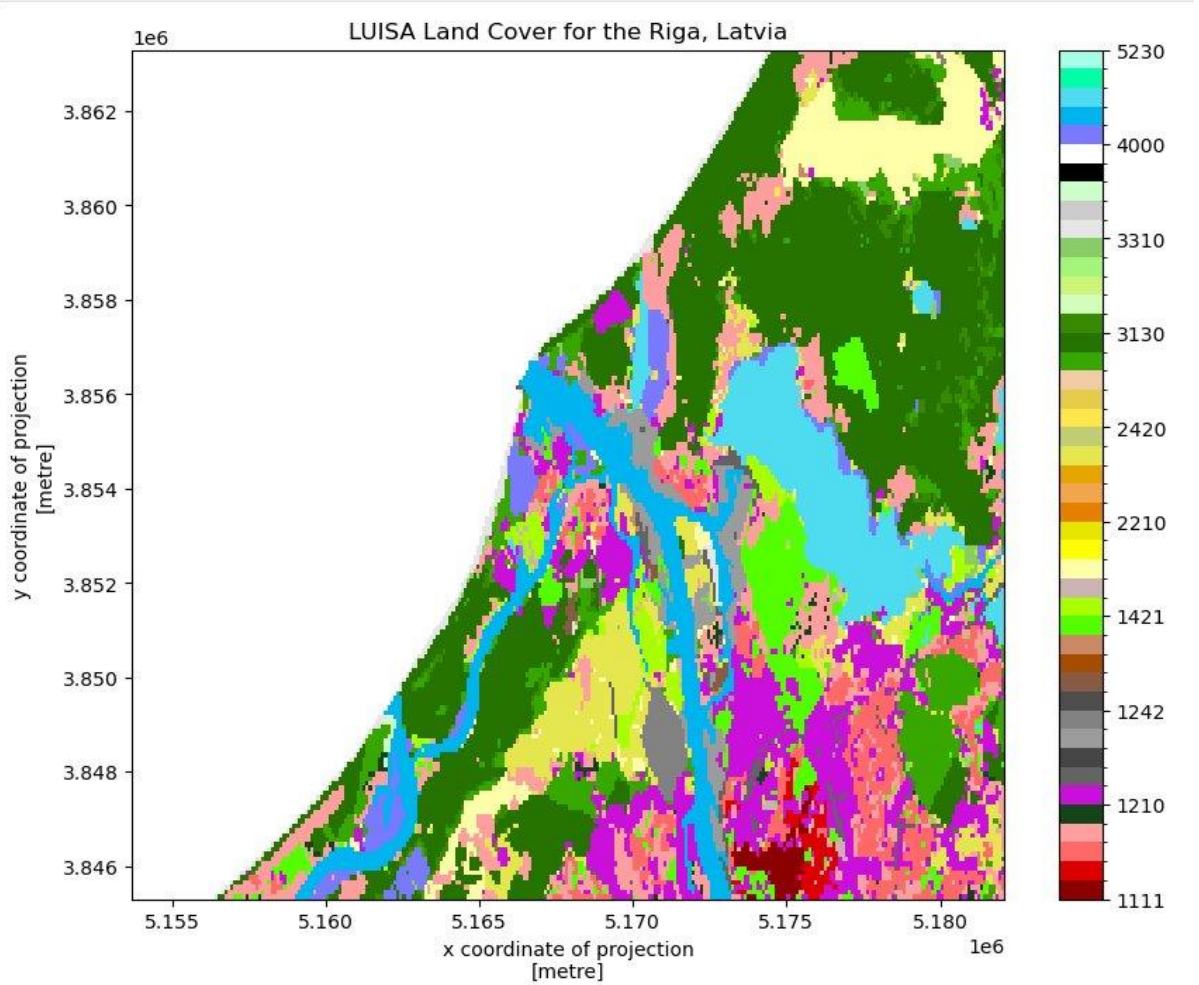
Coastal floods: EXPOSURE

The Baltic Sea coast in Latvia has several characteristic features

The shores consist mainly of **loose gravel deposits** (sand), they are relatively low and flat both above and under water.
However, there are also coasts with **rocks**, places where **grass grows into the sea** and **steep bands**



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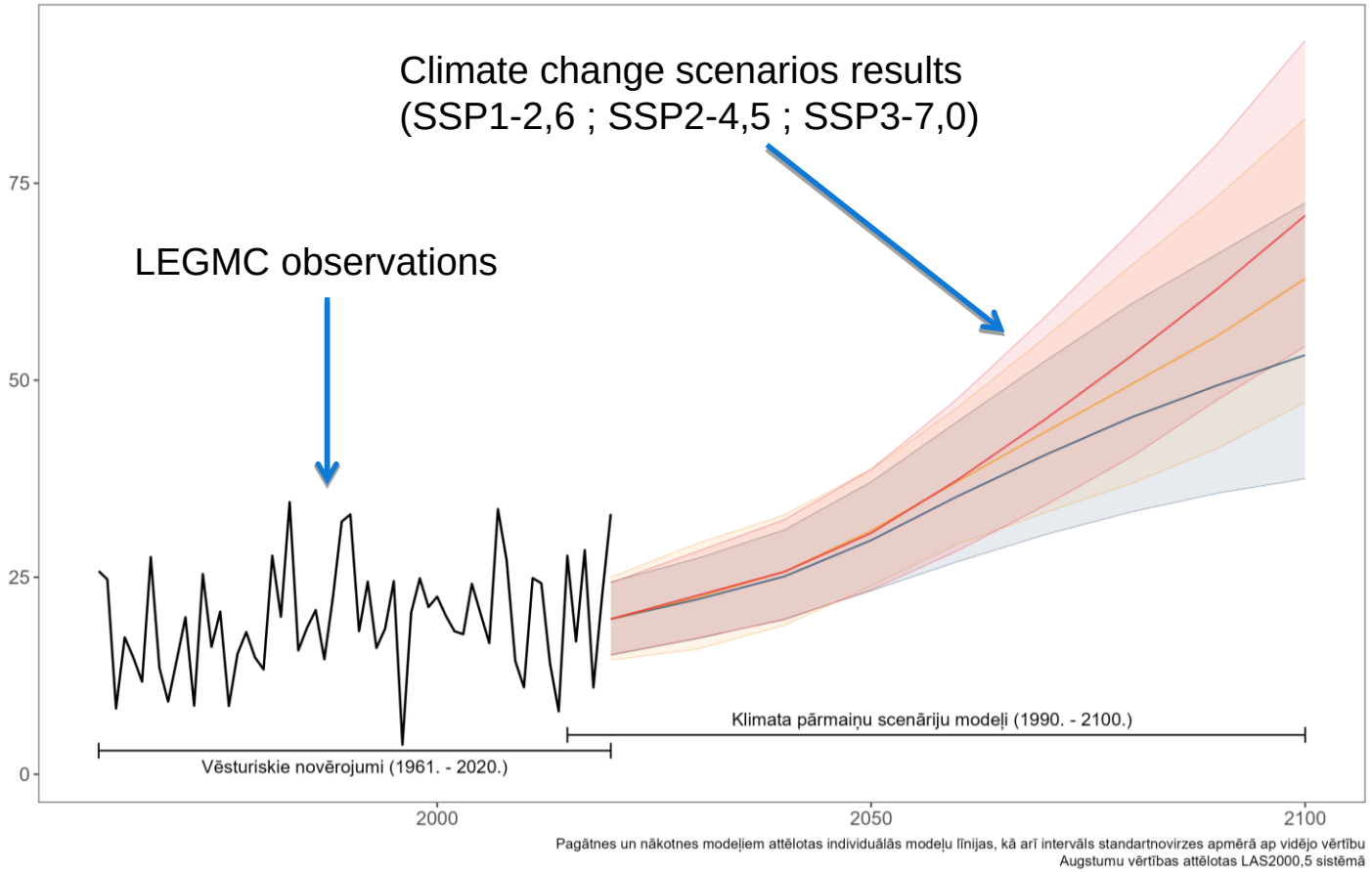
Coastal floods: Sea level rise

