



MINORITY
REPORT

1st International event



New
European
Bauhaus

Co-creating Green & Climate Resilient Cities

NEB Satellite Event

E²ARC
Architects for future cities

Co-creation Centre
TU Delft (NL)

9th June 2026

11:00- 17:00 CET





MINORITY
REPORT



New
European
Bauhaus

Introduction & Event framing

Eleni Goni

E²ARC

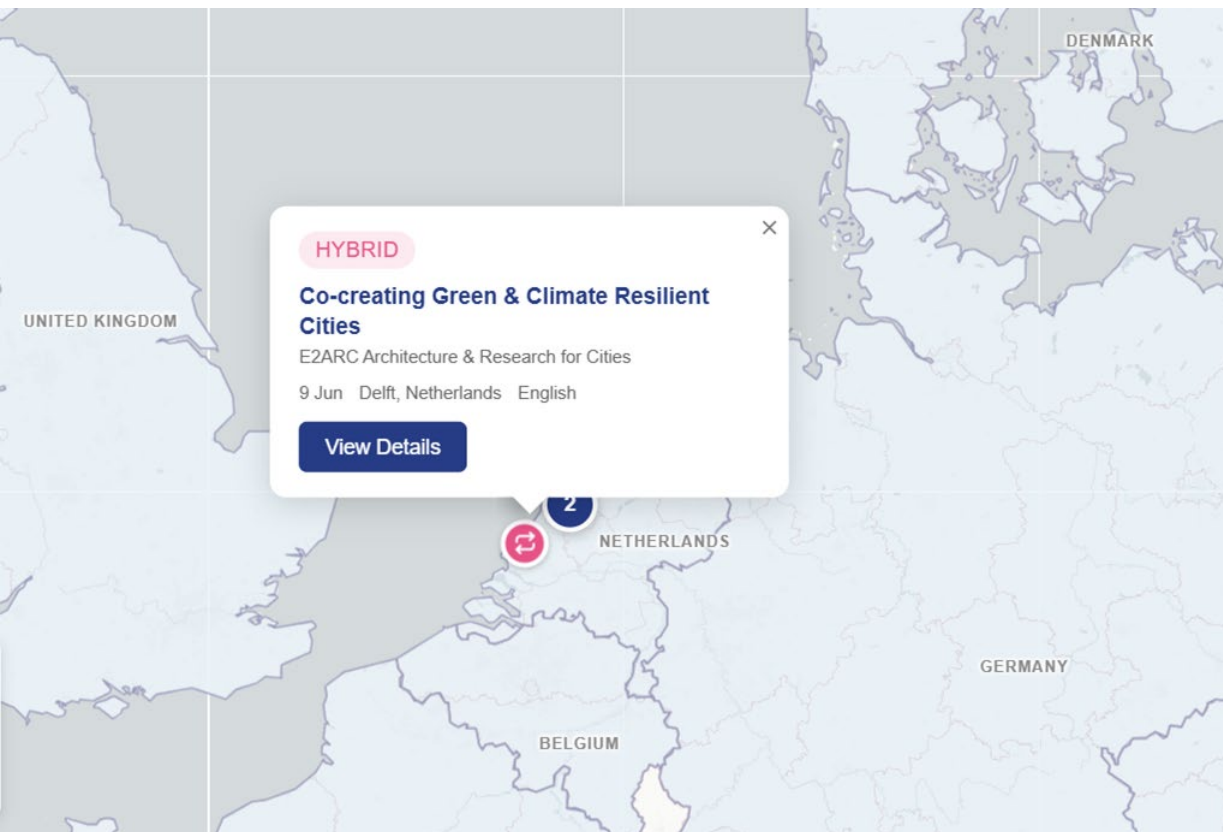
Architects for future cities

eleni.goni@e2arc.com



This project has received funding from the European Union's Horizon Europe research and innovation programme under the grant agreement number 101147385. The European Union is not liable for any use that may be made of the information contained in this document, which is merely representing the authors' view.





Official NEB Satellite Event | the only NEB Satellite event hosted in Delft in 2026



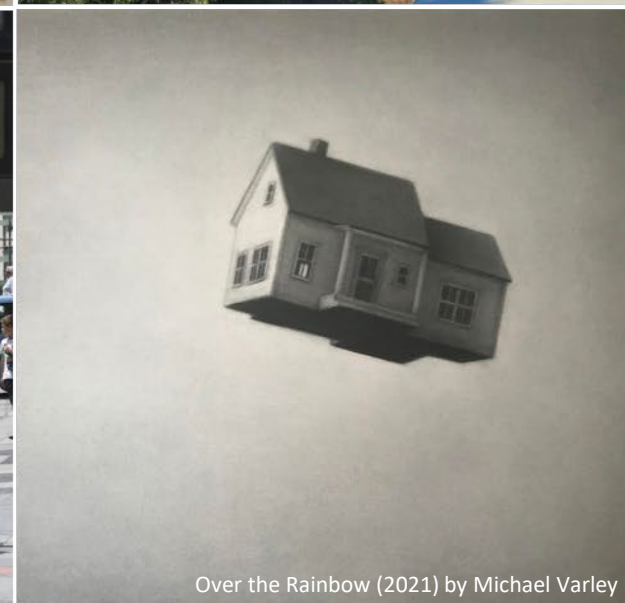
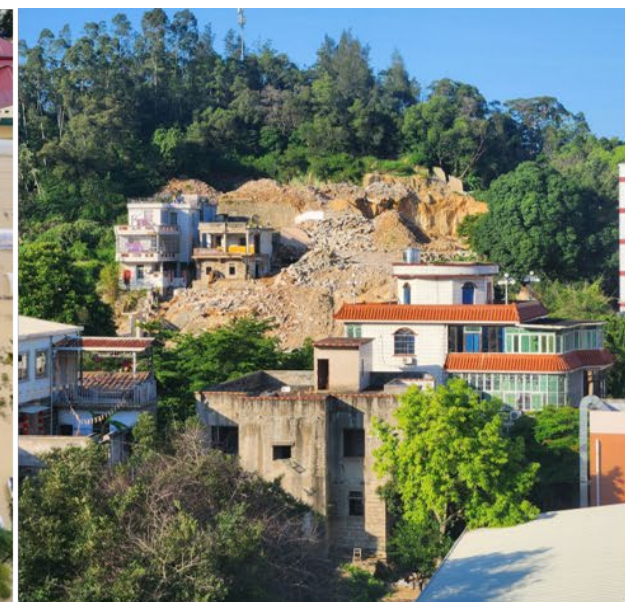
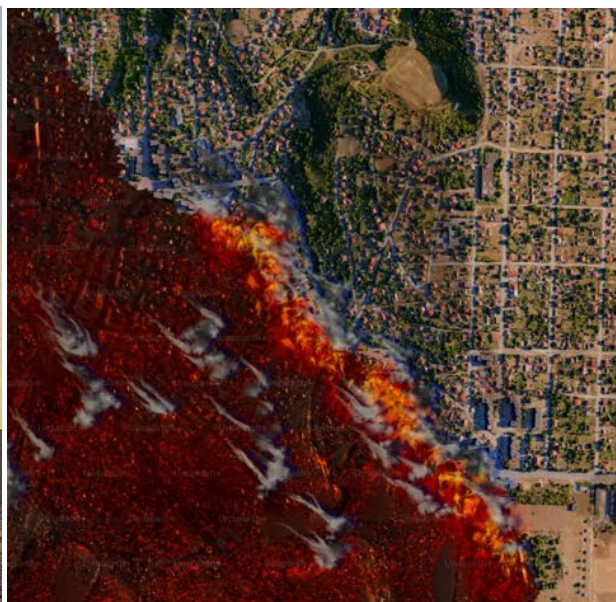
Agenda

- Arrival and welcome | 10:30-11:00
- Welcome & Event Framing | 11:00-11:15
- Policy framework & the NEB initiative - EC Policy Officer | 11:15-11:30
- **Session 1: People** | 11:30-12:20
- Lunch break | 12:20-13:10
- **Session 2: Places** | 13:10-14:00
- **Session 3: Tools** | 14:00-14:50
- Coffee break | 14:50-15:20
- Guided site visit to **"The Green Village"** | 15:20-16:30





Global challenges in urban environments



The Best Photos of 2021



A woman reacts as a wildfire approaches her home in Greece on Aug. 8

time.com

Climate impacts affect more than buildings...



Flood in central Copenhagen, July 2, 2011 (Photo Thomas Melbye)



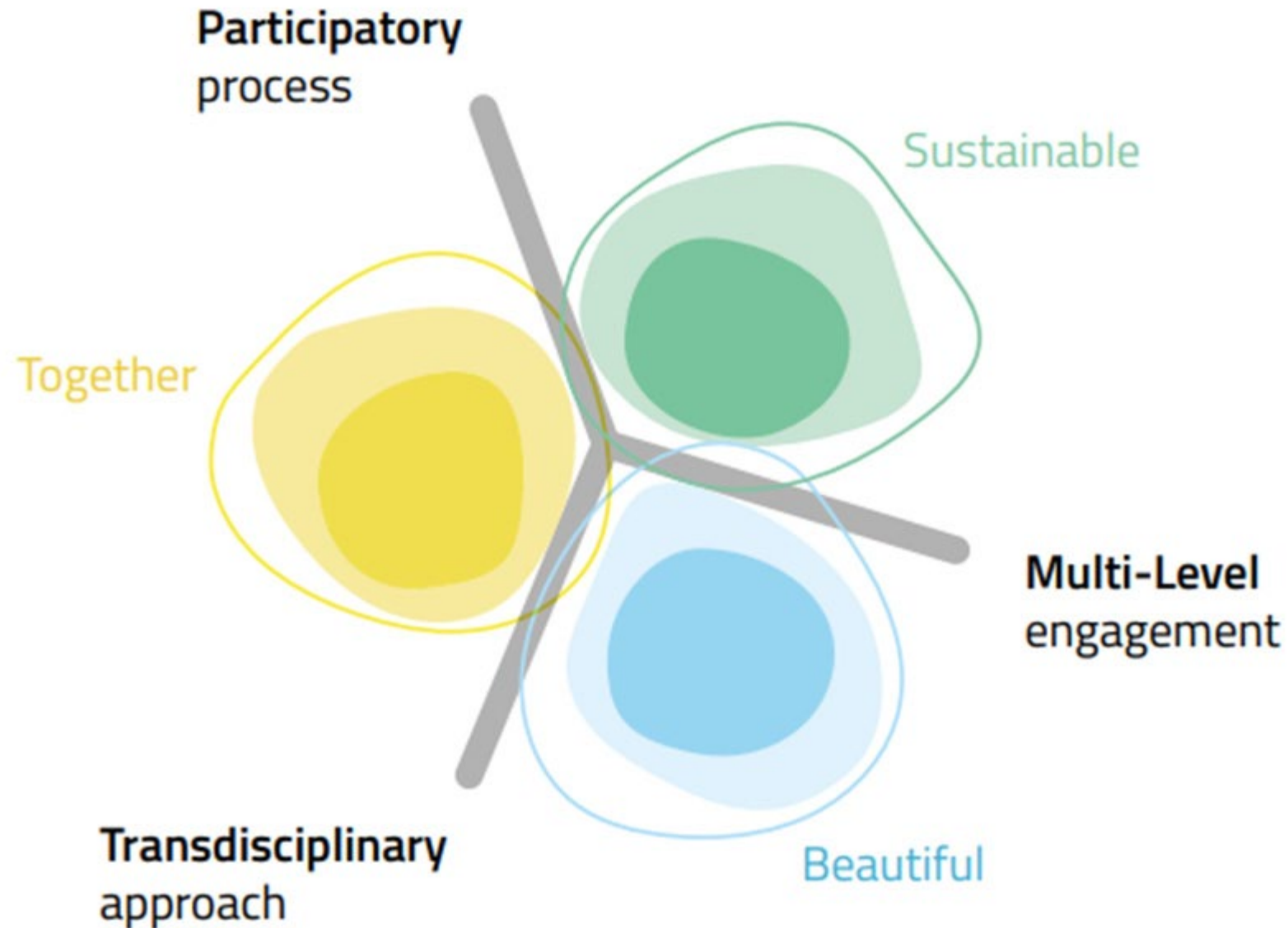
Focusing on resilience

- ✓ **People**
- ✓ **Places**
- ✓ **Governance**
- ✓ **Knowledge**
- ✓ **Equity**





Resilience through the NEB lens



*Sustainable,
liveable &
resilient cities &
communities*



16 partners from
Europe and New
Zealand



42 months



3 demonstration cases



Greece



Ireland



New Zealand

Core mission



MINORITY REPORT enhances climate resilience by combining AI, digital twins, & NbS to deliver adaptive renovation strategies for buildings, infrastructure, and communities facing climate-related hazards.

Leveraging cutting-edge technologies and collaborative approaches to safeguard vulnerable populations and their homes.

