Regions4Climate

Building resilient communities

01.01.2023 – 31.12.2027

Regions 4Climate

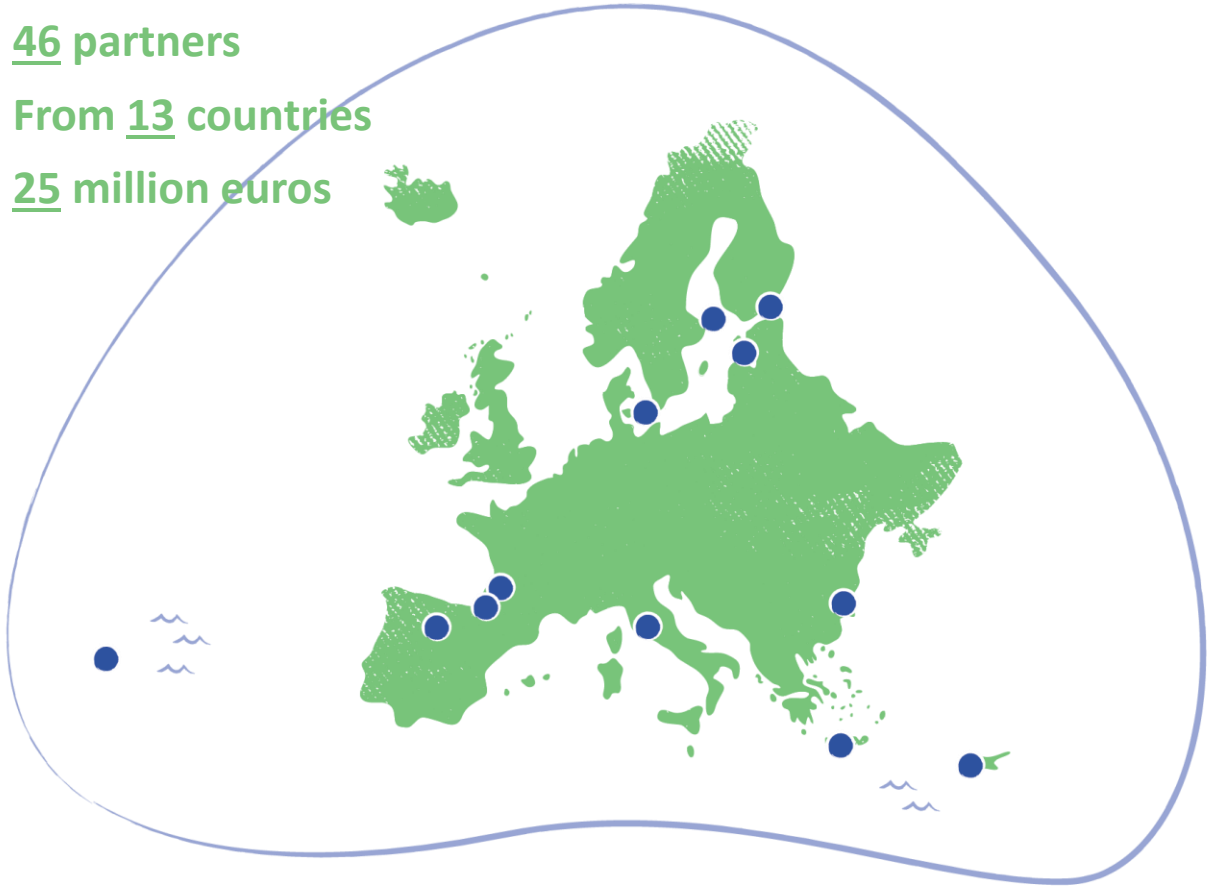
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor CINEA can be held responsible for them.

What is the Regions4Climate (R4C) project?

46 partners

From 13 countries

25 million euros



Topic(s): HORIZON-MISS-2021-CLIMA-02-04 - Large scale demonstrators of climate resilience creating cross-border value

Call for proposals: HORIZON-MISS-2021-CLIMA-02

The **Regions4Climate project** will plan and implement real **climate resilient innovations** created by and for people in response to the **EU mission Adaptation to Climate Change.**

Climate change presents a threat to our livelihoods, well-being and environment. A **transition** towards resilience has become urgent and mandatory.

This need requires that we simultaneously address social inequalities and implement **cross-sectoral innovations** to simultaneously build social, economic and environmental **resilience** to extreme events.

Regions 4Climate

Objectives

Develop a comprehensive operational framework.

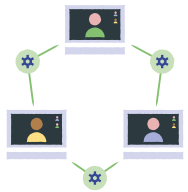
Why?