Average sea level rise in Latvia, cm ASL

https://klimats.meteo.lv/klimats_latvija/klimata_riks/



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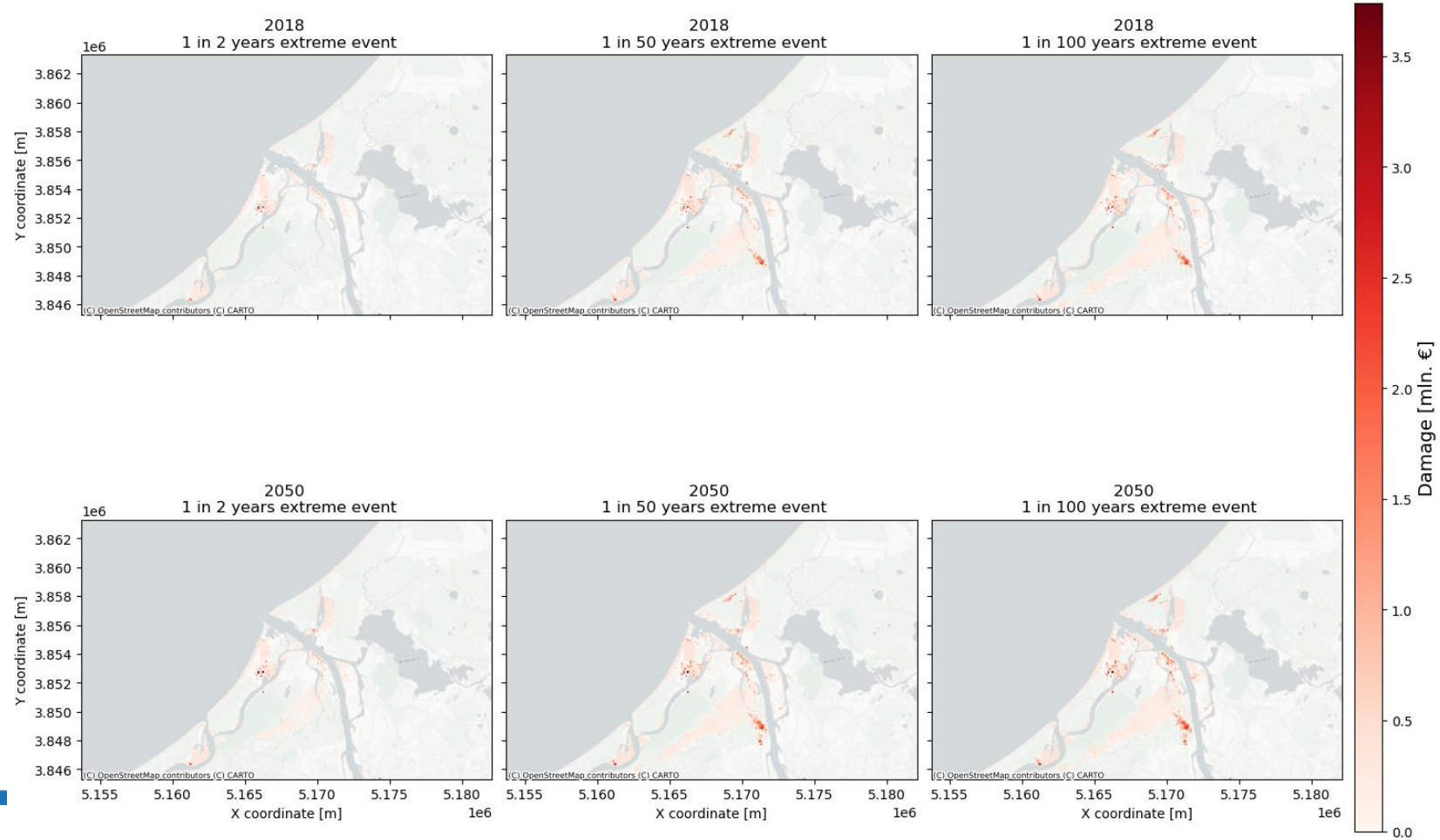
Coastal floods: POTENTIAL DAMAGE (EUR)

Based on **sea level rise, land use data and coastal flood return periods**, it is possible to calculate potential damage



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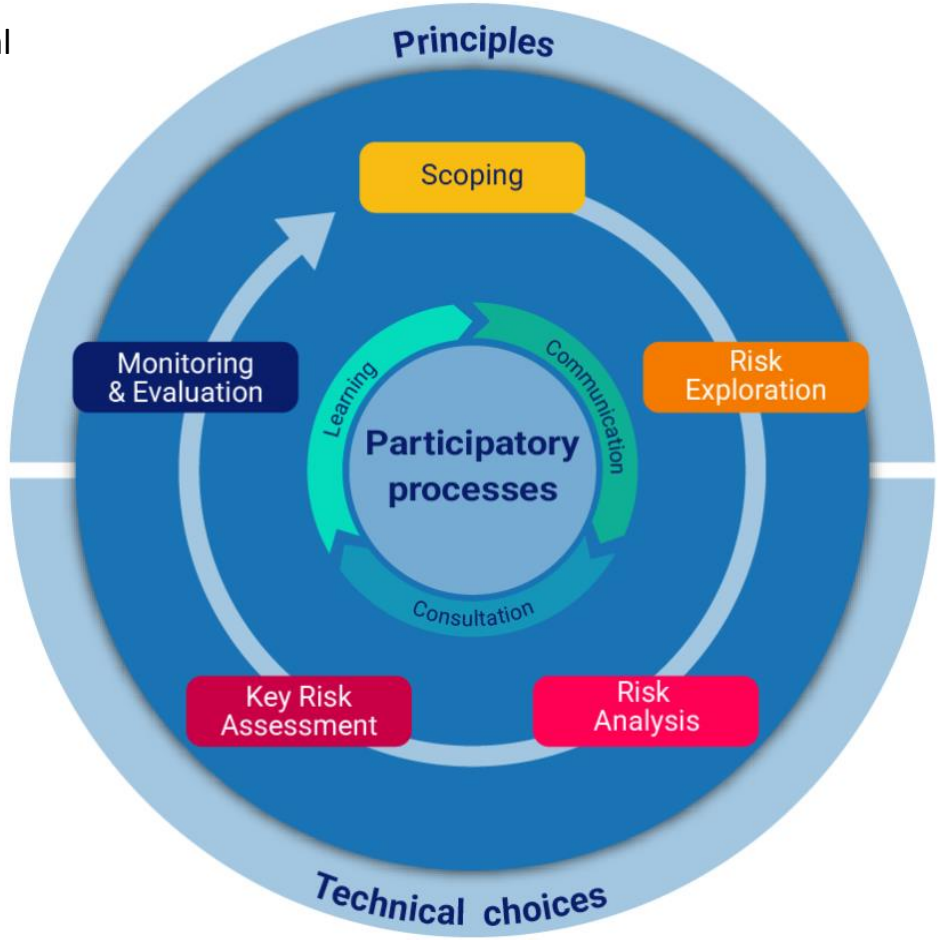
Climate risk assessment FRAMEWORK

https://handbook.climaax.eu/intro.html



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Piloting Regional Climate Risk Assessment

Cristina Coelho, Setúbal Municipality

29 January 2025

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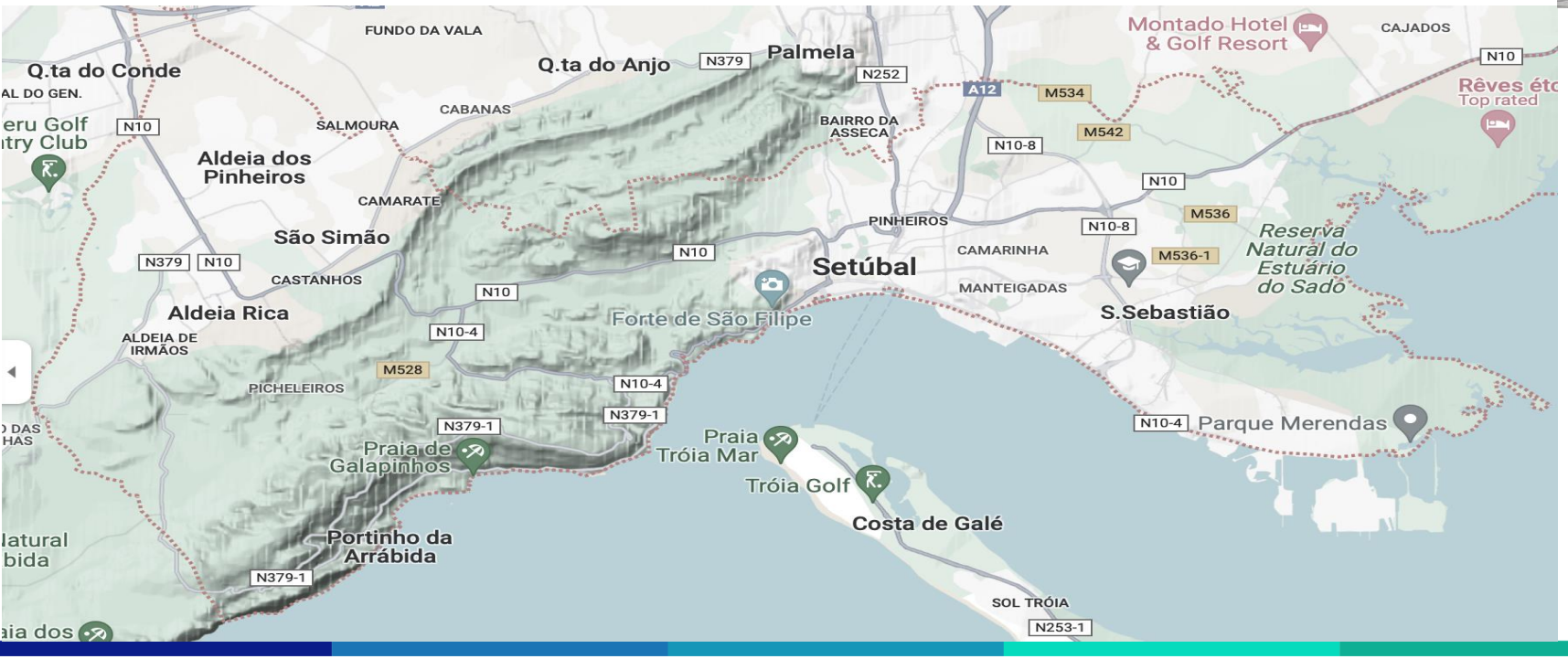
Flash Floods in Setúbal (Portugal)

The city is enclosed by natural protected area with mountains on the west, the Sado Estuary on the east, and the sea to the south.



The city is built closely to the shore with industrial areas stretching along the coast and the port for international cargo.

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Flash Flooding in the past

Setúbal has suffered from the impacts of flash floods many times in the past. Flash floods occurred almost once in 10 years between 1940s and 80s. Especially the flash flooding event in 1983 and a more recent one in 2008 generated strong disruptions and devastating damages in downtown Setúbal.

In Setúbal, flash floods have been triggered by intensive rainfall (>100mm) condensed to a few hours, mostly during the autumn and spring seasons.