Hazards addressed: Wildfire, Flooding (River, Coastal, Urban flash floods), Earthquake, Landslides, Heat (Heatwaves), Wind, Drought



From Individual Projects to Collective Impact



**MINORITY
REPORT**



RETIME
Inclusive Urban Resilience



MULTICARE



multiclimact



CARMINE
Climate-Resilient Development Pathways in Metropolitan Regions of Europe



Maximising impact and accessibility
of European Climate Research



ClimRes
LEADERSHIP FOR CLIMATE
RESILIENT BUILDINGS

Joint Manifesto signed in October 2025

- **37 pilots in 17 countries (EU & NZ)**
- **> 150 partners**
- **> € 55,5 M**



**GreenIN
Cities**



PEOPLE



“How participatory approaches engage and empower citizens in shaping climate-resilient cities”



PLACES

“How natural systems, resilient building design & human experience shape climate adaptive places”



TOOLS



How digital tools, construction innovations, and integrated frameworks support long-term, life-cycle adaptation in practice.





www.minorityreport-project.eu/en/



@Minority Report



@EU_MinorityRep



@MinorityReport_EU



MINORITY
REPORT

THANK YOU

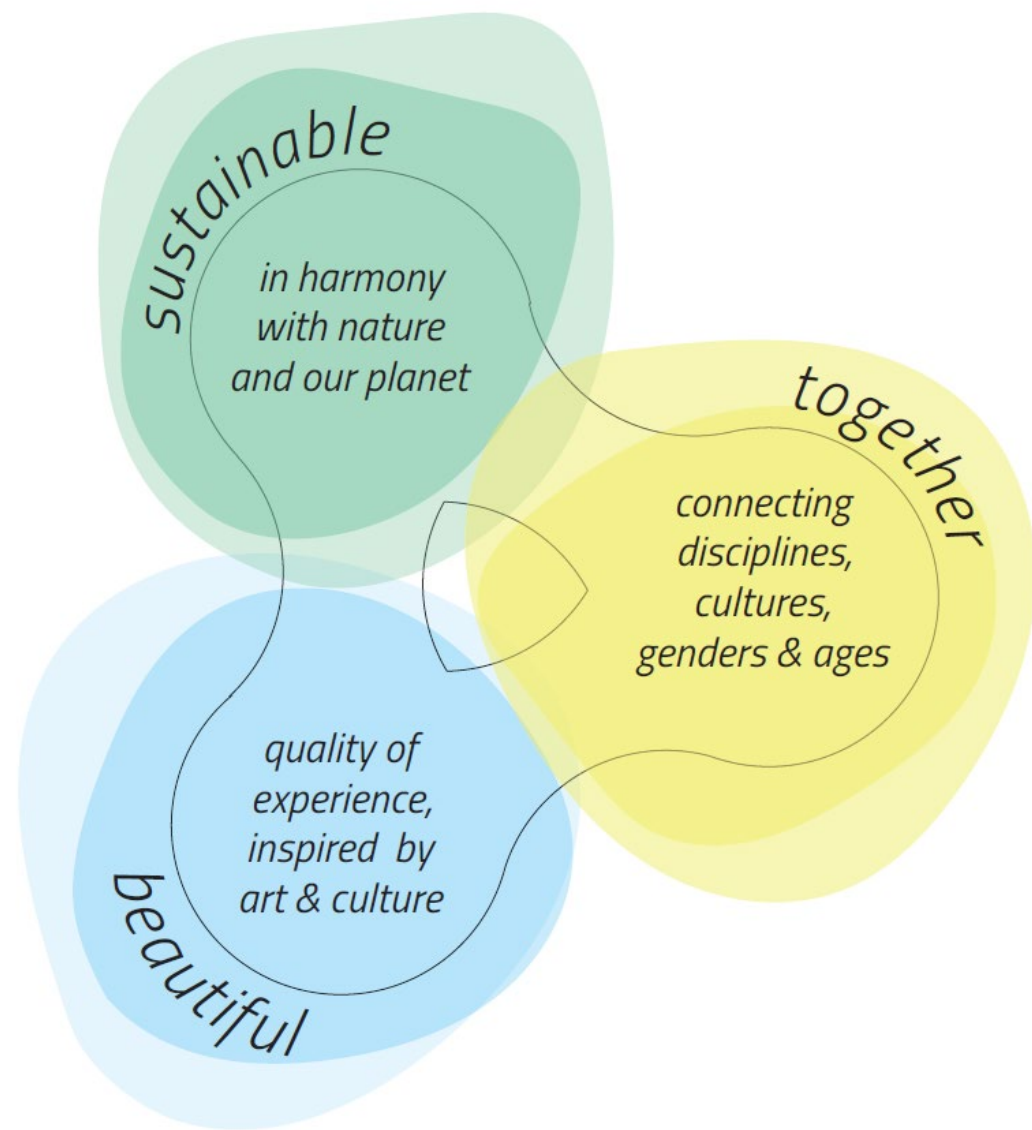


This project has received funding from the European Union's Horizon Europe research and innovation programme under the grant agreement number 101147385. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.



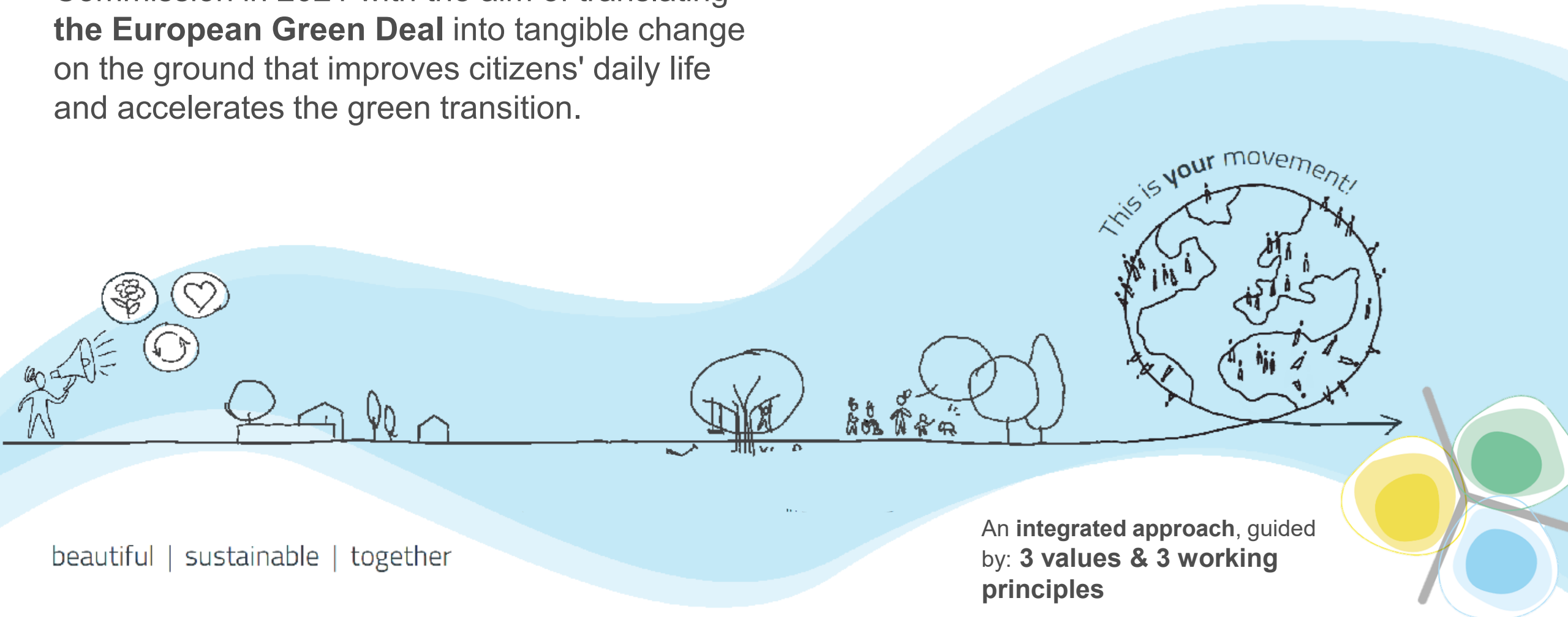
THE NEW EUROPEAN BAUHAUS: *ON RESILIENCE & POLICY FRAMEWORK*

Eva MCALISTER LÓPEZ
Policy Officer



What is the New European Bauhaus?

An initiative launched by the European Commission in 2021 with the aim of translating **the European Green Deal** into tangible change on the ground that improves citizens' daily life and accelerates the green transition.

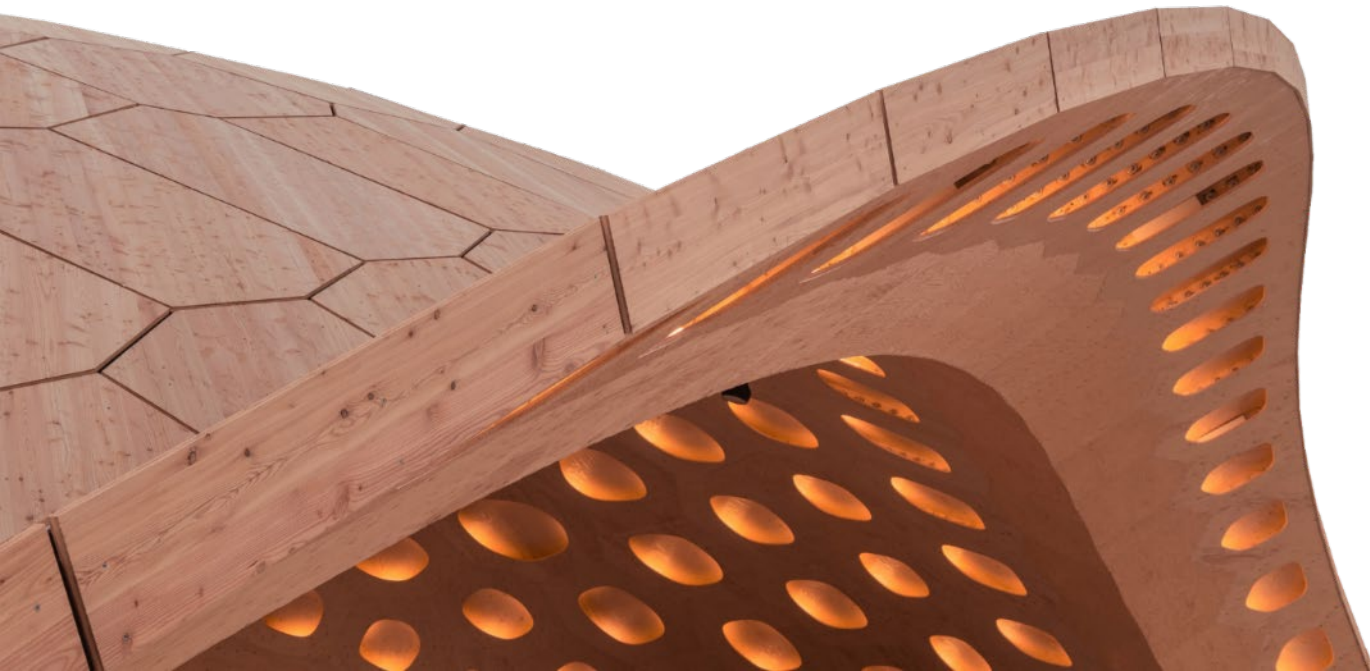


beautiful | sustainable | together

An integrated approach, guided by: **3 values & 3 working principles**

How do we deliver NEB?

- Growing a **Community**
- Providing **EU funding**
- Developing **tools and guidelines**
- Increasing visibility through **Communication actions**



Buga Pavillion,
Content licensed to the European Union

What have we achieved since 2021?

2,000

Members of the
NEB Community

700

projects

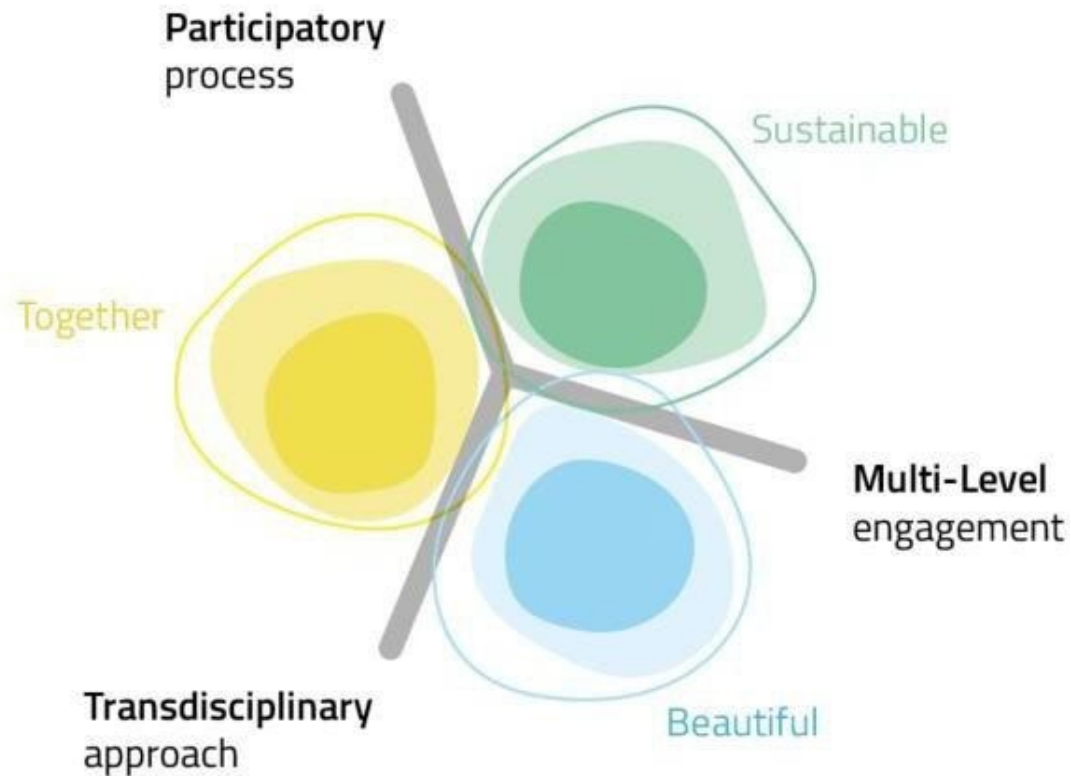
9

EU programmes
supporting NEB

EUR **557** million
from Horizon
Europe



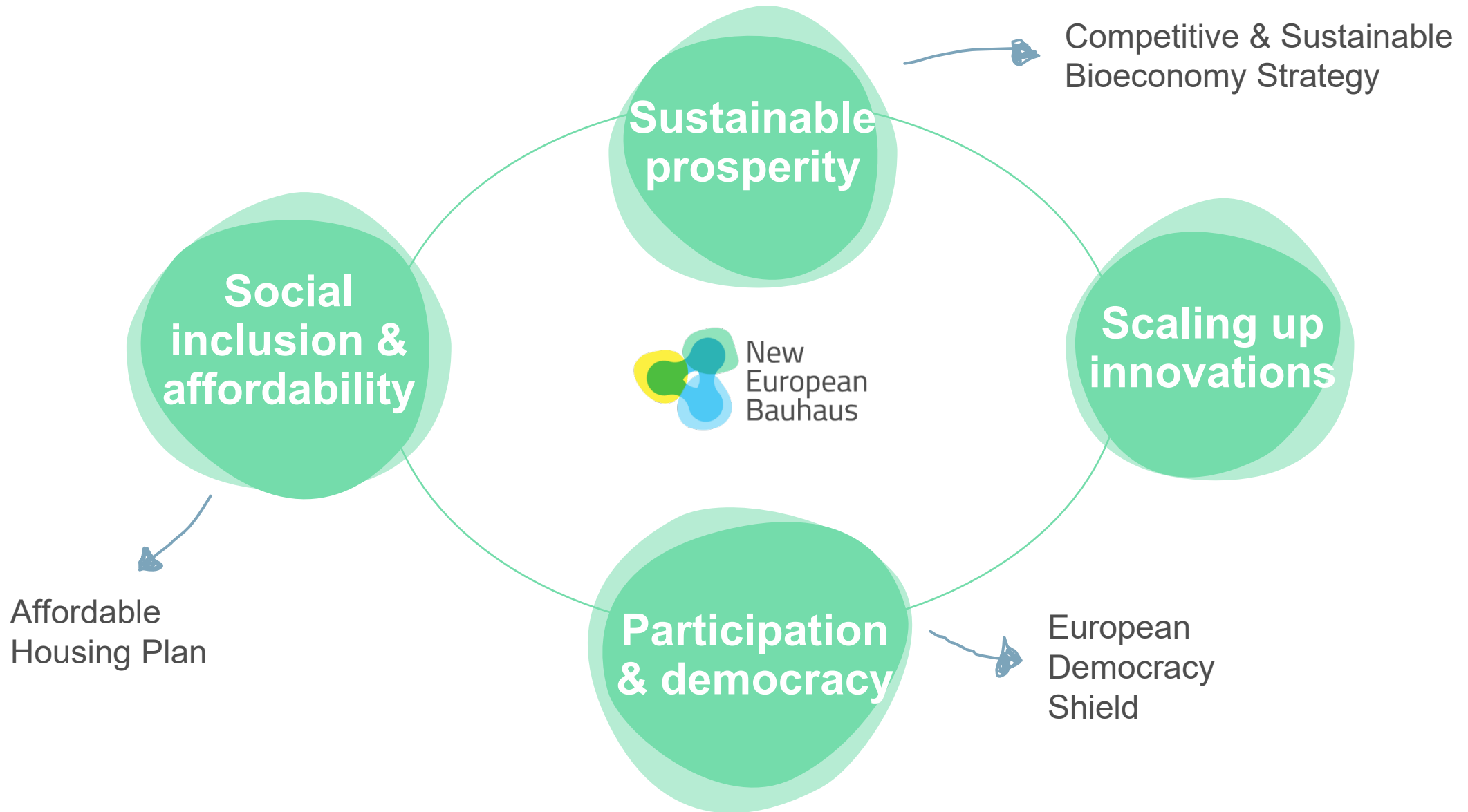
Tools to facilitate the implementation of NEB values