To guide and support a wide range of local and regional stakeholders to co-create, test, optimise, and replicate scalable, cost-effective, locally-attuned, multi-sectoral and cross-border solutions for enhanced regional resilience to the impacts of climate change.

Scale up and deploy innovative socio-technological climate resilience solutions.

How?

Through collaboration among and “twinning” between European regions vulnerable to similar climate change risks and impacts.



Generate and validate suitable solutions for just societal transformation and building of climate resilience at the regional and local level.

How?

Through generation and validation of a suite of tailor-made, user-centered tools and frameworks matching local needs.

Regions 4Climate

Work Packages

WORK PACKAGE 1
Project Management, Ethics & RRI

WORK PACKAGE 2
Just Transition & Social Equity

WORK PACKAGE 3
Climate Resilience Diagnostics

WORK PACKAGE 4
Smart Specialisation for Sustainability

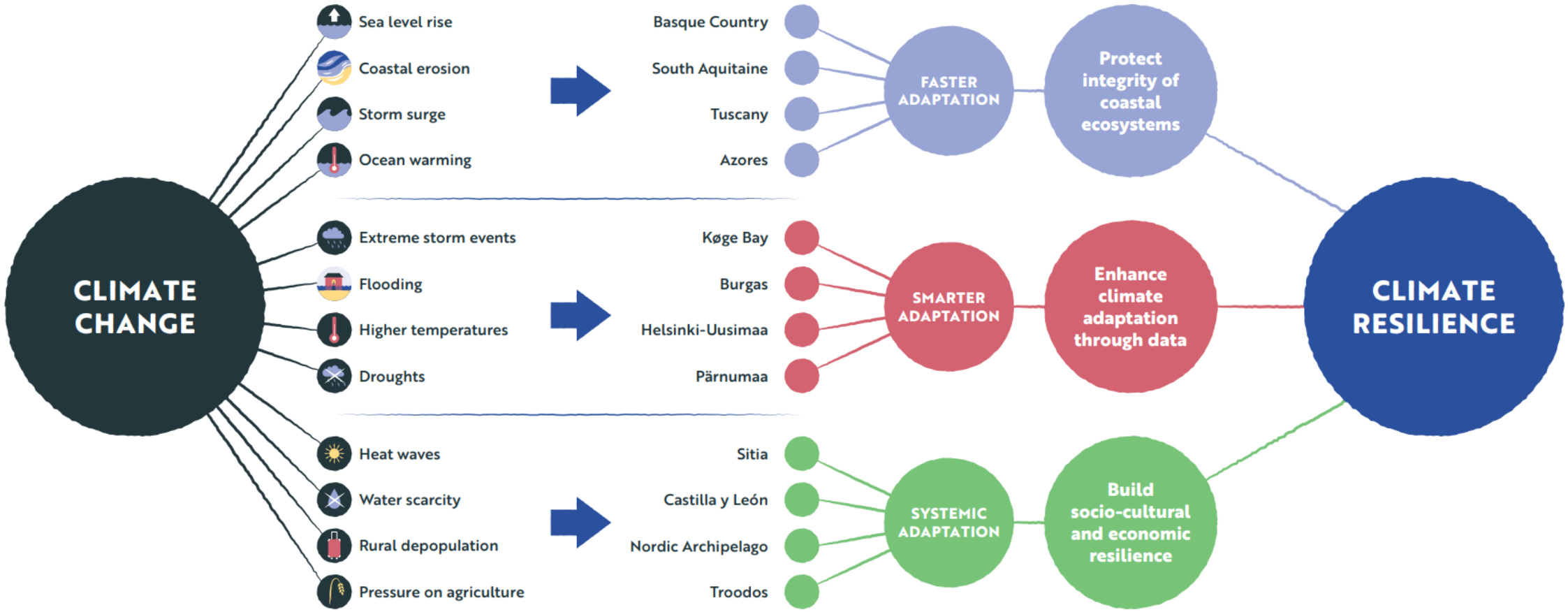
WORK PACKAGE 5
Regional Innovation Actions for Climate Resilience

WORK PACKAGE 6
Innovation Management & Exploitation

WORK PACKAGE 7
Dissemination & Communication

Regions 4Climate

Societal innovation at a glance



Regions 4Climate

Faster Adaptation

Core innovation pillars

1. Protect and restore the coasts
2. Examine opportunities for Blue Carbon Credits
3. Educate and engage citizens towards resilience building
4. Engage in cross-border actions

Smarter Adaptation

Core innovation pillars

1. Bridge the science-stakeholder-policy gap
2. Raise citizens' awareness
3. Improve the use of existing data

Systemic Adaptation

Core innovation pillars

1. Develop and validate green social business models
2. Collaboratively devise locally-attuned resilience strategies
3. Engage local communities in resilience building activities
4. Apply models and frameworks in support of the sustainable use of local resources

Regions 4Climate

Image source: Canva

Regional examples from Finland

Regions 4Climate

Helsinki-Uusimaa (I)

Description of the area

The Helsinki-Uusimaa region lies along the coast of Southern Finland, with hundreds of islands, some large lakes and inland countryside.