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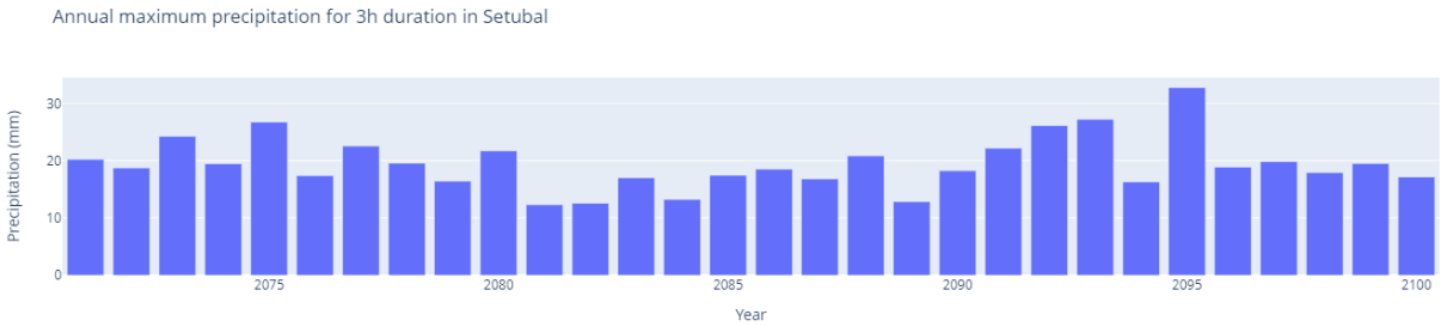
Extreme precipitation – 3h

Annual maximum precipitation (3h) for the historical period (1976-2005).



Annual maximum precipitation (3h) for the end of the century, based on RCP 8.5.

During the historical period, maximum 3h precipitation reached 23.1 mm, with a mean of 16.2 mm.

Extreme events - defined for this study area, as precipitation above the 90th percentile thresholds (21.62 mm for 3h) occurred 4 times.

Under RCP 8.5, maximum 3h precipitation will reach 32.75 mm (mean = 19.47 mm).

Extreme events will increase in frequency further, with 12 occurrences for 3h precipitation (+200%).

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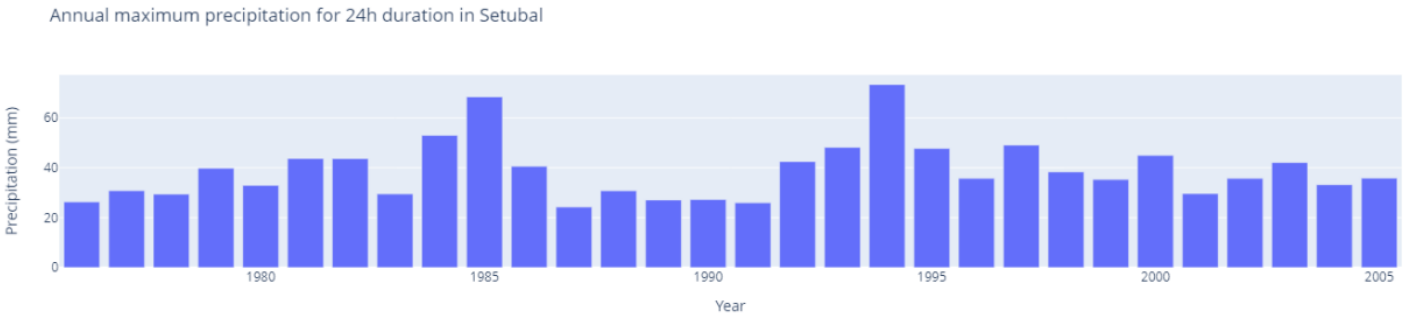
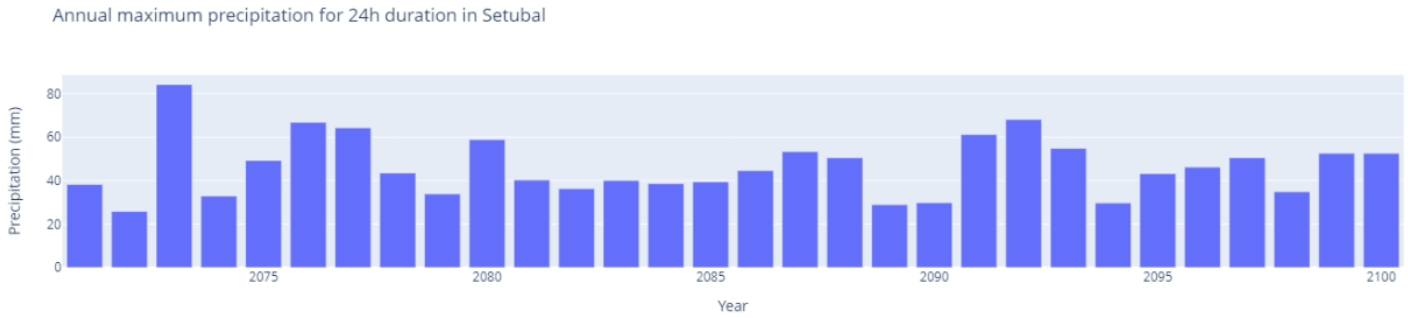
Extreme precipitation – 24h



Annual maximum precipitation (24h) for the historical period (1976-2005).



Annual maximum precipitation (24h) for the end of the century, based on RCP 8.5.

During the historical period (1976–2005), maximum 24h precipitation was 73.4 mm, with a mean of 38.83 mm.

Extreme events - defined for this study area as precipitation above the 90th percentile thresholds (52.22 mm for 24h), occurred 4 times.

Under RCP 8.5, maximum 24h precipitation will reach 84.2 mm (mean = 46.43 mm).

Extreme events will increase in frequency further, with 14 occurrences for 24h precipitation (+250%).

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SETUBAL
MUNICÍPIO PARTICIPADO

Lessons learned for the project

- The performed analysis has provided valuable insights into climate risk management, focusing on key hazards such as extreme precipitation, heatwaves, and wildfires.

- However, the Setúbal pilot faced significant challenges, particularly the spatial resolution of climate data from Copernicus, which limited the precision of the analyses at the municipal level. This constraint highlights the importance of acquiring higher-resolution datasets for more detailed and localized climate assessments at the municipal level.

- Collaborating with municipal and academic stakeholders enriched the process, ensuring that the methodologies and final deliverables aligned with local needs and priorities.

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https://youtu.be/VIET6Aqj2KQ?si=UNswzSWDjYXsTMZ0

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Thank you

cristina.coelho@mun-setubal.pt

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Pilot Regions: Lessons learned

Ainara Casajús Vallés
Senior Technician at the Ministry of Home Affairs and Public Safety in the Regional Government of Catalonia, Spain

Taina Hanhikoski
Senior Specialist, Ministry of the Interior, Department for Rescue Services, Finland

Dace Zandersone
Data Analyst at Latvian Environment, Geology and Meteorology Centre

Cristina Coelho
Municipality of Setúbal

Michal Žarnay
Innovation Consultant at INOVIA

Žilina City

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CLIMAAX RISK ASSESMENT

Experience from Zilina, Slovakia

Michal Žarnay
Innovation Consultant at INOVIA

Zilina City
Place, Date, Month, year

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Journey for Žilina pilot

Identifying 2 major hazards: **urban floods from heavy raining** and **heat waves.**

Strong support of experts from KAJO.

URBAN FLOODS	HEAT WAVES
Learning obtained: detailed **results** for specific use cases in the city **require** detailed **simulation** of the spot and surroundings – such a workflow not reproducible for others = not suitable for CLIMAAX At the end, municipality deals with simulation and virtual reality specialists on case-by-case basis.	Results obtained and integrated into strategic planning.