Guiding tools and frameworks for decision-makers and project managers who wish to apply NEB values and principles to their activities:

- [NEB Compass](#)
- [NEB Toolbox](#)
- [Investment Guidelines](#)
- [Self-Assessment Method](#)
- [NEB Checklist](#) (coming soon)

NEB in current political priorities



Affordable Housing Package – 16 December 2025

- European Affordable Housing Plan
- European Housing Construction Strategy
- Revised EU State aid rules
- Commission Communication on the New European Bauhaus: from vision to implementation, and proposal for a Council Recommendation

NEB Communication

Sets EU vision & priorities

Launches tools & actions

Mobilises EU funding & markets

Commission-led

NEB Recommendation

Invites MS to act

Embeds NEB in national/regional frameworks

Strengthens multilevel governance

Member State-owned

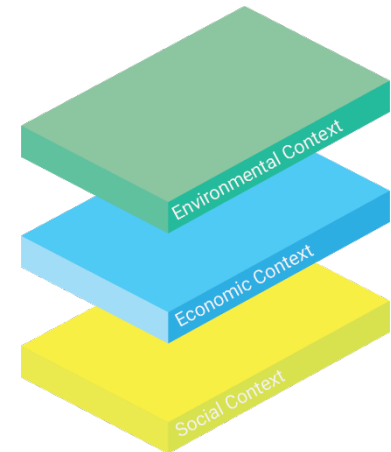
Key message:

Together, they move NEB from inspiration to systemic change.



NEB Catalogue of Blueprints for Affordable and Resilient Homes

- **21** NEB aligned **projects** tackling resilience and affordability in built environment
- Projects presented as **conceptual “blueprints”**
- Analysis of **underlying contexts** and **approaches** used
- Structure designed to facilitate transferability and **replication**
- First edition launched at NEB Festival in print, live version to continue online



The Catalogue

THE APPROACH

To understand how housing projects deliver both affordability and resilience, this Catalogue adopts a matrix framework influenced by the 2025 Strategic Foresight Report's **Resilience 2.0 model**¹, which identifies a need 'to build up economic, societal, environmental and political resilience'. The Catalogue draws on these areas, presenting three interdependent contexts: **Economic, Social, and Environmental**. These Contexts reflect the primary conditions through which affordable and resilient housing is shaped. The Matrix also identifies the **mechanisms through which successful outcomes are achieved**, referred to as **Levers**. These Levers represent the practical actions across design, governance, finance, construction, and social engagement, that enable projects to respond to specific contextual challenges.

CONTEXTS

The Contexts describe the needs, pressures or vulnerable conditions to which each Blueprint responds. They represent the 'ground layer' upon which a project must build, inevitably shaping the project's approach. These contexts commonly take the form of financial and delivery pressures, social and community needs, or environmental and climate-related risks.

The three contexts:



The Economic Context captures needs related to affordability, viability and delivery. It includes situations where housing is particularly difficult to provide, improve or maintain because of high construction costs, limited public budgets, rising rents, energy poverty, underused assets, fragmented retrofit markets or the financial burden of demolition and rebuilding.

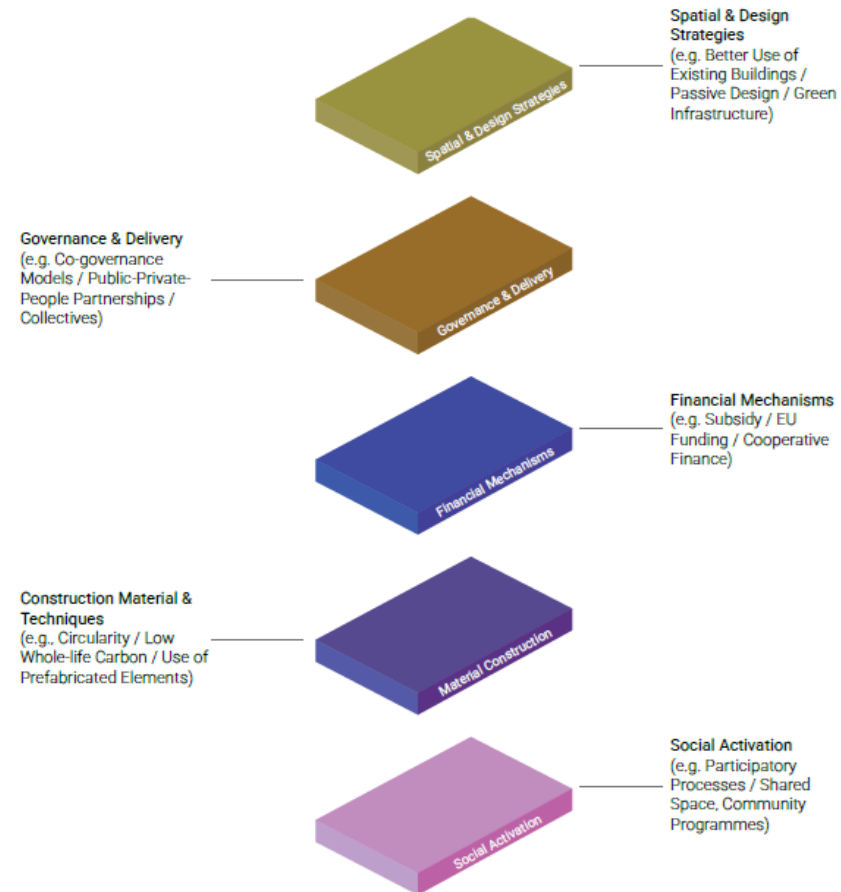
The Social Context captures needs related to inclusion, stability, participation, perceptions of safety, care and community life. It includes situations where housing challenges are linked to displacement risk, weak social fabric, social isolation, lack of support services, or unequal access to neighbourhood spaces.

The Environmental Context captures needs related to climate adaptation, carbon reduction, resource efficiency and environmental quality. It includes situations where homes and neighbourhoods are exposed to overheating, flooding, high energy demand, material waste, environmental degradation or the need to transition to low-carbon living.

Together, these Contexts draw our attention to the overlooked reality that affordability and resilience are not achieved by strong design alone. They emerge when strong design or methods are tailored to the financial pressures, social conditions and environmental risks. The role of the Blueprints is to draw attention to and elucidate how different projects recognised these complex needs and used specific levers to respond to them. These Levers are presented on page 9.

LEVERS

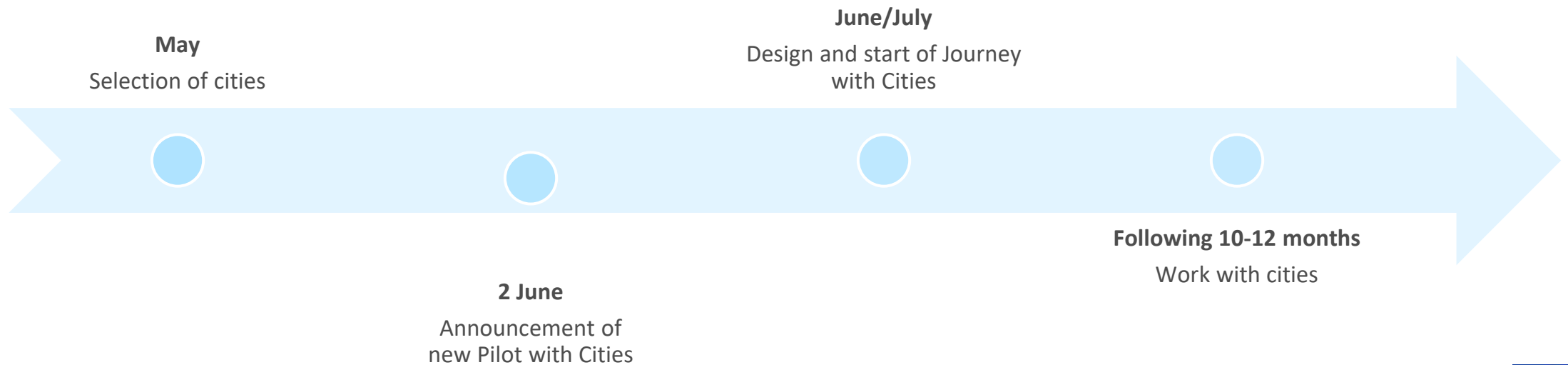
The Levers included in the Matrix emerged from the Blueprints and represent recurring strategies that consistently enable successful outcomes. They are grouped into five domains:



These Levers form practical tools observed across the case studies. The Matrix reveals that different projects combine these Levers to respond to different economic, social and environmental needs with the end goal of affordability and resilience.

Pilot Project for Cities

- Addition of a new Experimentation Journey under the Preparatory Action "*Innovation for Place-Based Transformation*"
- **Focus:** climate resilience in the built environment
- **Aim:** test a facilitated and participatory process with 5 cities to collaboratively address climate resilience challenges

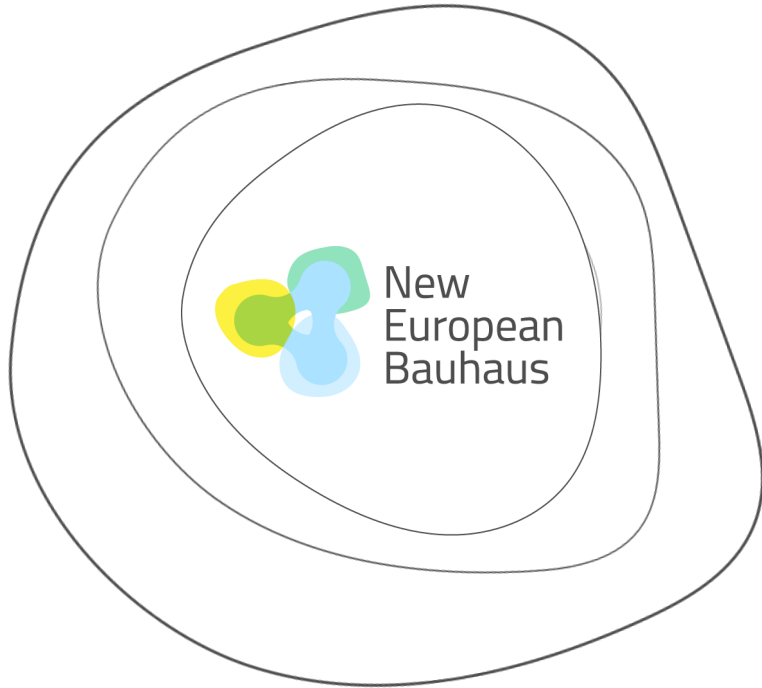


**THE
FESTIVAL** of the
NEW EUROPEAN
BAUHAUS
Life. Spaces. Buildings.

COME AND JOIN
THE MAKERS OF CHANGE
BRUSSELS
9-13 JUNE
2026

https://new-european-bauhaus.europa.eu/festival_en

Follow the latest developments on NEB



#NewEuropeanBauhaus

- **Web:** https://new-european-bauhaus.europa.eu/index_en
- **Instagram:** @neweuropeanbauhaus
- **LinkedIn:** <https://www.linkedin.com/showcase/new-european-bauhaus/>
- **Newsletter:** <https://ec.europa.eu/newsroom/neb/user-subscriptions/2137/create>



Session 1 (11:30-12:20) - People



Co-creation for Inclusive and Climate-Ready Neighbourhoods - How participatory approaches engage and empower citizens in shaping climate-resilient cities?



Gabrielle Froes
Prospex Institute vzw



Eylul Aksekili
ICONS Innovation Solutions



Max Beihofer
Climate Action Research
Lab Freiburg



Moderation:
Katharina Faradach
Prospex Institute vzw



NEB & Co-creation for Inclusive and Climate-Ready Neighbourhoods

INCLUSION

Neighbourhood development that is shaped with citizens, not only for them



Neighbourhoods that are more **socially resilient** and equitable.

SUSTAINABILITY

Holistic transformation of **everyday** living environment



Co-creation strengthens climate readiness of local communities

QUALITY OF LIVED EXPERIENCES

Co-creation helps to ensure that neighbourhoods become meaningful, welcoming, pleasant and healthy to live in.



Spaces that combine environmental performance with **social and cultural value**.



Who are the social groups most excluded from current urban design processes?

Think of 1 group of people who tend to be left out from urban planning processes



Mentimeter.com

**Join the live Menti using code:
8647 4342**





MINORITY
REPORT

Co-creation framework & inclusive stakeholder engagement

Gabrielle Froes

Prospex Institute



This project has received funding from the European Union's Horizon Europe research and innovation programme under the grant agreement number 101147385. The European Union is not liable for any use that may be made of the information contained in this document, which is merely representing the authors' view.