The region has a population of 1.7 million citizens in an area of 9 568 km^2, or 178 inhabitants per km^2.

Challenges

- Loss of forests for other land uses
- Surface sealing, flooding during storm events, and excessive urban heat in summer

Goals

- Optimise investment planning and social acceptance via data analytics and collaborative planning tools
- Incorporate a human-centric digital twin approach
- Collaboratively develop plans to restore and protect urban nature

Main demonstration area: LAAJASALO

Regions 4Climate

Helsinki-Uusimaa (II)

Main achievements so far

Political

Created pathways for communication with key expert stakeholders in municipal government. Cooperation has started very well.

Economic

Met with experts and investigated literature into methods for modelling adaptation options in the digital twin.

Social

Came to a common understanding within the demo team about integrated risk and the dynamic interactions between the built and natural environments. Organized and implemented one stakeholder workshop so far and established a framework for future workshops.

Technological

A working version of the digital twin demo is up and running. Available data sources are well understood. A network of 10 sensors in Laajasalo are sending live temperature and humidity data to the digital twin. First demo versions of decision-making tool.

Environmental

Some elements of the natural environment, including vegetation and tree data, are already implemented in the digital twin. Integration to other WPs.

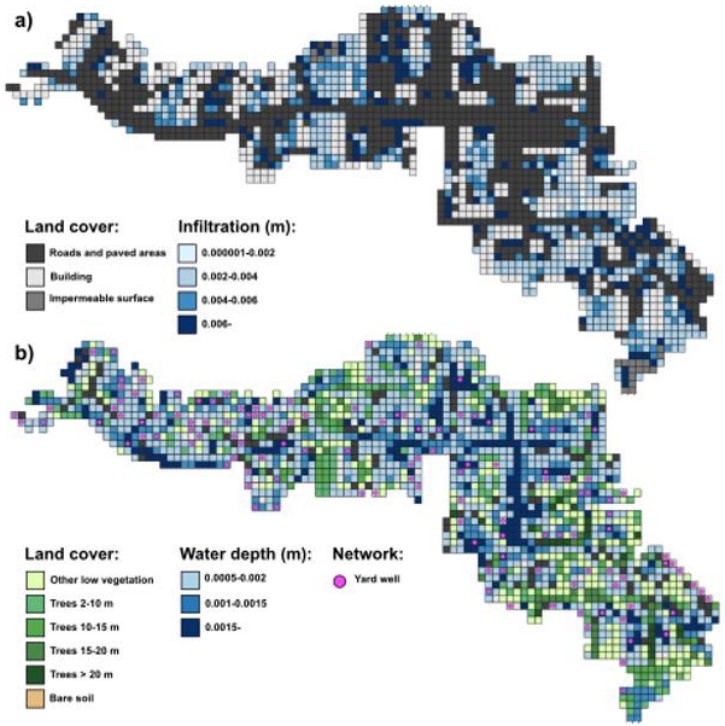
Legal

Development is committed to complying with GDPR. At the point demo group is not working with GDPR sensitive data.

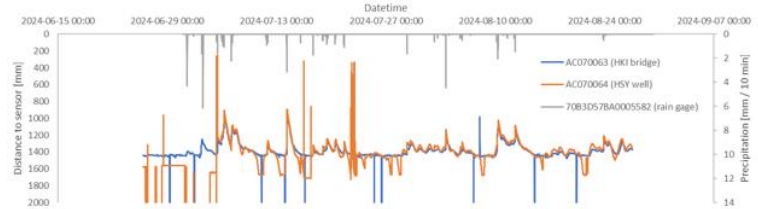
Regions 4Climate

Helsinki-Uusimaa (III)