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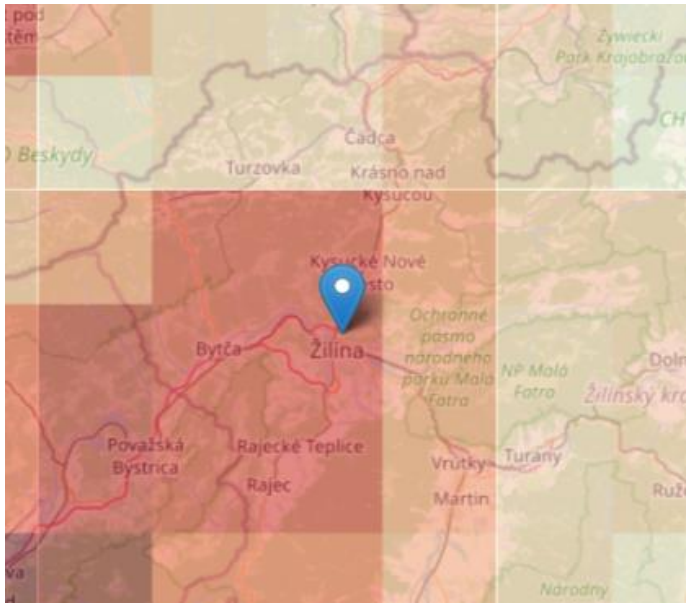
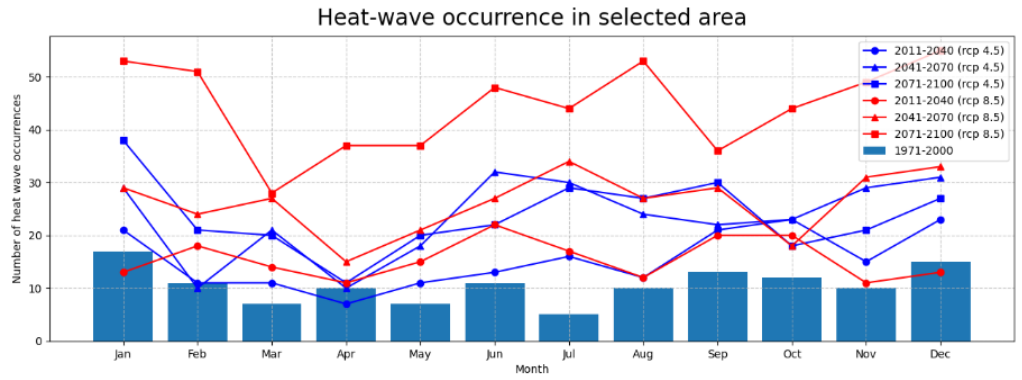
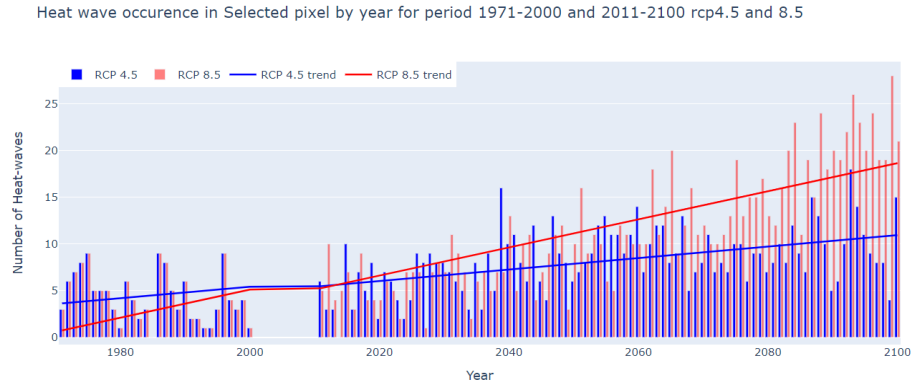
Results: Heat Waves Hazard Assessment

- Based on the **Euro Cordex climate scenario** data for RCPs 4.5 and 8.5 (12x12km grid)
- Estimation of the **heat waves occurrence** for past and future climate for years and months (with possibility of changing the tresholds for temperature and duration) and
  Number of heat days per year – for selected pixel (12x12km)







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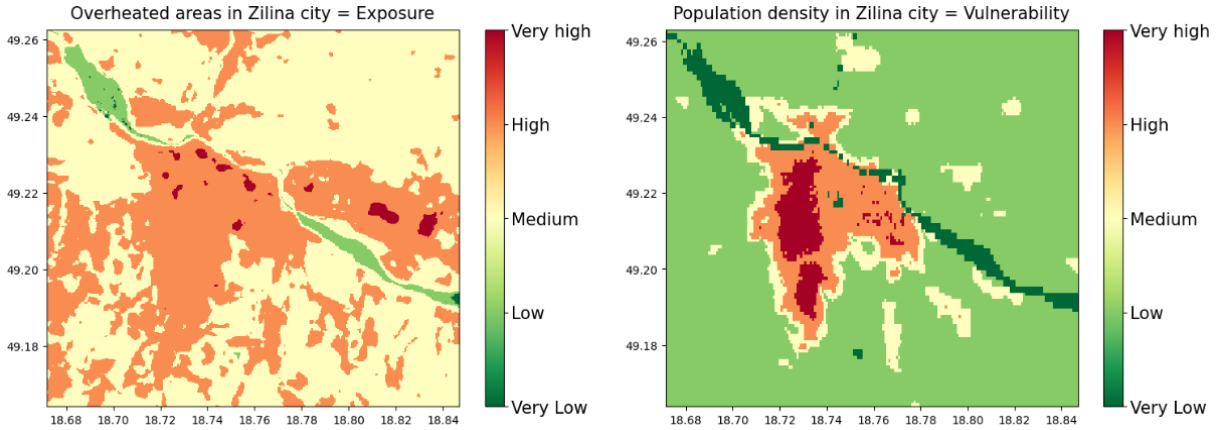
Results: Heat wave risk assessment

Based on data:

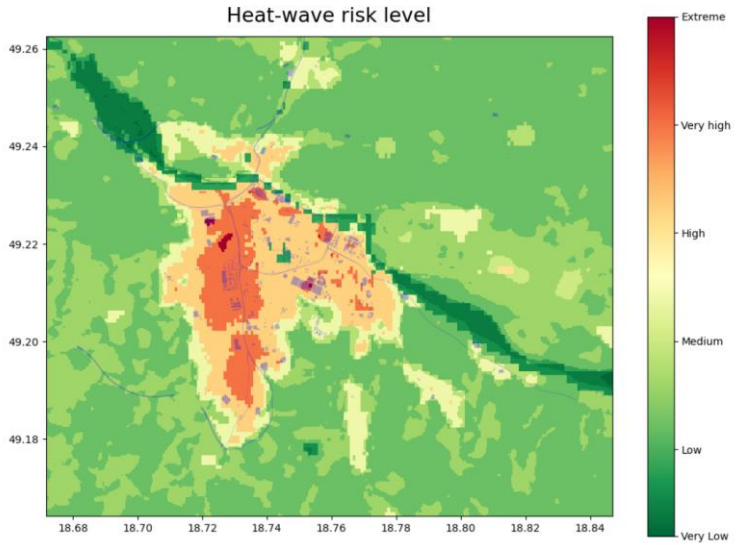
- **Areas exposed to heat:** Landsat8 Land surface temperature (30x30m)
- **Vulnerable population:** World pop data (100x100m)
- **Vulnerable areas:** Žilina municipality office



Risk matrix 10+10

Heat exposed areas based on the LST	1	2	3	4	5	6	7	8	9	10
10	Medium 11	Medium 12	High 13	High 14	High 15	High 16	Very high 17	Very high 18	Very high 19	Very high 20
9	Medium 10	Medium 11	Medium 12	High 13	High 14	High 15	High 16	Very high 17	Very high 18	Very high 19
8	Medium 9	Medium 10	Medium 11	Medium 12	High 13	High 14	High 15	High 16	Very high 17	Very high 18
7	Low8	Medium 9	Medium 10	Medium 11	Medium 12	High 13	High 14	High 15	High 16	Very high 17
6	Low 7	Low8	Medium 9	Medium 10	Medium 11	Medium 12	High 13	High 14	High 15	High 16
5	Low 6	Low 7	Low8	Medium 9	Medium 10	Medium 11	Medium 12	High 13	High 14	High 15
4	Low 5	Low 6	Low 7	Low8	Medium 9	Medium 10	Medium 11	Medium 12	High 13	High 14
3	Very low 4	Low 5	Low 6	Low 7	Low8	Medium 9	Medium 10	Medium 11	Medium 12	High 13
2	Very low3	Very low 4	Low 5	Low 6	Low 7	Low8	Medium 9	Medium 10	Medium 11	Medium 12
1	Very low 2	Very low 3	Very low 4	Low 5	Low 6	Low 7	Low8	Medium 9	Medium 10	Medium 11

Vulnerable population density



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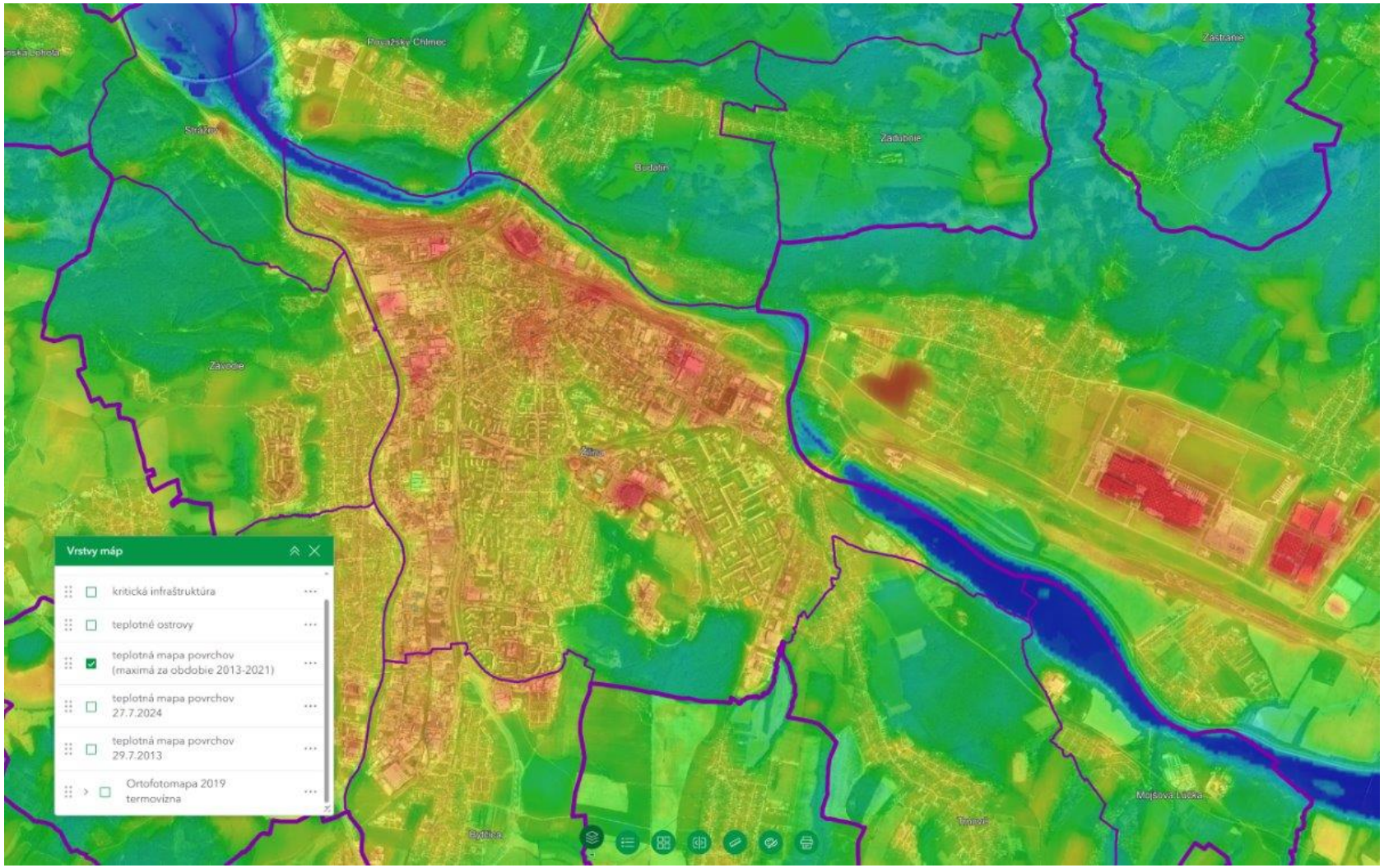
Heatwaves and Urban Development Plan