Mitigating Environmental Disruptive Events Using **People-Centric Predictive Digital Technologies** to Improve Disaster and Climate Resilience

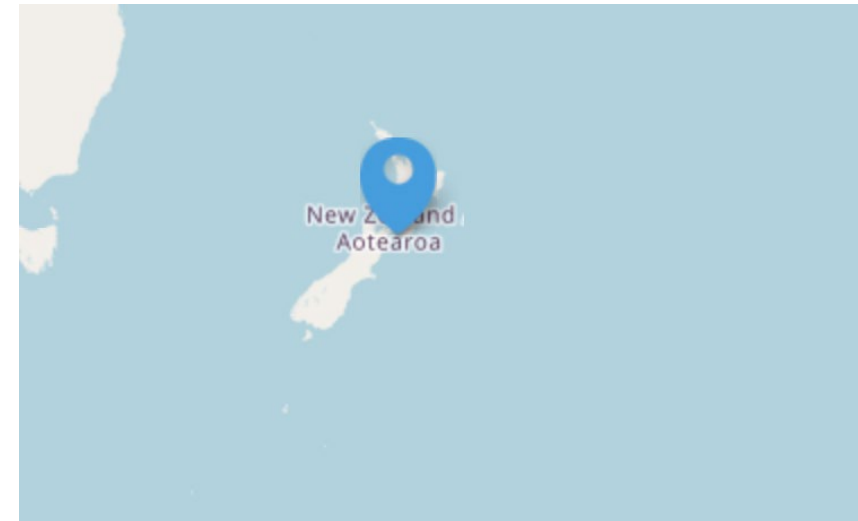
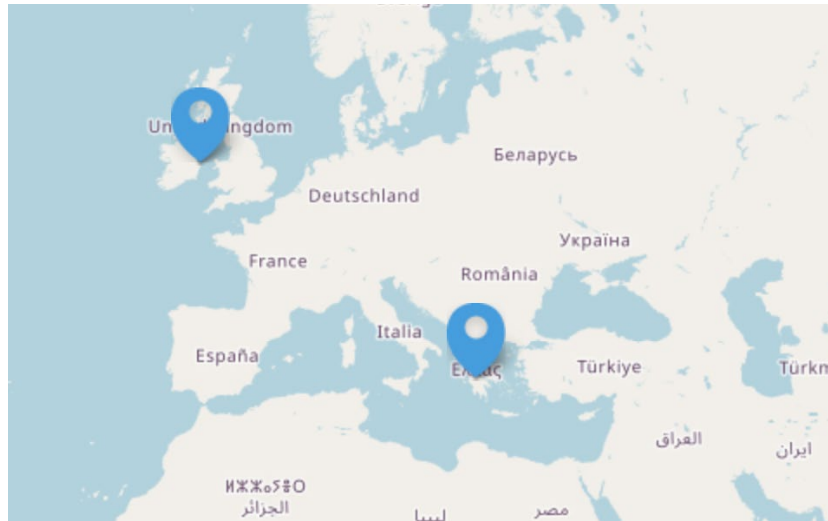
Minority Report seeks to predict, identify, and categorise the vulnerability of existing and future buildings and infrastructures towards exposure to multiple hazards using digital twin technologies.



People are at the core of Minority Report



Distinct but Interrelated Pilot Sites



Minority Report's Co-Creation Framework

Definition and key principles



Interactive & Modular Design



Comprehensive & Collaborative



Targeted & Inclusive Representation



Interactive & Modular Design



Flexible, based on stakeholder needs



Adaptable to local contexts



Comprehensive & Collaborative



Targeted & Inclusive Representation



Local stakeholders



End-users



Underrepresented & vulnerable groups



Supporting public strategic engagement through targeted communication and targeted local empowerment

Eylul Aksekili

ICONS Innovation Strategies



Project: 101147113 – RETIME – HORIZON- CL-2023-D4-02

Co-funded by the European Union under grant agreement no. 101147113. 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 the granting authority can be held responsible for them.



Adaptation strategies for urban resilience

RETIME combines advanced tech with thorough socio-environmental analysis to build hazard exposure resiliency and informed urban environments for all.

RETIME intends to meet citizens' real-time needs while supporting monitoring and decision-making processes



Objectives



Support public authorities and other key stakeholders in enhancing the safety and resilience of the built environment by implementing site-specific emergency protocols.



Increase awareness of building occupants and other vulnerable key stakeholders on the available solutions in case of extreme climatic events and natural disasters.



Test innovative and practical adaptation measures for at-risk urban areas.

Project Coordinator

iscte

— Conhecimento e Inovação

Horizon Europe

Efficient, sustainable and
inclusive energy use
(HORIZON-CL5-2023-D4-02)

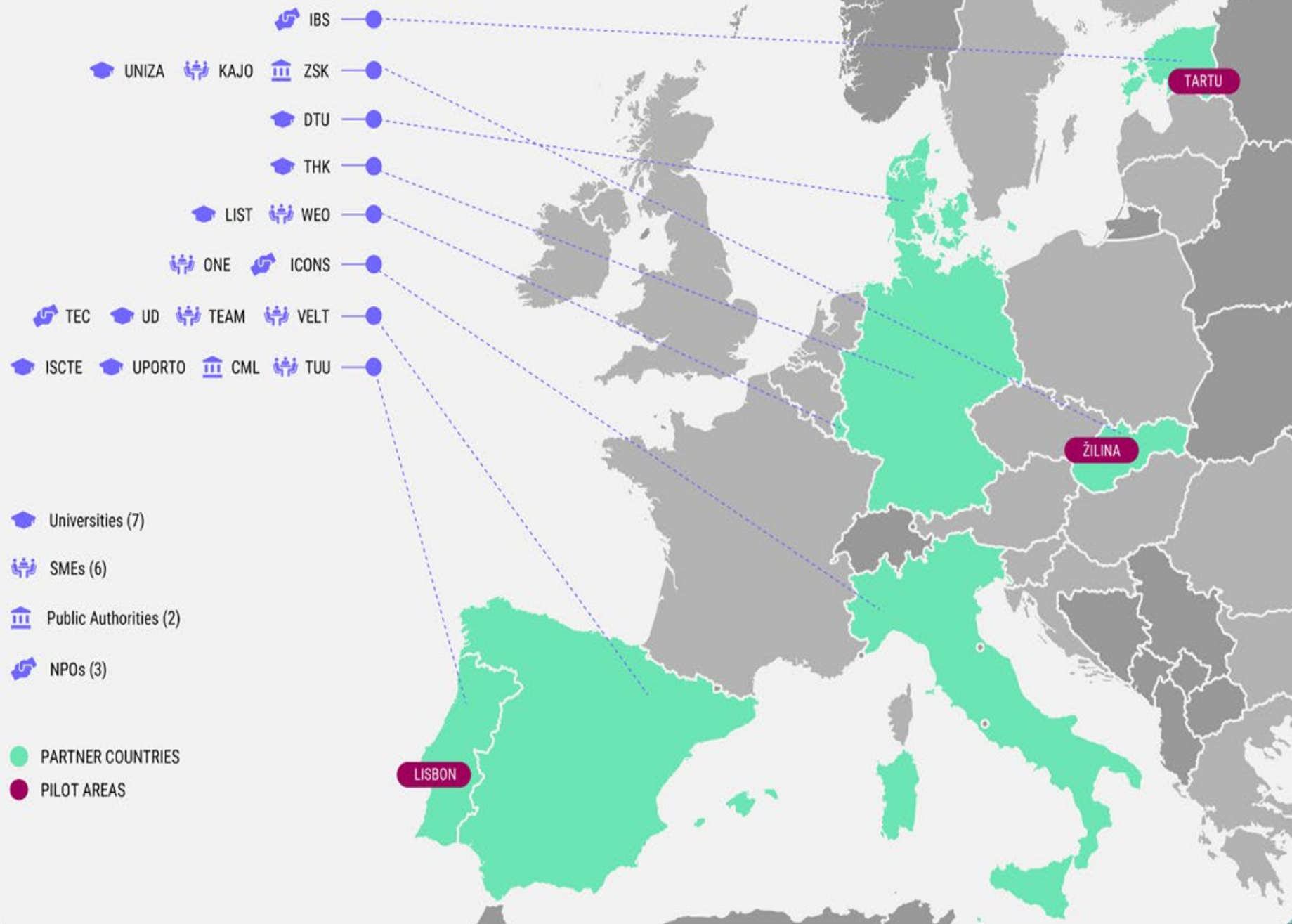
Total Budget: €5,475,761

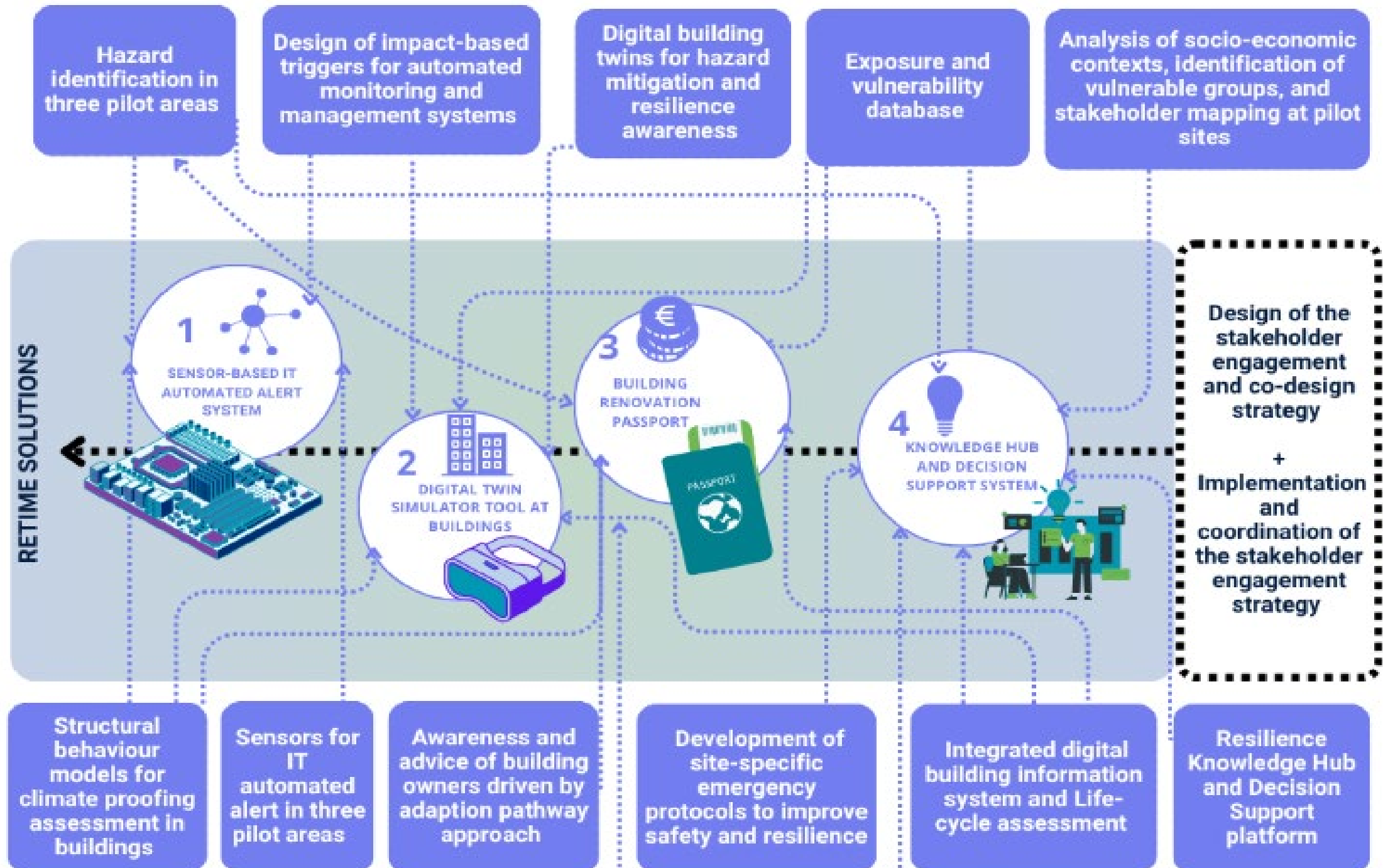
18 partners

48 months

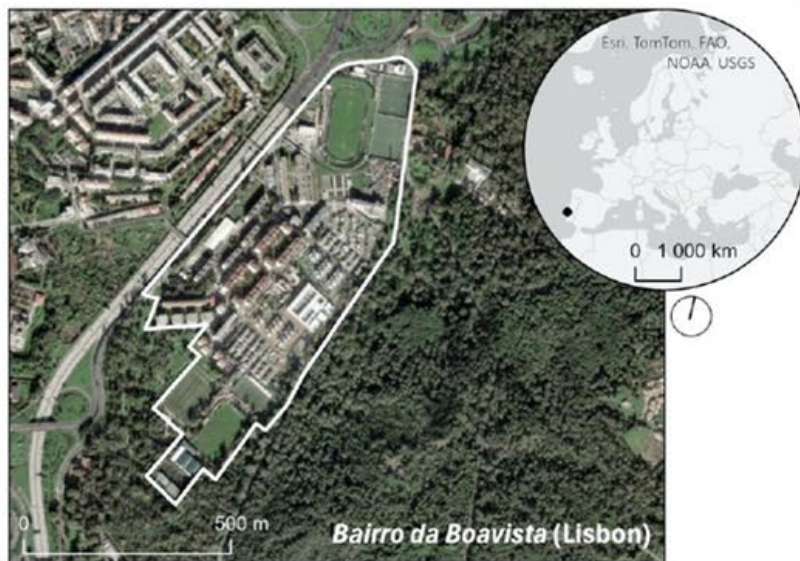
Start date: 1 May 2024

End date: 30 April 2028





Three Pilot sites: local stakeholder-centric approach



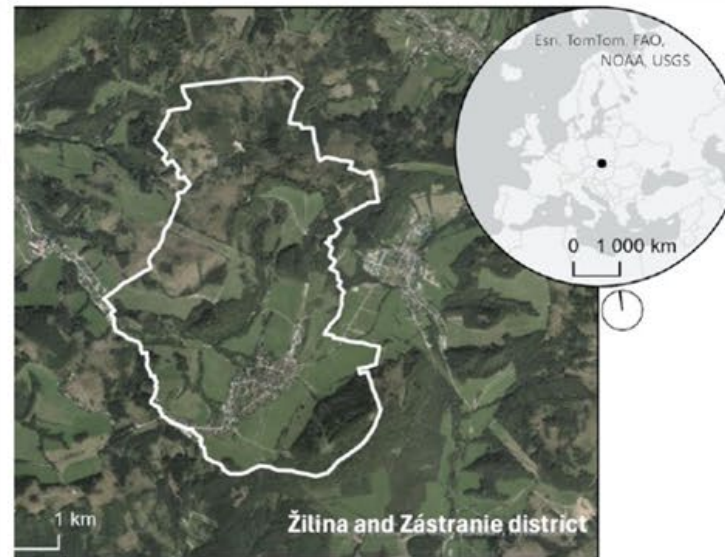
Location: Lisbon, near Monsanto Forest Park