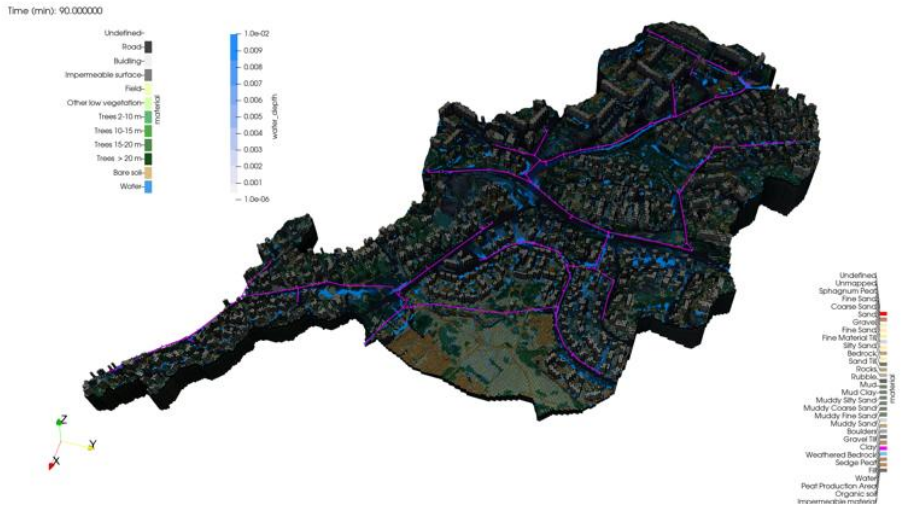
Combined hydrological and urban heat island (UHI) modelling



Simulated a) infiltration and b) water depth on the surface during a precipitatio event in Vallikallio, Espoo.



Water depth data recorded with radar sensors from Vaisala.



Precipitation event in the Laajasalo catchment in Helsinki with surface, subsurface and stormwater network flow components.

Regions 4Climate

Nordic Archipelago (I)

Description of the area

The Nordic Archipelago includes the archipelago regions of Stockholm, Uppsala, Sörmland and Östergötland, and the provinces of south-west Finland, Uusimaa and Kymenlaakso, and Åland.

The Nordic Archipelago has a population of 30 000 citizens in an area of 1 580 km^2, or 19 inhabitants per km^2.

Challenges

- Rural depopulation
- Greenhouse gas emissions from maritime transport

Goals

- Collaboratively generate a common vision for sustainable inter-regional transport and renewable energy systems
- Model renewable energy production and model inter-regional transport via a fleet of electric ferries
- Explore business models for a cross-border company to administer transport issues

Regions 4Climate

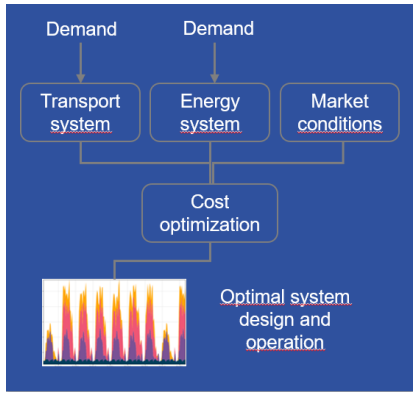
Nordic Archipelago (II)

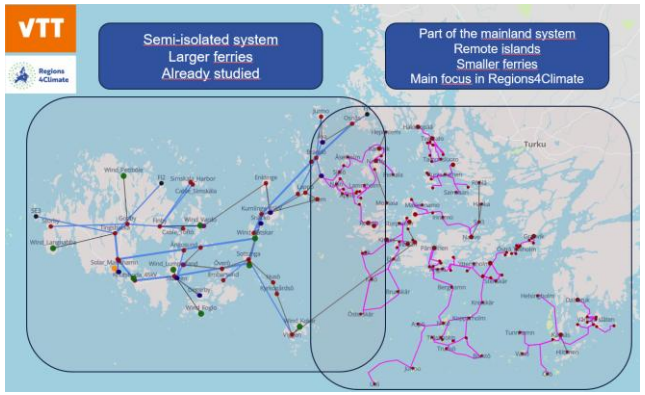
Finding solutions with a coupled energy-transport model

- System modelled as interconnected nodes, which have demand (energy, transport) and limited transmission capacity between each other.
- The model solves the ”collective optimal” design and operation solution for the entire system from economic viewpoint (cost-minimal), also calculating the emissions.
- Data-based and scenario-based, but heavily automated: significant amount of input data used to analyse specific details.

Researching new value chains

- Analysing different investment options for replacing the existing diesel-based fleet and understanding the resulting value chains.





Regions 4Climate

Thank you for your attention

R4C website: https://regions4climate.eu/

Dr Carmen Antuña Rozado
VTT – MSc(Arch), EMBA, PhD / Senior Scientist
R4C Project Coordinator
carmen.antuna@vtt.fi

Arto Laikari
VTT – Research Team Leader, Climate resilient communities
R4C Project & Data Manager
arto.laikari@vtt.fi

Regions 4Climate

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor CINEA can be held responsible for them.