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Questions & Answers

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Carmine Project Showcase

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CARMINE

Climate-Resilient Development Pathways in Metropolitan Regions of Europe

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UK participants in this project are co-funded by UK Research and Innovation (UKRI).
The work of the Meteomatics partner (Switzerland) has received funding from the Swiss State Secretariat for Education, Research and Innovation (SERI).

UK Research and Innovation

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation

Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Education, Research and Innovation SERI

Project co-funded by

Funded by the European Union

About

Vision

To provide knowledge-based Climate Resilient Development Pathways in Metropolitan Regions of Europe, that bridges the local and regional scales by providing impact-based decision support services (IDSS) and multi-level climate governance supporting local adaptation, including both traditional and Nature-Based Solutions.

Budget: EU Contribution approx. €10,17M

32 Partners from 11 countries

Goal

CARMINE's overarching goal is to **help the metropolitan communities become more climate resilient**, by co-producing knowledge-based tools, strategies and plans for enhanced adaptation and mitigation actions addressing the Charter of the EU Mission on Adaptation to CC by 2030.

Duration of 48 months: Start date 1 Feb 2024 – End date 31 Jan 2028

Coordinated by ADMINISTRATIA NATIONALA DE METEOROLOGIE R.A. (MeteoRo)

CARMINE

An overview of CARMINE

The project prioritizes **local adaptation strategies**, including traditional methods and nature-based solutions.

To showcase its methodology, the project **digitally replicates the climate and socio-economic characteristics** of eight selected case study areas.

The project bolsters the resilience of European metropolitan communities to climate change by offering **decision support services** and **implementing multi-level climate governance**.

CARMINE develops tools, strategies, and plans aimed at **enhancing adaptation and mitigation efforts** in accordance with the EU Mission on Adaptation to Climate Change by 2030.

Objectives

Objective #1 Review resources, tools, practices and policies to **identify gaps hindering the advancement of the resilience pathways in the Metropolitan Regions of Europe**

Objective #2 Develop risk models integrating climate, earth systems, and socio-economic factors to improve adaptation and mitigation in the Metropolitan Regions of Europe.

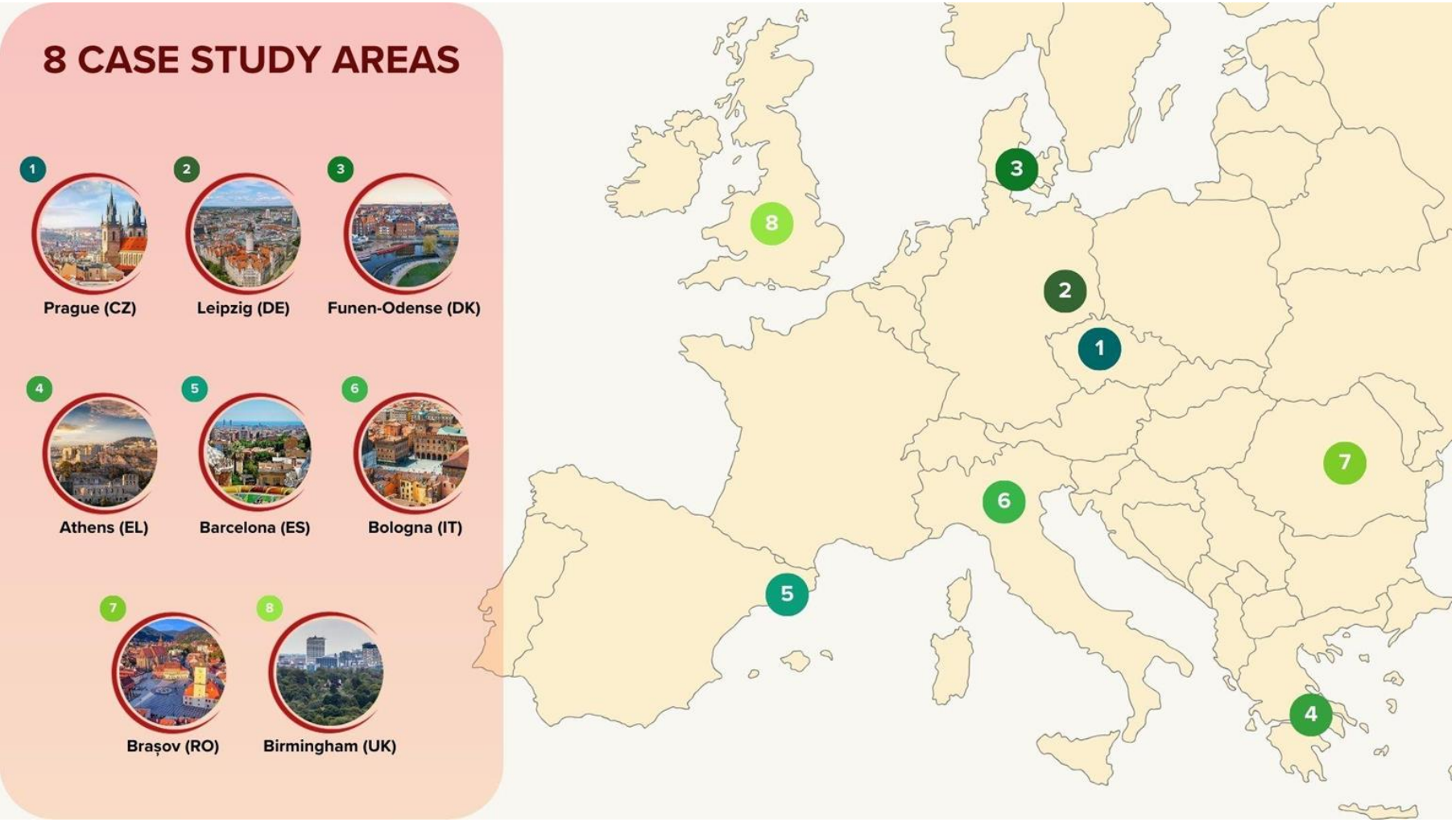
Objective #3 Co-produce an **adaptation framework combining Living Labs, Digital Twins, and Nature-Based Solutions** for resilience in the Metropolitan Regions of Europe.

Objective #4 Provide **advanced decision support services** integrating climate data with socioeconomic impact assessments for easy access to detailed local adaptation plans.

Objective #5 Develop a coordinated, **impactful modeling and risk assessment** to guide Research and Innovation (R&I) priorities, policies, and cross-sectoral plans for 2030-2050.

Tools & solutions

Case Study Areas



We establish Living Labs and analyse the climate risks and socio-economic vulnerabilities, to:

- co-develop sectoral Digital Twins use cases
- co-design decision-support tools
- propose climate-resilient development pathways (including NBS)

8 countries with diverse SE profiles, types of communities, vulnerabilities, climate impacts drivers and geographical distribution across Europe.

Living Labs

Living Labs are a **participatory research tool** often used in planning, product design and innovation which brings together a collective of key stakeholders to explore a focal issue.