Population: ~1,900 residents

Key Features: Publicly owned and managed housing; diverse building ages, typologies, and conditions; high population density; strong community cohesion

Hazards & Exposure

- | | |
|--|---|
|  Energy Poverty |  Extreme heatwaves |
|  Flooding |  Wildfires |



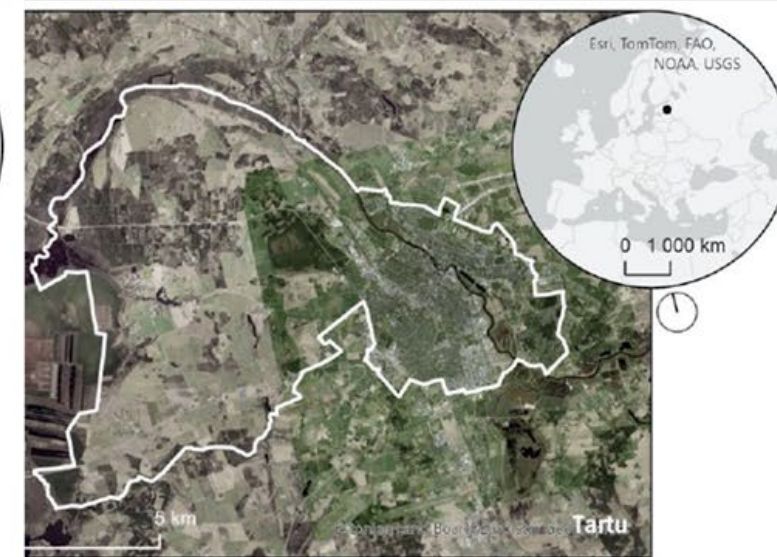
Location: Žilina, Slovakia, in the foothills of Straník Mountain

Population: ~925 residents

Key Features: Suburban setting; predominantly privately owned residential housing; ageing infrastructure

Hazards & Exposure

- | | |
|---|---|
|  Landslides |  Extreme heatwaves |
|  Flooding |  Heavy Snowfalls |
|  Earthquakes |  Wildfires |



Location: Tartu, Estonia, along the Emajõgi River

Population: ~6,900 residents

Key Features: Rich cultural and architectural heritage; dynamic urban environment

Hazards & Exposure

- | | |
|--|---|
|  Energy Poverty |  Heatwaves |
|  Coldspells |  Wildfires |



Key stakeholders

Differing needs, priorities, and perspectives should be brought together to shape integrated decisions and service outcomes

Vulnerable Groups

- €- Low-income residents
- 👴 Older adults
- A_x Individuals with limited literacy skills
- 🧠 Persons with disabilities
- 🏠 Domestic violence survivors
- 👤 War Refugees & Immigrants

Building-related stakeholders

- 🏢 Building or flat inhabitants
- 🏢 Building users
- 🏢 Building managers
- 🏢 Building owners
- 🏢 Working staff

Technical solution providers

- 👤 Architects and designers
- 👷 Engineer practitioners
- 👷 Construction practitioners
- 💻 IT developers

Policy and decision-makers

- 👤 Municipal and regional planners
- 🏛 Building regulation officials
- 💡 Smart city and digital planning units
- 📢 Civil protection and emergency management authorities

Perceptions & Perspectives



Current needs



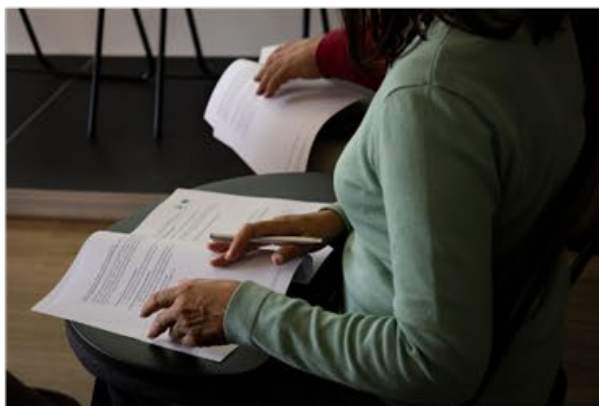
Emerging challenges



Stakeholder Engagement and Collaboration

RETIME implements a multi-actor engagement approach based on continuous dialogue, co-creation, and iterative learning

- **Continuous Dialogue & Analysis:** Stakeholders are engaged through focus groups, informal meetings, and e-learning activities (e.g., ideathons), while user-generated content is analysed using Natural Language Processing to capture needs and insights
- **Knowledge Exchange:** Research organisations and SMEs exchange expertise with key stakeholders also through pilot site activities, fostering capacity building and collaboration
- **Co-Design:** Stakeholders contribute to solution development through a Social Innovation Roadmap
- **Testing & Validation:** Solutions are iteratively tested and refined in real and experimental settings
- **Policy Interaction:** Public authorities use project evidence to inform policies and explore adaptive governance



Key RETIME activities: focus groups and pilot site visits



CDE Local Desks: A key RETIME innovation.

What are they?

Local contact points connecting:

- Citizens
- Stakeholders
- Local authorities
- The RETIME consortium



We created CDE Local Desks to serve as bridges between the project and local communities. They ensure that local voices inform project activities while project results reach the people who can benefit from them.

Our philosophy.
Communication is *not* information transfer.
Communication is participation.

Our philosophy

Communication is not information transfer.

Communication is participation.

How?

- Workshops
- Stakeholder consultations
- Co-design sessions
- Public engagement Activities
- Promotional campaigns co-created with stakeholders

Our objective is not simply to inform stakeholders about climate risks. We aim to create opportunities for dialogue and collaboration that allow stakeholders to actively contribute to resilience planning.

1



2

3



Stakeholder Consultations

4



5



3



4



Engagement Activities

Promotional Campaigns
Co-created



The Žilina Resilience Ideathon

To collectively identify vulnerabilities and design resilience solutions.

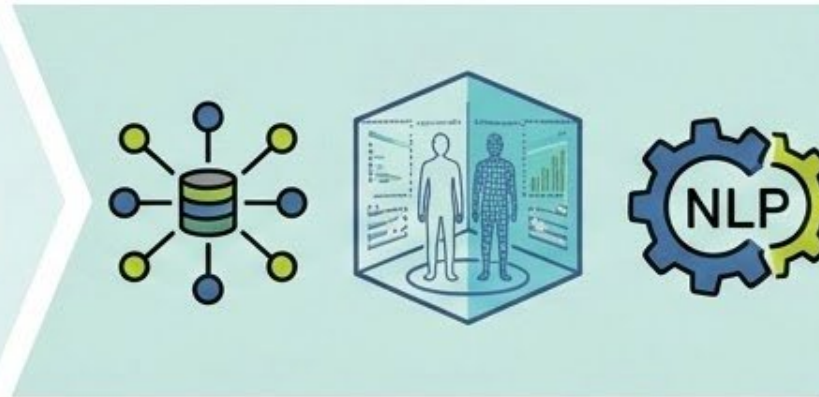
The Ideathon demonstrates how RETIME translates engagement into action. Rather than presenting solutions to communities, we bring stakeholders together to help create those solutions themselves.



From Engagement to Solutions



Focus Group Dialogue & Insight Capture



Knowledge Exchange & NLP Analysis



Co-Design of Adaptive Strategies





Context

CSS Straník is a social care facility supporting people with high support needs.

Key challenges

- Climate-related risks
- Emergency preparedness
- Building resilience
- Protection of vulnerable residents

Why this is important

Because resilience must also be:

- Inclusive
- Accessible
- Human-centred

Additional strengths

- Participation of people with disabilities
- Gamified activities
- Learning-based approach

This is particularly important because the people most affected by climate risks are often those least represented in decision-making processes. RETIME seeks to change that.



Key challenges



Climate-related risks



Emergency preparedness



Building resilience



Protection of vulnerable residents



Additional strengths



Participation of people with disabilities



Gamified activities



Learning-based approach



Leipzig Case Study Area: climate resilience, adaptation measures and socio-economic impacts

Max Beihofer

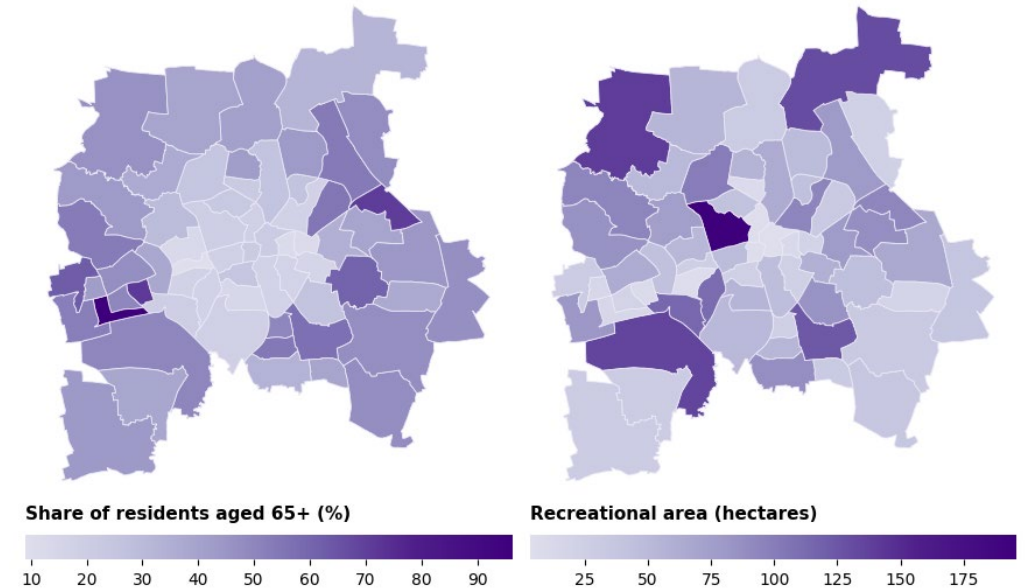
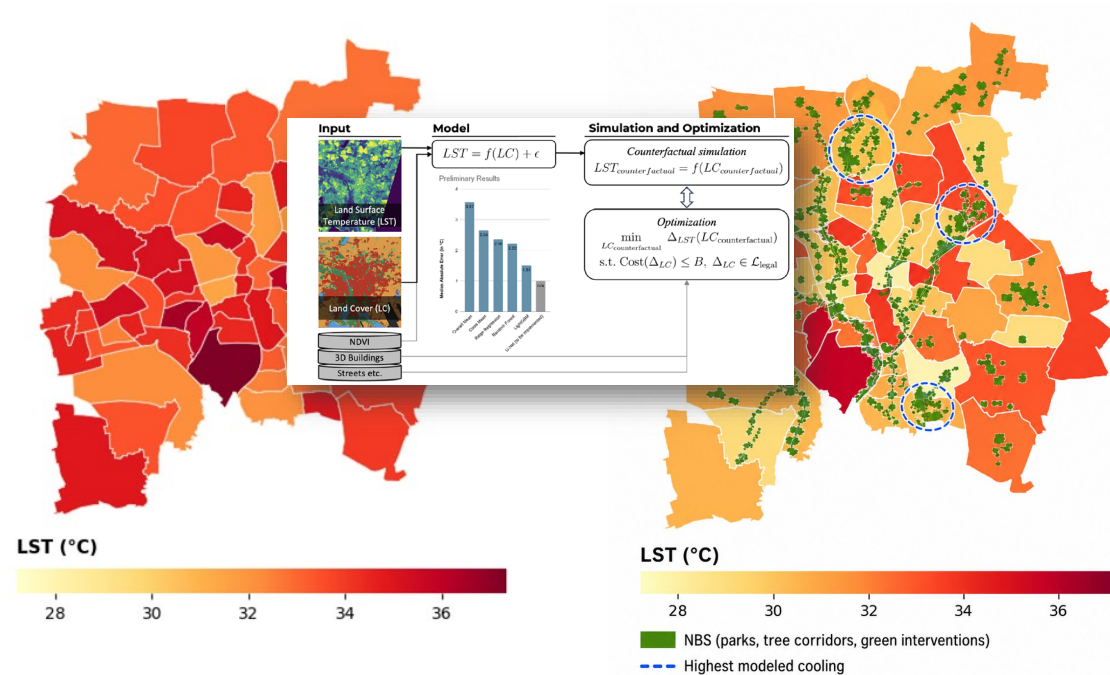
Climate Action Research Lab Freiburg

The coolest solution is not always the best solution

Leipzig

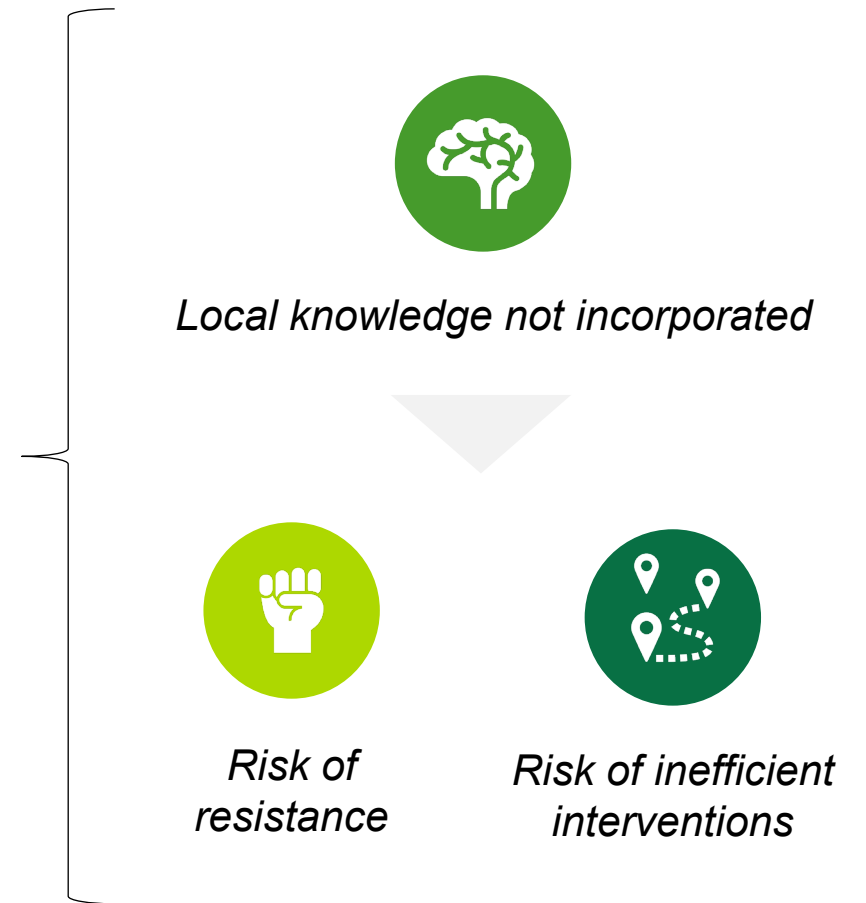
Leipzig with some
more trees

Also Leipzig

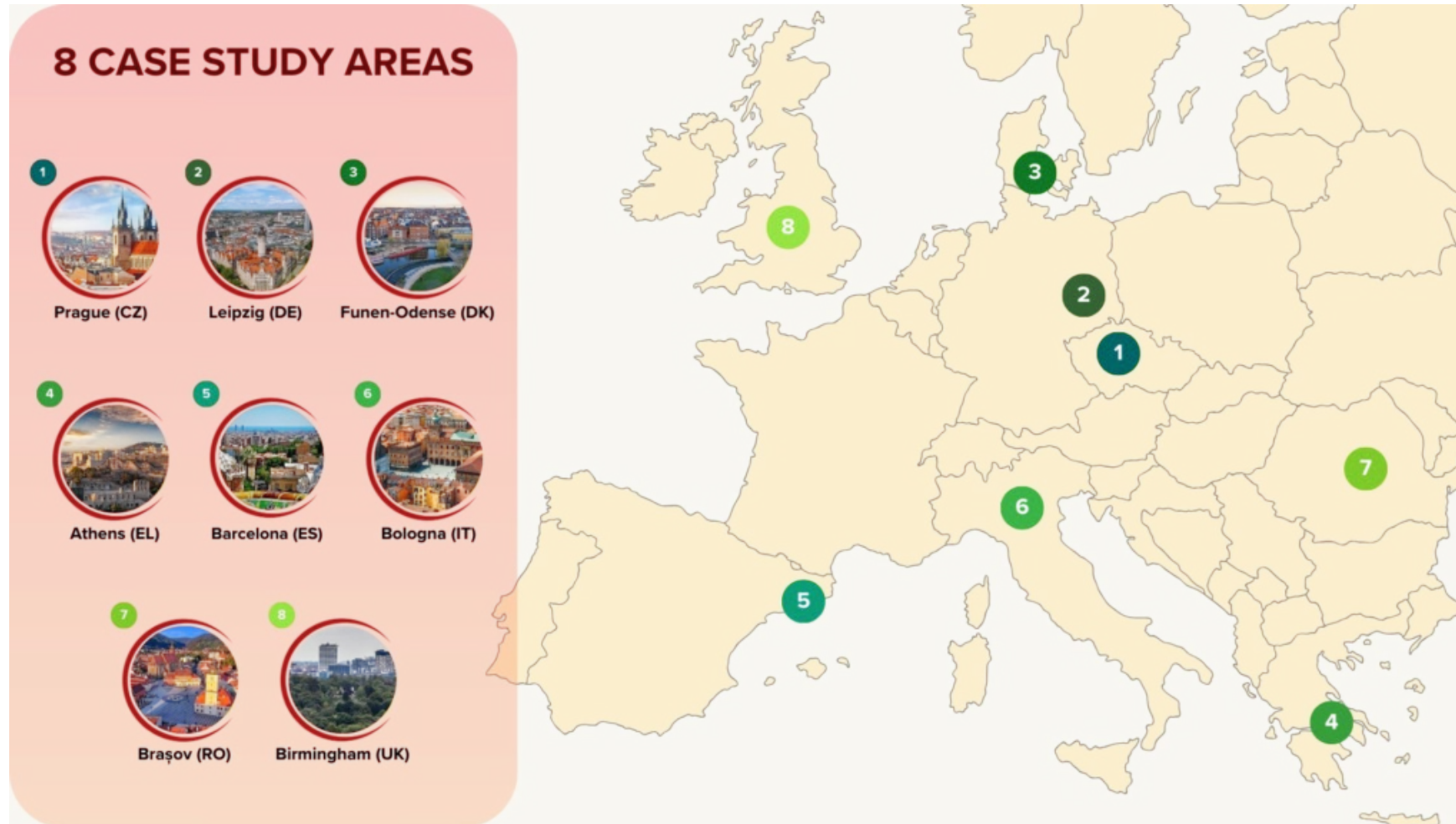


Climate resilience is not only
a **technical challenge**,...

...it fails if affected groups are
not sufficiently involved



CARMINE supports metropolitan regions in becoming climate-resilient by co-producing tools, strategies, and services with local stakeholders



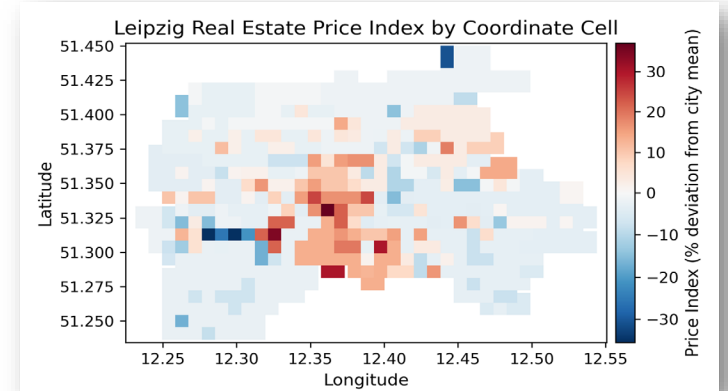
In CARMINE, we combine qualitative and quantitative methods

Living Labs

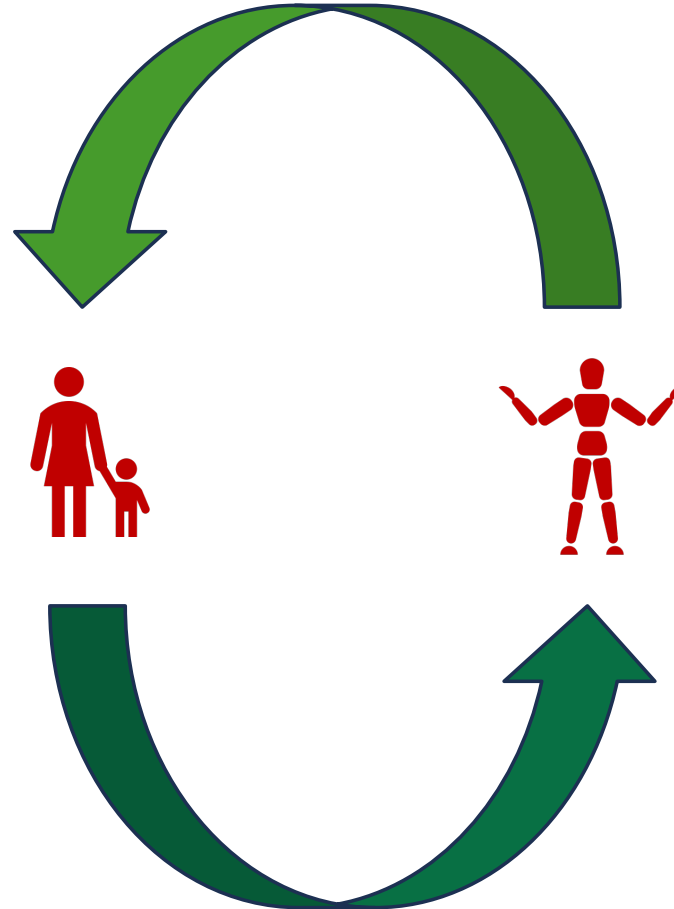


Qualitative identification and prioritisation of **risks, drivers and potential solutions** and definition of a **future vision** for the city in 2050

Digital Twin



Development of **quantitative** models to represent the social, economic and physical realities in the city and that can be used for **decision support**



The Leipzig Digital Twin is developed to support risk-mitigation decisions & enable what-if analyses of impacts on vulnerable groups

Physical Risks

Heatwaves

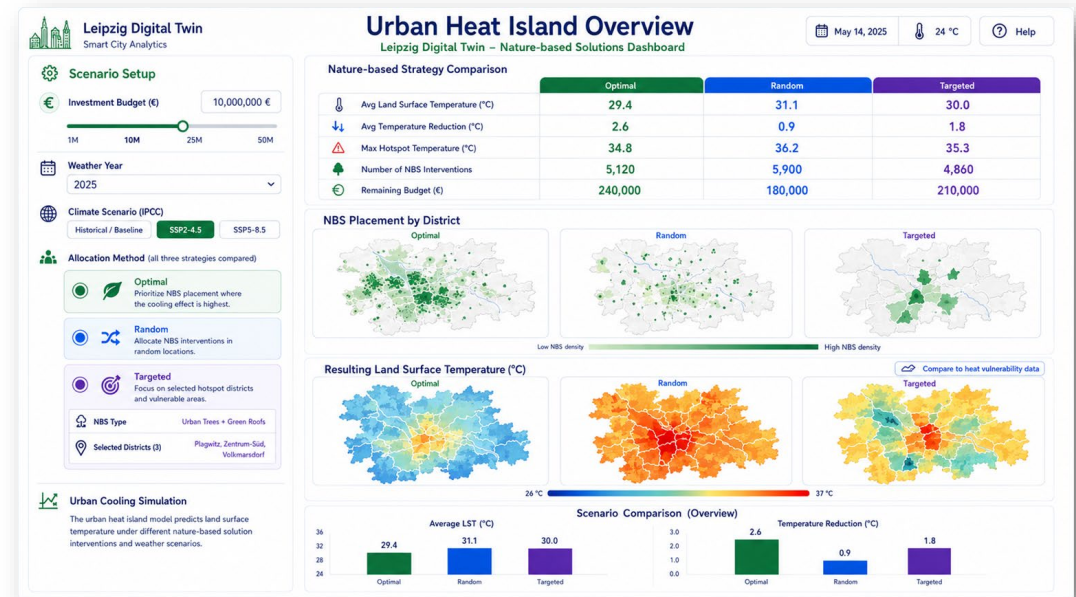
Flooding

Wildfires

Transition Risks

Rents & Real Estate Prices

Building Energy Consumption



Barriers to effective engagement...

Limited workshop time and a large number of participants can make discussions too broad and unfocused

...and ways to address them

Use structured formats, clear questions, and problem cards



Barriers to effective engagement...

Unrepresentative participation means that climate-aware or institutionally-connected groups often dominate, while vulnerable, sceptical, or hard-to-reach groups are missing

...and ways to address them

Link workshops to existing local events and community spaces

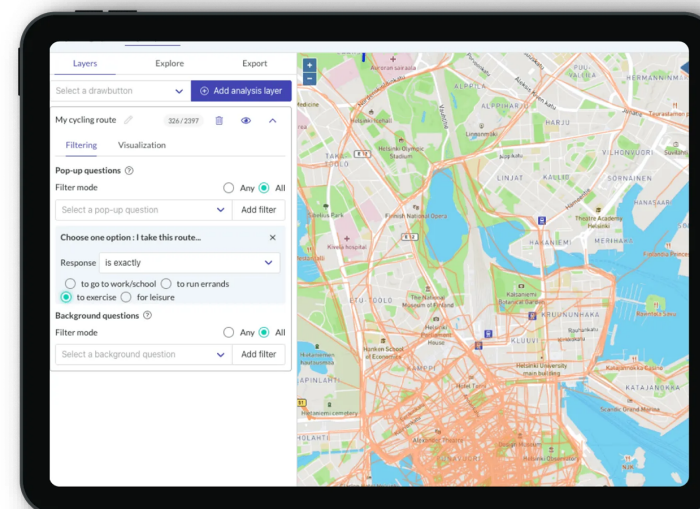


Barriers to effective engagement...

...and ways to address them

Practical access barriers such as time, mobility, language, and care duties can prevent affected people from taking part

Offer online participation options, stakeholder mailing lists and feedback loops





Interactive Session: Creating Urban Spaces for All



How can we better involve underrepresented groups in the design of climate ready neighbourhoods?

Split into 4 groups. Each group will focus on one of the underrepresented social groups.

In your groups, please:

1. Identify 2-3 barriers to the inclusion of this specific group
2. For each barrier, identify one SMART solution

Group 1: Gabrielle Froes

Group 2: Max Beihofer

Group 3: Eylul Aksekili

Group 4: Katharina Faradsch





Final Reflections





MINORITY
REPORT

1st International event



New
European
Bauhaus

E²ARC
Architects for future cities

Lunch break
See you at 13:10

Co-creating Green &
Climate Resilient Cities
NEB Satellite Event



Session 2 (13:10-14:00) - *Places*



A Place-Based Approach for Holistic Resilience & Nature-Based Strategies in the Built Environment - How natural systems, resilient building design and human experience shape climate adaptive places?



Thomas Grey
TCD



Fiona Demeur
IAAC



Simona Bianchi
TU Delft



Moderation:
Dimitra Xidou
TCD



NEB and Place-Based Approaches

- NEB is part of the Commission's overall objective of 'Supporting people, strengthening our societies and our social model'

2021 - COUNCIL OF THE EU: Council conclusions on culture, high-quality architecture and built environment as key elements of NEB

*'Place-based approach' is an approach that targets the **specific circumstances of a place** and **engages the community** and **a broad range of local organisations** from different sectors as **active participants in their development and implementation***

2024 – NEB Toolbox

*NEB as a **framework for sustainable, inclusive, and beautiful change in a specific place-based context**, transcending conventional boundaries*

2024 - A practical guide to NEB self-assessment method and tool

4.1 How to achieve high level of beauty in the built environment - sense of place... **local character, unique identity, distinctiveness of a place & attachment**

4.2.8 Spatial coherence in planning & design - contributing to a sense of place & **fostering a lasting connection between people and their environment**

4.2.10 ...sense of belonging - **maintain the spirit or essence of a place**, by recognising and preserving its characteristic features, emotional identity

***Transdisciplinary initiatives** take a collaborative approach to knowledge creation b/w local, traditional & academic knowledge holders. They **engage at multi-levels & connect local place-based strategies to a global network of actors** while considering the initiatives' wider global impact.*

2023 NEB Compass



Place-based & People Centred Approach to Resilient Neighbourhoods

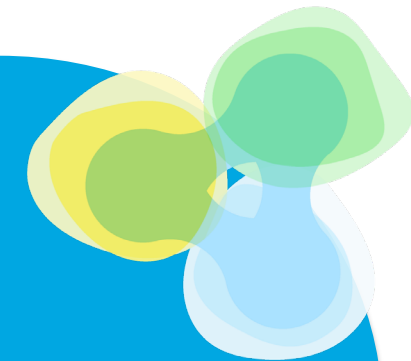


Minority
Report

Human-centred resilience &
identity of place

GreenIN
Cities

Co-design of NBS with human and non-
human perspectives grounded in place



MultiCare

Modular building solutions that can
respond to specific characteristics of
place



How project adopts place-based and people-centred approach (and/or considers the non-human) toward resilient neighbourhoods

Potential for replicability and scalability of approaches in each project.