LLs act as **open innovation spaces which foster co-creation** with users and the end result is expected to better address stakeholder needs.[1,2,3]

1. Leminen, S., Westerlund, M., & Nyström, A. (2012) Living Labs as Open-Innovation Networks, Technology Innovation Management Review, 2(9): 6-11

2. Pascu, C. and van Lieshout, M. (2009), "User-led, citizen innovation at the interface of services", info, Vol. 11 No. 6, pp. 82-96

3. Westerlund, M., & Leminen, S. (2011) Managing the Challenges of Becoming an Open Innovation Company: Experiences from Living Labs. Technology Innovation Management Review, 1(1): 19-25

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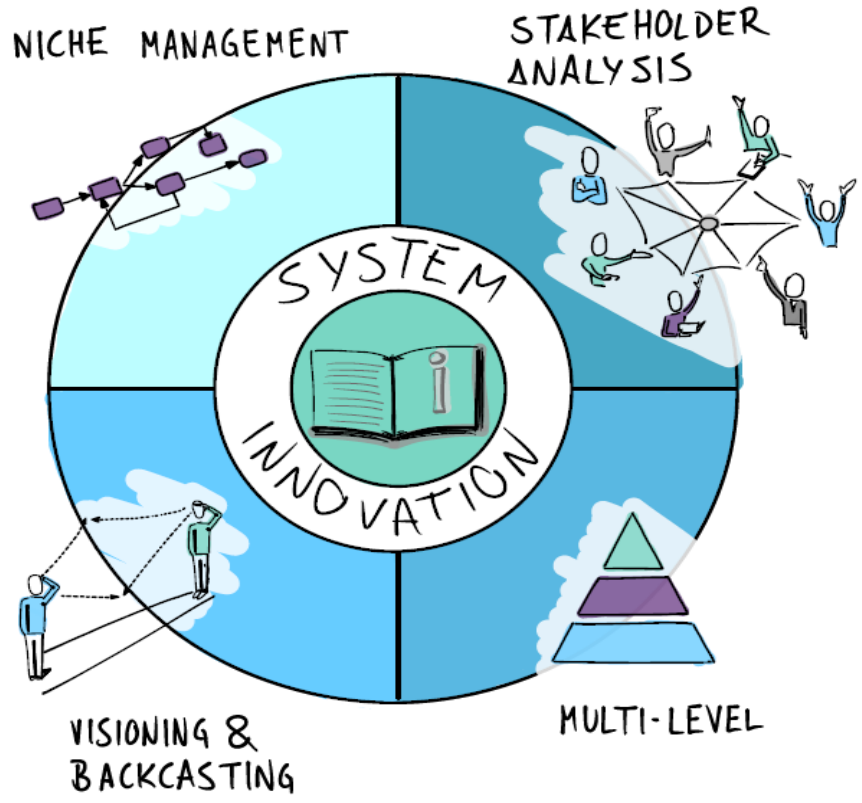
Systems Innovation Approach

System Innovation Approach (SIA) is an analytic approach towards **systemic change based on interconnected set of innovations**, where each influences the other; with innovation both in the parts of the system and in the ways in which they interconnect.

The SIA is applied in order **to solve complex**, **multi-parameter problems**. The emphasis is on the functions of the **cross-sectoral system "as a whole"** and on the variety of actors, instead of just focusing on specific functions or individual/sectoral benefits.



Systems Innovation Approach

Implementing SIA:

- **Defining the scope**: systems boundaries (spatial, temporal or conceptual), setting focus/objectives
- **Mapping**: Mapping of the system including stakeholders, issues and challenges
- **Problem Definition**: Challenge statement and problem isolation
- **Envisioning**: Outlining the desired future state/goal
- **Back casting**: Identification of Innovation Pathways working backwards from the Future Vision
- **Building**: Elaboration of the Innovation pathways and identification of concrete actions

Living Labs

Stakeholder Identification

CSA	Stakeholders Long List					
CS1	**Sector** *(relevant Industry, e.g. public health, tourism, water management)*	**Category** *[Business/Industry, Government/Policy Makers, Research/Academia, Local Citizen, NGO/Association]*	**Name of Stakeholder or Organisation** *[e.g. National Ministry of Water Resources]*	**Scale** *[Local, National, Regional/International]*	**Existing Contact** *[Yes/ No]*	**Comment**

Stakeholders Long List - Vulnerable communities						
Vulnerable communities [which social gpe /	**to which hazard** [flood / fire / heat / water access / food insecurity....]	**temporality** [short / mid/ long term]	**Name of Stakeholder or Organisation** *[e.g. National Ministry of Water Resources]*	**Scale** *[Local, National, Regional/International]*	**Existing Contact** *[Yes/ No]*	**Comment**

CARMINE

SIA Implementation in CARMINE

3 Living Lab Workshops

- **Workshop 1**: CC Challenge and Systems Mapping
- **Workshop 2**: Sector-based CC Goals (Envisioning)
- **Workshop 3**: Outline A&M Pathways

Additional activities regarding geo-design mapping for NBS

CARMINE living lab workshop 1

Living Lab Workshop 1: CC Challenge and Systems Mapping

Objective: CC Challenge validation and comprehensive systems map including risks, drivers and preliminary A&M solutions

Main Activities:

- Validate the challenges associated with Climate Change (CC) at the CSA level
- Map the risks and drivers related to CC Challenge
- Identify / review CC adaptation and mitigation measures including NBS solutions
- Prioritize the A&M solutions

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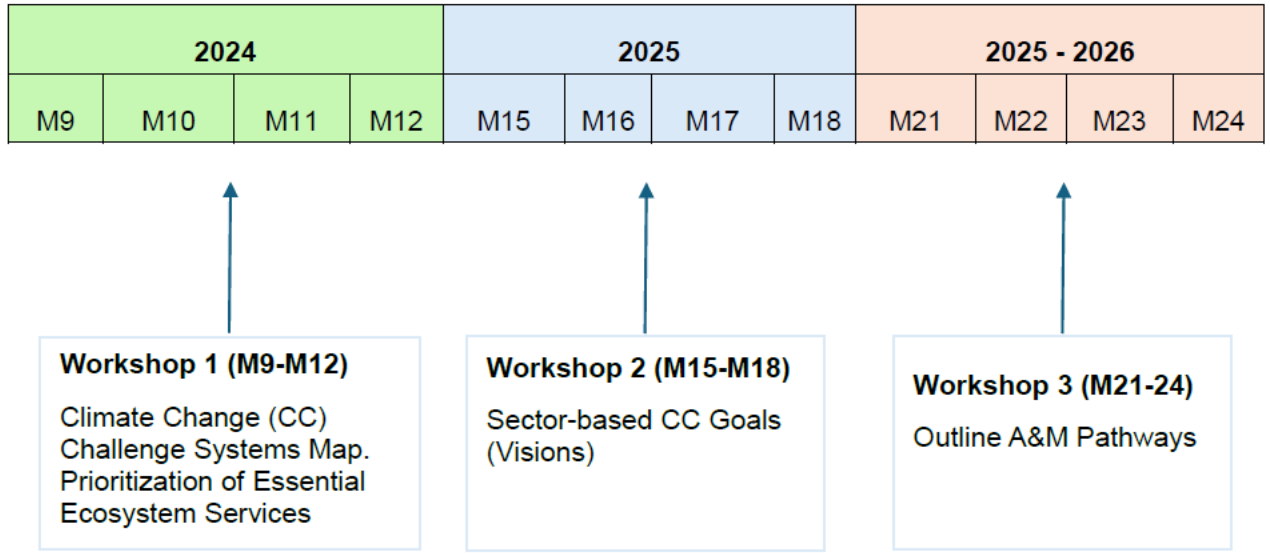
SIA Implementation in CARMINE

Timeline of Living Lab Workshops



CARMINE

Climate-Resilient Development Pathways in Metropolitan Regions of Europe

Living Lab Brașov Metropolitan Area

Cristian Ioja (University of Bucharest)

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UK Research and Innovation

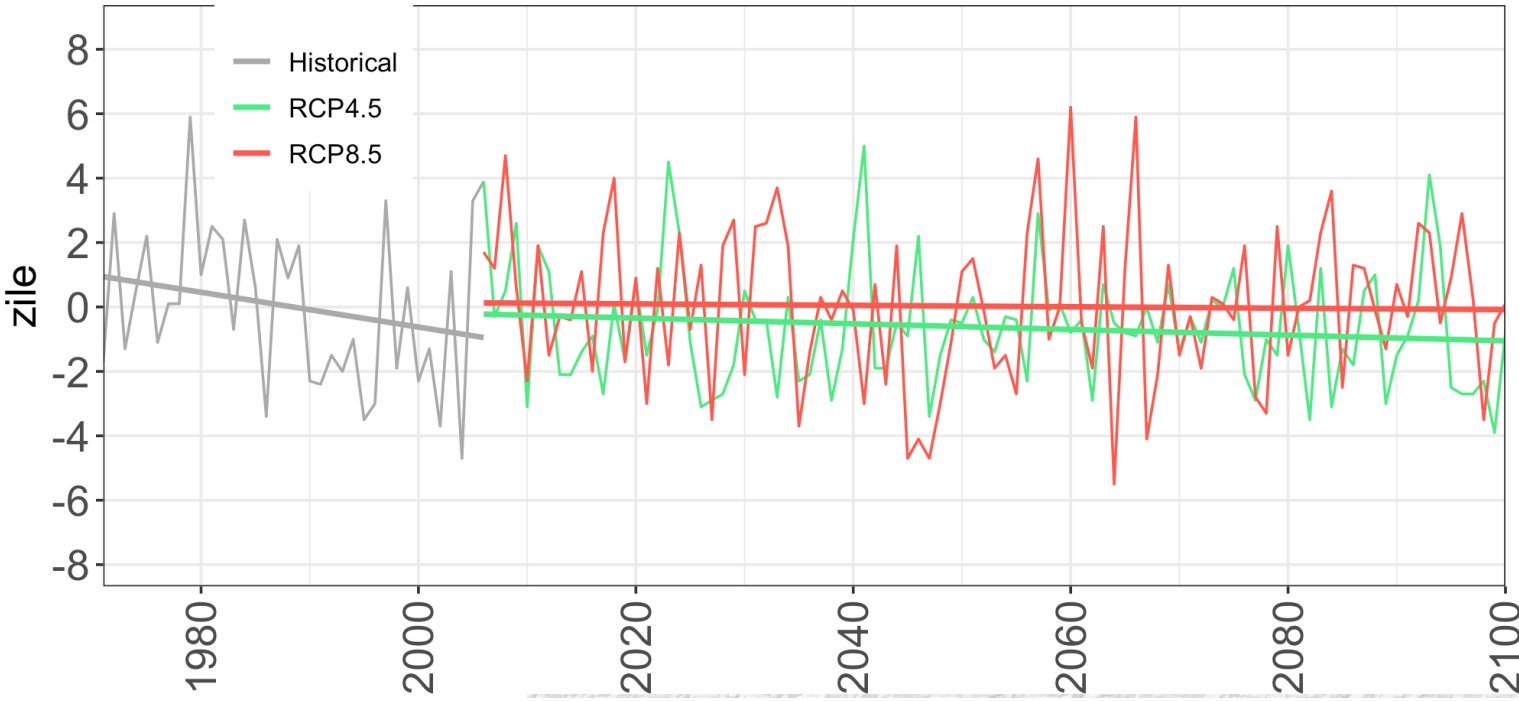
Funded by the European Union

Content

1. Brașov Metropolitan Area
2. Details about Living Lab Brașov
3. Results of the LL activities regarding the mapping of risks, drivers, solutions
4. Engagement of stakeholders themselves in the LL WS1
5. Targets youth and vulnerable communities
6. Concluding remarks