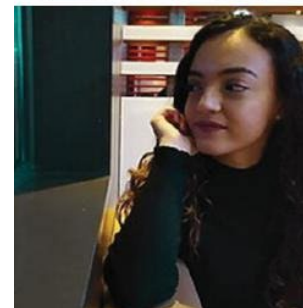
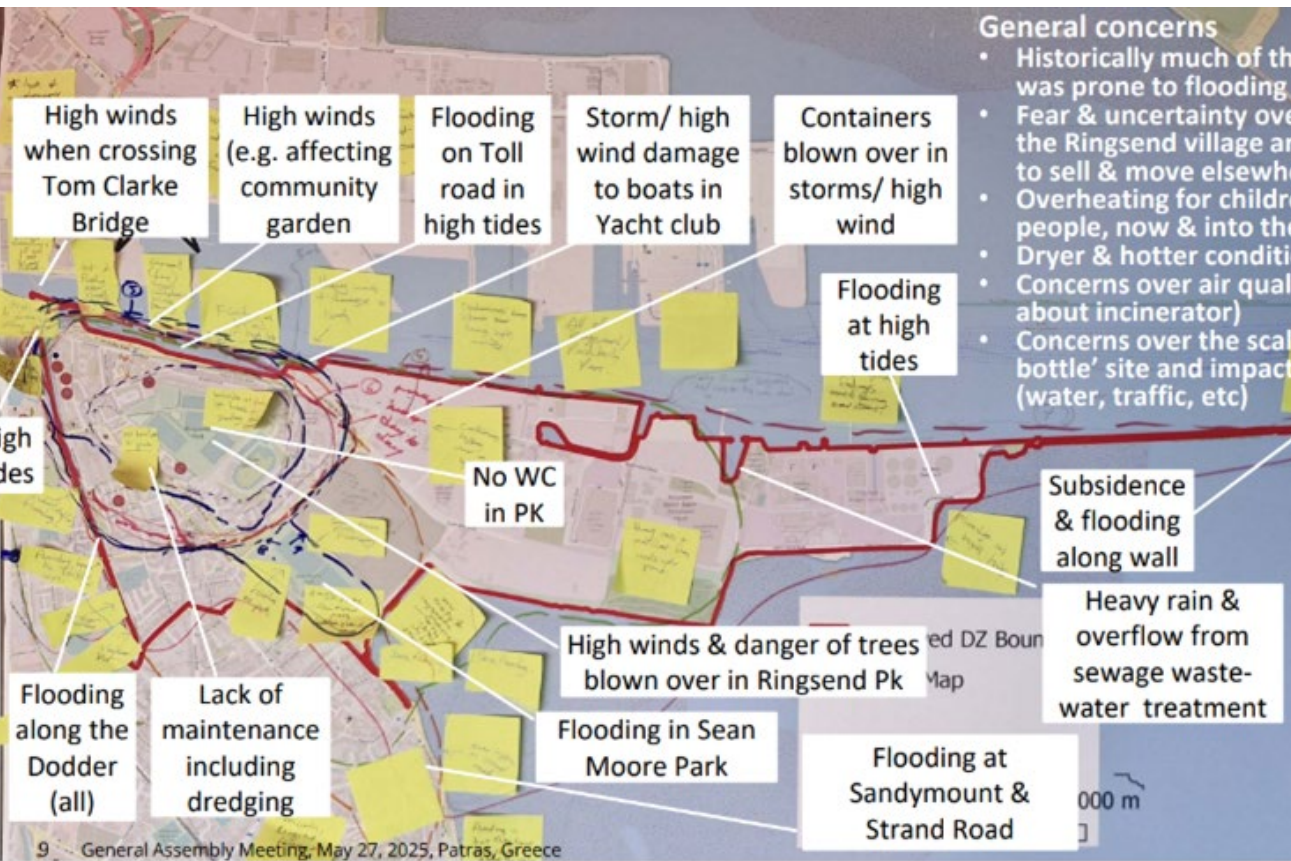
How this approach helps to contextualize stakeholder engagement and emphasise the importance of lived experience

How the place-based and people-centred approach reflects aspects of the NEB values and principles



People-centred resilience & identity of place

Thomas Grey | Minority Report Project





A design persona is a fictional but accurate narrative description of a user and how they interact with, or experience, an existing or proposed product, system, or environment. It provides a focused, engaging, and goal directed embodiment of the user that forces designers to deal with specific user needs as part of the design process. It can also help represent the needs of users who may not be engaged with as part of the research or design process.





Personas paired with **contextually appropriate scenarios** to provide a realistic narrative account of key user experiences / perspectives (persona) in relation to disruptive events that occur in specific built environment settings (scenarios) in each of the demonstration sites.



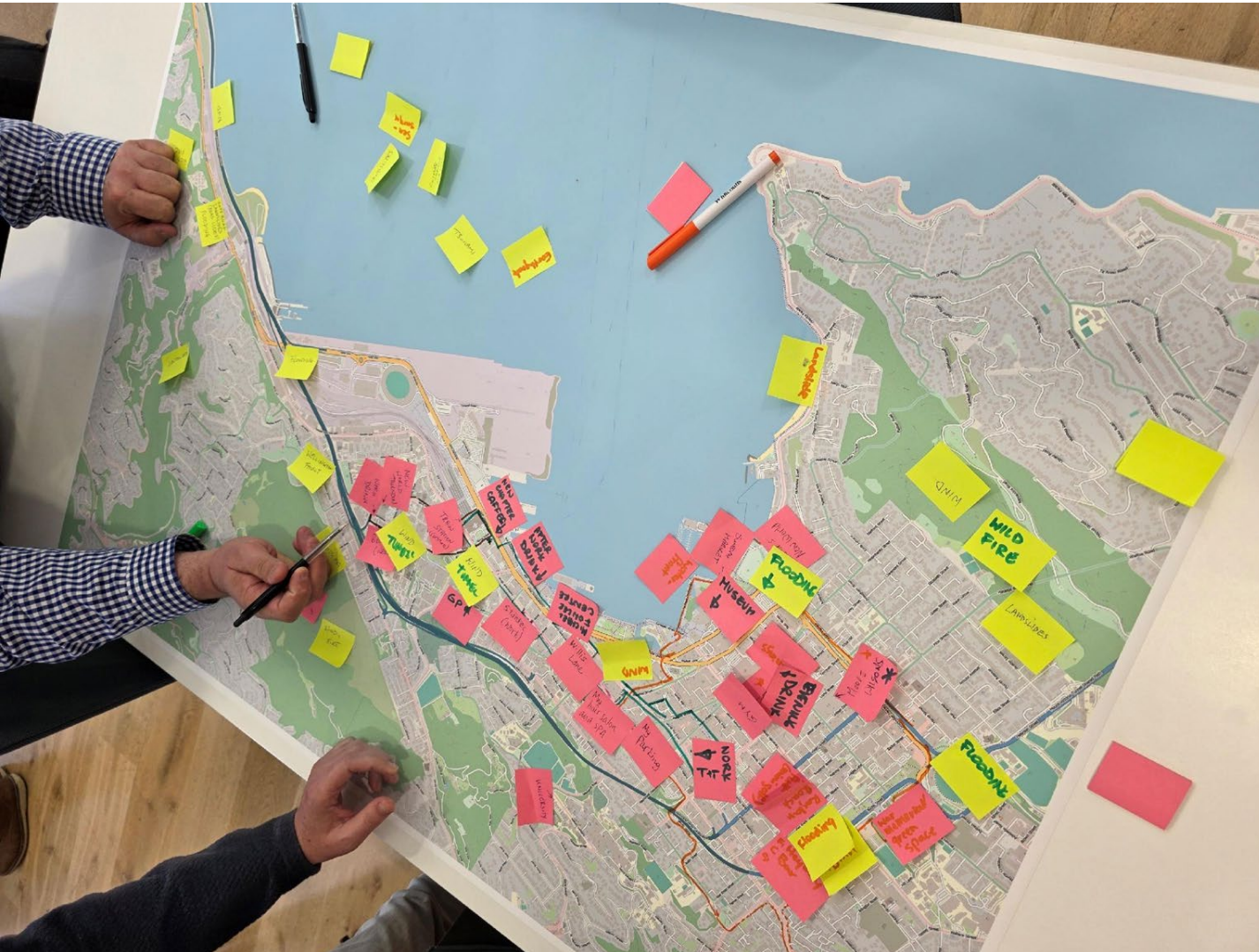


“essential to gather **specific, place-based insights** to ensure that the significance of meaningful and affective relationships embedded within place are **understood**”

Place-based personas and anchoring these personas in place to **“minimise the disconnect between abstract and personal responses...”**

(Cherry et al 2022)





Demonstration site community activities with strong place-based focus including mapping of the local area, discussion of key local features, and the identification of an approximate neighbourhood boundary. 'Daily clocks' were also used to explore a typical day over 24 hours in terms of how and where people spent their time in the community



Adaptable & modular persona and scenario matrix

- 1) **Person:** Core Attributes (Age, Gender, Sexual Orientation, Race/Ethnicity), Human Characteristics; Family & Carer Status; Social and Economic Status. **Social and Place Connection (Social Connection and Place Attachment), and Knowledge, Awareness, & Experience of the local context.**
- 2) **Place:** Overall Location, Setting-related Issues, Location and proximity to hazard, (and overall topography); Local Urban Form, Site Conditions
- 3) **Scenario Key Elements:** Event Type, Severity, Time, Impact – Setting (Level of Impact) **specific to the local area.**
- 4) **Future-oriented goals and timescale:** Short-timescale goals, Medium-timescale goals, Longer-timescale goals associated with **local place-based resilience measures.**



Aligning with the NEB's place-based approach

“Place-based approach” is an approach that targets the specific circumstances of a place and engages the community and a broad range of local organisations from different sectors as active participants in their development and implementation

(The Council of The European Union, 2021)

Valuing place-based and vernacular knowledge

“Transdisciplinary initiatives take a collaborative approach to knowledge creation between local, traditional and academic knowledge holders. They engage at multi-levels and connect local place-based strategies to a global network of actors while considering the initiatives’ wider global impact.”

(NEB compass 2023)



Maintaining or creating a sense of place

“sense of place encompasses the local character, unique identity and distinctiveness of a place and the attachment of people to that place”

“Genius loci and sense of belonging - maintain the spirit or essence of a place, by recognising and preserving its characteristic features, emotional identity (elements with deeper meanings and emotional connections for its inhabitants)”

(European Commission, Joint Research Centre, et al. 2024)



Co-design of nature-based solutions: A case study of Barcelona

Fiona Demeur

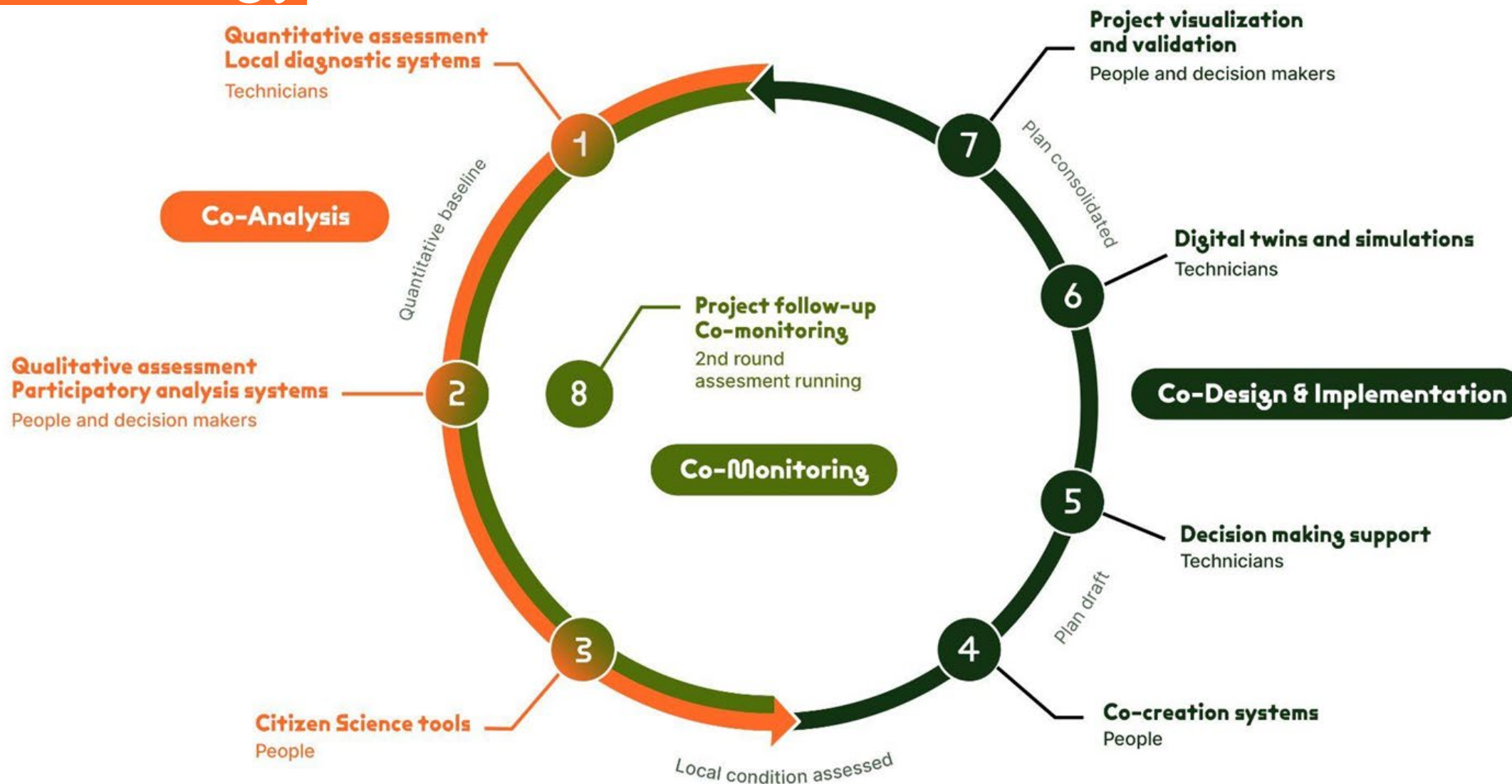
Advanced Architecture Lab

Institute for Advanced Architecture of Catalonia

fiona.demeur@iaac.net

**GreenIN
Cities**

Methodology



1.