Brasov Metropolitan Area

- Over 400,000 inhabitants
- 7 cities and 12 municipalities
- The contact zone between the Eastern and Western Carpathians (Brașov Basin)
- Exposure to multiple risks (climatic, seismic, hydrological)
- Very active processes of urban regeneration (industrial to other types of surfaces)
- Increasing interest in valorising the natural and cultural heritage in tourism



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Details about Living Lab Brasov

1. Initial workshop in June 2024 (testing the interest of different stakeholders for climate change adaptation)
2. Preparatory meeting with the students
3. Workshop on 28 November 2024:
   - 31 participants representing 24 stakeholders (public institutions, academia, NGOs, private companies)
   - 30 missing stakeholders (especially the representatives of communities that are outside of Brasov city)
   - Using the template of other living labs
   - 3 sub-working groups with facilitator, supporting facilitator, and recorder to identify the risks, impacts, measures, and barriers

Results of Living Lab Brasov

1. **Considered challenge**: drought
2. **26 Risks**: **R10.** Limiting access to drinking water (including for vulnerable groups) because of water availability, price, and quality (including also the risk of water rationalization); **R6.** Increasing living costs (including food, water, energy); **R3.** Decrease in the profitability of agricultural activities (including costs).
3. **17 Drivers**: **D7.** Low level of education and awareness of the population regarding hazards; **D10.** Water losses from the network
4. **25 Measures**: **M1.** Improving the monitoring of natural resources; **M8.** Awareness of authorities and users about water management; **M11.** Promoting water saving; **M24.** Increasing the capacity of stocking water resources; **M25.** Protecting wetlands and water bodies

Drivers	Pre-identified Drivers *(if any)*	Final List of Drivers identified	Related Risks
Political	Lack of coherent drought management strategies in the forestry and agricultural sectors	D1. Lack of coherent drought management strategies in the forestry and agricultural sectors	R3, R10, R18, R23
		D2. High delays in political decisions	R5, R16
Economic	Limited availability of investments in new technology (including irrigation)	D3. Limited availability of funds for investments in new technology (including irrigation)	R13, R9, R16
	Increasing water consumption from tourism activities	D4. Increased water consumption from tourism activities	R25, R9, R14
		D5. Development of agricultural activities	R3, R1, R10
Social	High number of residents using their own water supply sources	D6. High number of residents using their own water supply sources	R7, R11, R25

A & M Solutions *(Adaptation (A) or Mitigation (M) solution*	Pre-identified A& M	Final list of A& M	Risks	Drivers
Political	Improving the monitoring of water resources	M1. Improving the monitoring of natural resources	R1, R3	D1, D3
		M2. Promoting a public strategy for managing water resources under severe drought	R5, R4	D1, D3
		M3. Fostering institutional collaboration and common policies	R5	D2
		M4. Implementing adequate management systems (ISO 14064)	R1	D3
		M5. Implementing the CSRO directive for sustainability	R1	D3
Economic	Accessing funding for reducing exposure to climate risks	M6. Accessing funding for reducing exposure to climate risks	R9	D3
		M7. Experimenting with new agricultural crops of low water consume	R10	D5

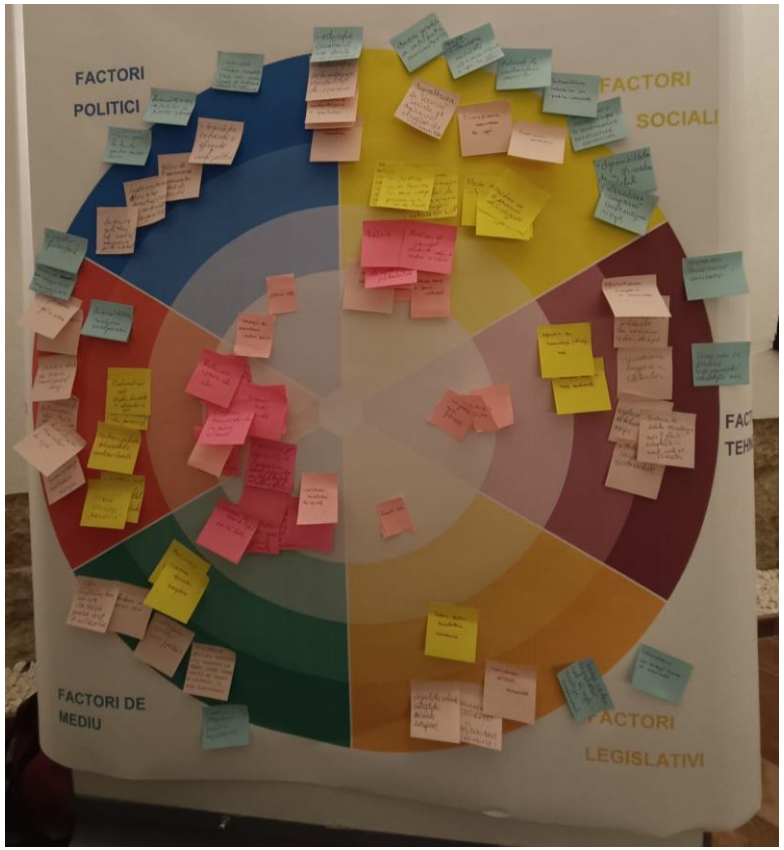
CARMINE

Table 9: Prioritization of Solutions *[Google Drive meter/provide graph as well]*

Prioritization of Solutions	Ease of implementation Total Number 30 PERSONS	Urgency Total number *31 PERSONS*	Importance Total number *31 PERSONS*
M1. Improving the monitoring of natural resources	1 – extremely difficult - 1 2 – difficult - 5 3 – moderate difficult - 9 4 – easy - 7 5 – extremely easy - 8	1 – not urgent - 0 2 – less urgent - 3 3 – moderate urgent - 7 4 – urgent - 13 5 – very urgent - 8	1 – not - 0 2 – less - 1 3 – moderate - 2 4 – important - 14 5 – very – 14
M2. Promoting a public strategy for managing water resources under severe drought	1 – extremely difficult - 3 2 – difficult - 2 3 – moderate difficult - 13 4 – easy - 8 5 – extremely easy – 4	1 – not urgent - 0 2 – less urgent - 1 3 – moderate urgent - 5 4 – urgent - 9 5 – very urgent - 16	1 – not - 1 2 – less - 1 3 – moderate - 4 4 – important - 12 5 – very -13
M3. Fostering institutional collaboration and common policies	1 – extremely difficult - 4 2 – difficult - 7 3 – moderate difficult - 10 4 – easy - 5 5 – extremely easy - 4	1 – not urgent - 0 2 – less urgent - 1 3 – moderate urgent - 7 4 – urgent - 11 5 – very urgent – 12	1 – not - 0 2 – less - 1 3 – moderate - 6 4 – important - 8 5 – very -16
M4. Implementing adequate management systems (ISO 14064)	1 – extremely difficult - 3 2 – difficult - 6 3 – moderate difficult - 11 4 – easy - 5 5 – extremely easy - 5	1 – not urgent - 0 2 – less urgent - 0 3 – moderate urgent – „4 4 – urgent - 12 5 – very urgent - 5	1 – not - 0 2 – less - 1 3 – moderate - 3 4 – important - 12 5 – very -15
M5. Implementing the CSRO directive for sustainability	1 – extremely difficult - 1 2 – difficult - 4 3 – moderate difficult - 18 4 – easy - 7 5 – extremely easy - 0	1 – not urgent - 1 2 – less urgent - 1 3 – moderate urgent - 15 4 – urgent - 11 5 – very urgent - 3	1 – not - 1 2 – less - 0 3 – moderate - 15 4 – important - 6 5 – very – 9
M6. Accessing funding for reducing exposure to climate risks	1 – extremely difficult - 3 2 – difficult - 5 3 – moderate difficult - 10 4 – easy - 9 5 – extremely easy - 3	1 – not urgent - 0 2 – less urgent - 1 3 – moderate urge9nt - 4 – urgent - 7 5 – very urgent - 14	1 – not - 0 2 – less - 2 3 – moderate - 6 4 – important - 8 5 – very – 15
M7. Experimenting with new agricultural crops	1 – extremely difficult - 2 2 – difficult - 8 3 – moderate difficult - 11 4 – easy - 6 5 – extremely easy – 3	1 – not urgent - 0 2 – less urgent - 8 3 – moderate urgent - 12 4 – urgent - 8 5 – very urgent - 3	1 – not - 4 2 – less - 4 3 – moderate - 12 4 – important - 8 5 – very -3
M8. Awareness of authorities and users about water management	1 – extremely difficult - 3 2 – difficult - 4 3 – moderate difficult - 4 4 – easy - 11 5 – extremely easy – 8	1 – not urgent - 0 2 – less urgent - 0 3 – moderate urgent - 5 4 – urgent - 6 5 – very urgent - 20	1 – not - 0 2 – less - 1 3 – moderate - 2 4 – important - 9 5 – very -19
M9. Developing sustainability-oriented training programs for public servants and staff in private companies	1 – extremely difficult - 0 2 – difficult - 5 3 – moderate difficult - 10 4 – easy - 8 5 – extremely easy - 7	1 – not urgent - 0 2 – less urgent - 3 3 – moderate urgent - 6 4 – urgent - 9 5 – very urgent - 13	1 – not - 0 2 – less - 2 3 – moderate - 6 4 – important - 8 5 – very – 15
M10. Changes in the health system for risks related to drought	1 – extremely difficult - 4 2 – difficult - 9 3 – moderate difficult - 8 4 – easy - 6 5 – extremely easy - 3	1 – not urgent - 1 2 – less urgent - 3 3 – moderate urgent - 9 4 – urgent - 11 5 – very urgent – 7	1 – not - 1 2 – less - 2 3 – moderate - 8 4 – important - 12 5 – very - 8
M11. Promoting water saving	1 – extremely difficult - 1 2 – difficult - 2 3 – moderate difficult - 4 4 – easy - 9 5 – extremely easy – 14	1 – not urgent - 0 2 – less urgent - 0 3 – moderate urgent - 4 4 – urgent - 11 5 – very urgent - 16	1 – not - 0 2 – less - 1 3 – moderate - 2 4 – important - 8 5 – very – 20
M12. Diversification of water supply resources	1 – extremely difficult - 0 2 – difficult - 12 3 – moderate difficult - 12 4 – easy - 4 5 – extremely easy - 2	1 – not urgent - 0 2 – less urgent - 1 3 – moderate urgent - 9 4 – urgent - 9 5 – very urgent – 12	1 – not - 0 2 – less - 1 3 – moderate - 6 4 – important - 13 5 – very -11
M13. Developing social services for vulnerability situations	1 – extremely difficult - 1 2 – difficult - 9 3 – moderate difficult - 8 4 – easy - 8 5 – extremely easy – 4	1 – not urgent - 0 2 – less urgent - 3 3 – moderate urgent - 10 4 – urgent - 13 5 – very urgent – 5	1 – not - 0 2 – less - 3 3 – moderate - 6 4 – important - 14 5 – very -8
M14. Increased access to public water system	1 – extremely difficult - 0 2 – difficult - 6 3 – moderate difficult - 12 4 – easy - 9 5 – extremely easy - 3	1 – not urgent - 0 2 – less urgent - 3 3 – moderate urgent - 8 4 – urgent - 9 5 – very urgent - 11	1 – not - 0 2 – less - 2 3 – moderate - 8 4 – important - 5 5 – very – 16
M15. Developing support systems for local crisis of water and food shortages	1 – extremely difficult - 3 2 – difficult - 8 3 – moderate difficult - 10 4 – easy - 6 5 – extremely easy – 3	1 – not urgent - 0 2 – less urgent - 2 3 – moderate urgent - 5 4 – urgent - 15 5 – very urgent - 9	1 – not - 0 2 – less - 1 3 – moderate - 4 4 – important - 14 5 – very -12
M16. Promoting NBS (e.g. artificial wetlands, green areas, trees)	1 – extremely difficult - 0 2 – difficult - 9 3 – moderate difficult - 8 4 – easy - 7 5 – extremely easy - 6	1 – not urgent - 0 2 – less urgent - 0 3 – moderate urgent - 6 4 – urgent - 11 5 – very urgent - 14	1 – not - 0 2 – less - 2 3 – moderate - 5 4 – important - 10 5 – very – 14
M17. Promoting smart irrigation systems	1 – extremely difficult -1 2 – difficult - 6 3 – moderate difficult - 9 4 – easy - 8 5 – extremely easy – 6	1 – not urgent - 0 2 – less urgent - 2 3 – moderate urgent - 8 4 – urgent - 10 5 – very urgent - 11	1 – not - 0 2 – less - 3 3 – moderate - 8 4 – important - 9 5 – very – 11
M18. Improving wastewater treatment process	1 – extremely difficult - 1 2 – difficult - 10 3 – moderate difficult - 9 4 – easy - 7 5 – extremely easy – 3	1 – not urgent - 0 2 – less urgent - 2 3 – moderate urgent - 3 4 – urgent - 8 5 – very urgent – 18	1 – not - 0 2 – less - 1 3 – moderate - 5 4 – important - 8 5 – very – 17
M19. Promoting technologies with	1 – extremely difficult - 1 2 – difficult - 8 3 – moderate difficult - 5	1 – not urgent - 0 2 – less urgent - 2 3 – moderate urgent - 2	1 – not - 0 2 – less - 2 3 – moderate - 4

Engagement of stakeholders

1. Difference of engagement between the groups
2. Environmental institutions have a good engagement in the groups
3. Academia has a dual role, both constructive and destructive (very smart idea, developing contradictory or useless discussions, monopolizing dialog, or passive)
4. NGOs stimulating the discussions
5. Good input on the specialized stakeholders (e.g. social, economic, and technological), but only when were directly asked
6. Low engagement of vulnerable groups



Vulnerable groups

1. Organising different meetings with youth, older and farmers
2. Excellent engagement on the dedicated meeting
3. More oriented to historical events in the meeting with older people
4. More oriented on innovation in the meeting with youths

Concluding remarks

1. Testing different approaches of the living lab before the official event to maximize the output
2. Ensuring a preliminary form for each workshop component (e.g. pre-identified risks, drivers, measures)
3. Multiple eyes with multiple roles (coordination - facilitators – support – recorder)
4. Training of all persons involved in the activity and existing backup solutions
5. Considering mixed groups
6. Learn to manage the potential conflicts or destructive discussions
7. Don’t exclude de unrepresented groups (GOLD mine)

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Thank you for your attention

Any questions are welcome!

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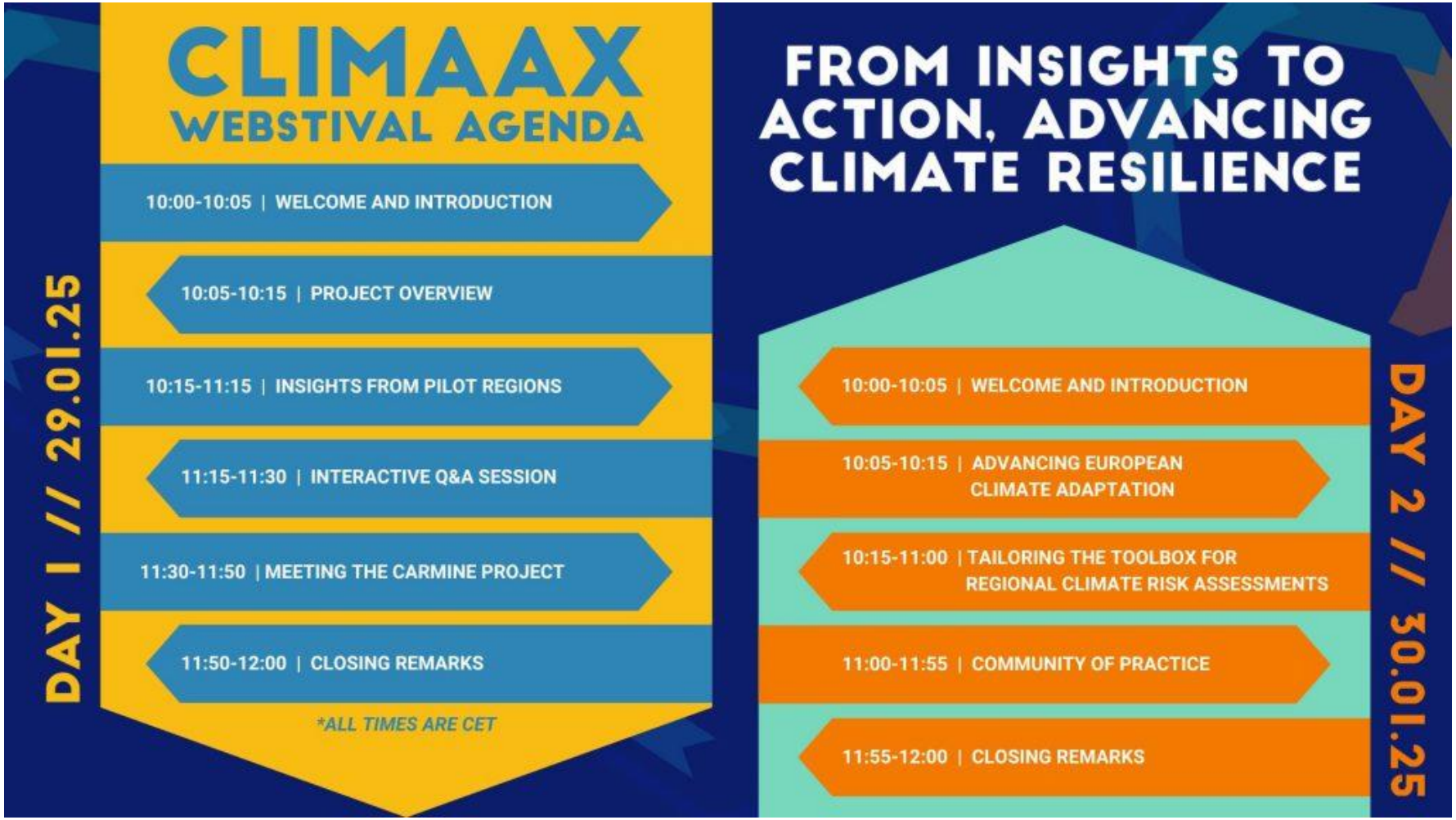
AGENDA



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