Barcelona

Pilot Site



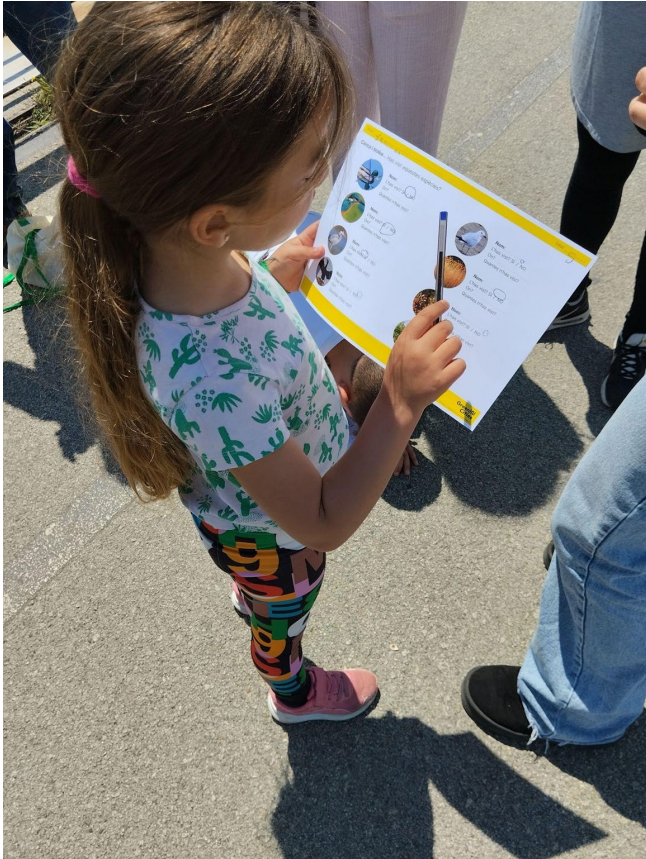
Barcelona - Experiential mapping - families

> emotions, gender representation, safety, accessibility



Biodiversity co-mapping - families & experts in ecology

> species classification (species discovery & prioritization)



Key Challenges

Environmental

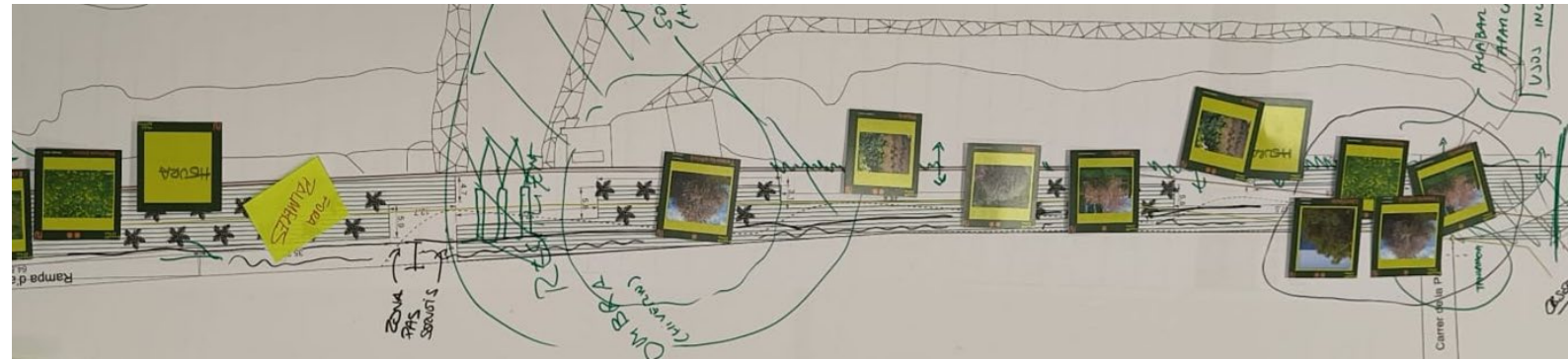
- Extreme Heat
- Pollution (Air, soil)
- Migratory Species

Social / Functional

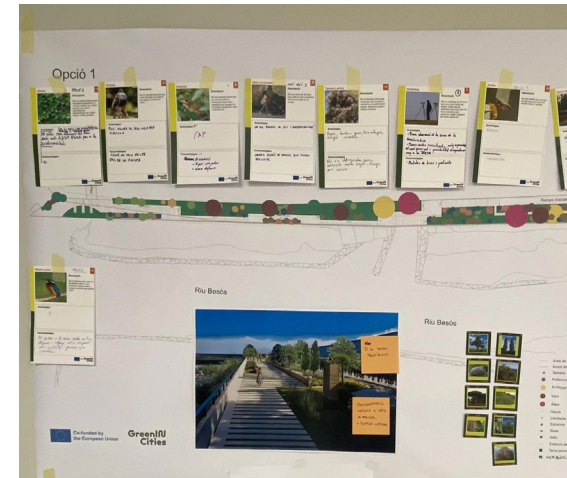
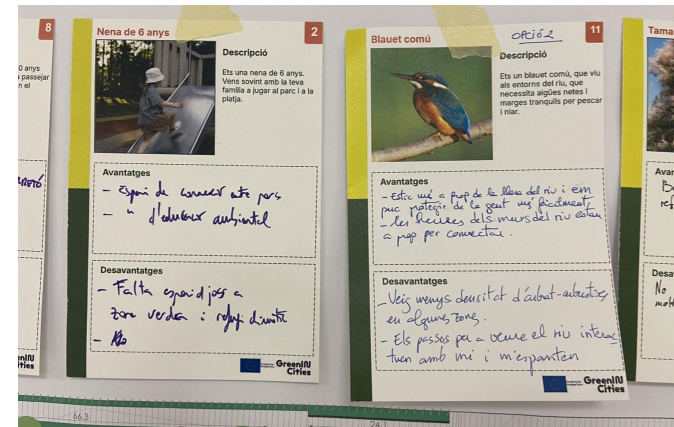
- Safety
 - Isolation of the site
 - Mobility (Bikes, electric scooters)
- Distribution of spaces & functions
- Balance between ecological enhancement and human activities



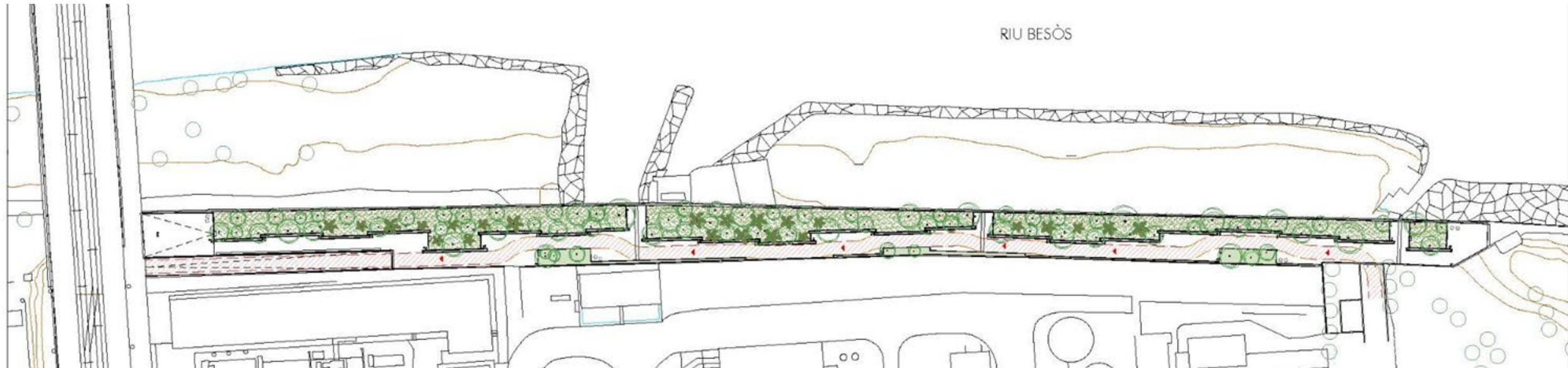
Co-creation public space workshop focussing on resilience and ecology - citizens expert in ecology



Animal oriented co-validation - citizens expert in ecology



Barcelona Masterplan: A Place for Humans & Non- Humans



2.

Nature-Based Solutions Catalogue

Initial GreenInCities Solution Catalogue is Online!

<https://www.greenincities.eu/solutions>

The catalogue is a living document and the final project catalogue will be published early 2027 adding newly developed solutions.



New Space Functions
Integrating Green



Download

Urban Green Elements



Download

Green Practices



Download

Horizontal Governance
Support Systems



Download

How to read the solutions catalogue

Representative Image

How the solution can be co-designed

Impact Scores

Implementation Scores

2.1.7 SPECIES HOTELS AND WALLS



CO-DESIGN PROTOCOL

1. Define the Vision and the Goals of the project.
2. Community Outreach and citizen engagement (Stakeholder mapping/Interviews).
3. Conduct site analysis and Environmental Assessment (site visits and Environmental impact assessment).
4. Collaborative Design session (Brainstorming sessions, Design Workshop session, Feedback loops).
5. Integrate Sustainable Practices (Material Selection, Water Efficiency, Biodiversity Enhancement).
7. Develop Detailed plan and prototype.
8. Formal and technical passages with local administration for the local construction.
9. Sustainable construction practices.
10. Setting of Volunteer programs, Educational Workshop, community Events for solution co-construction and activation

IMPLEMENTATION SCORES	IMPACT SCORES
Time ● ○ ○ ○ ○	Climate Resilience ● ● ○ ○
Advanced Tech ● ○ ○	Participation ● ● ● ●
Cost (Investment) ● ○ ○	Harmony with nature ● ● ● ●
Replication Potential ● ○ ○	Health benefits ● ● ○ ○

CO-EXISTENCE STRATEGY

Species Hotels and Walls coexist with nature, as it is an architectural solution that creates habitats for diverse species in an urban context. They are inspired by natural spaces and bring this biophilic design language closer to people. Apart from their aesthetic value, they also offer ecological added value thanks to the materials used and the plants introduced.

CLIMATE ADAPTATION

Species Hotels and Walls can provide important habitats in dense and sealed urban areas and thus counteract the extinction of species and decline in biodiversity caused by urbanisation and climate change.

NEW EUROPEAN BAUHAUS FRAMEWORK

Beautiful Species Hotels and Walls comfort biodiversity and at the same time will be a site-specific artistic installation, where insects become part of the art for example through the sensorial experience created by their noise. Furthermore they can educate about the natural environment and the importance of insects on all levels.

Sustainable Species Hotels and Walls can be realised with recycled materials and in a modular way, so that they can be easily repaired or repurposed in another configuration. They thus contribute to the circular economy and have no negative input on the environment.

Together Species Hotels and Walls are mainly built for non-human stakeholders. But through workshops and solutions-activation events also diverse human stakeholders can be involved. By implementing the species hotels and walls into urban contexts people can furthermore reconnect with nature and learn about habitat needs of animals and insect.

Solution name

Explanation of human & non-human addressed

How the solution addresses climate adaptation

Relationship to NEB Framework

Partner responsible for the solution

Thank you

**GreenIN
Cities**



<https://www.greenincities.eu/>
[@greenincities](#)



MULTICARE PROJECT

Low-Carbon Modular Technologies for Multi -Hazard Resilience Buildings

Simona Bianchi, Delft University of Technology



Funded by
the European Union

This project has received funding from the European Union under the Horizon Europe Research & Innovation Programme (Grant Agreement no. 101123467 MULTICARE).

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

MULTICARE Concept



MULTI-HAZARD



High
Intensity

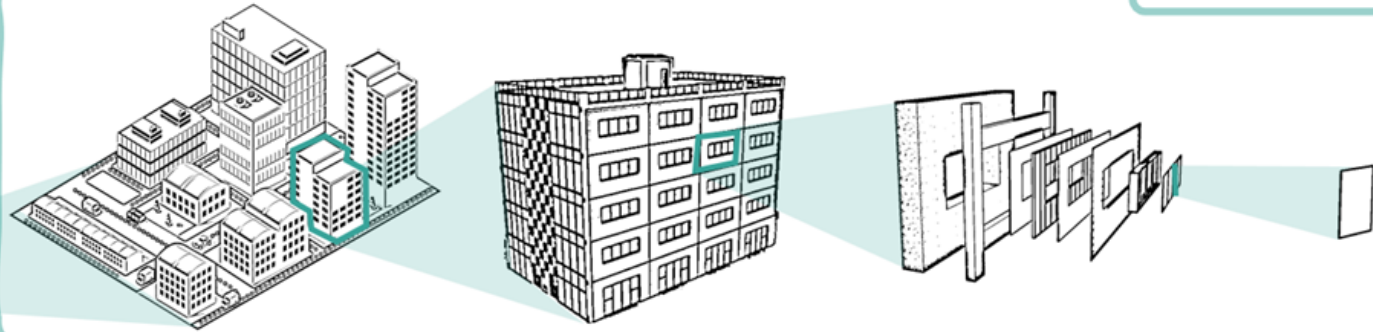


High
Intensity



Medium
Intensity

MULTI-SCALE



Urban
resilience?



Human
resilience?



Resilient
technology?



Resilient
supply?

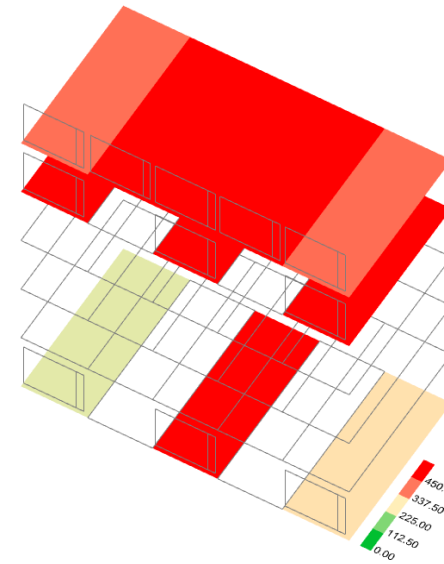
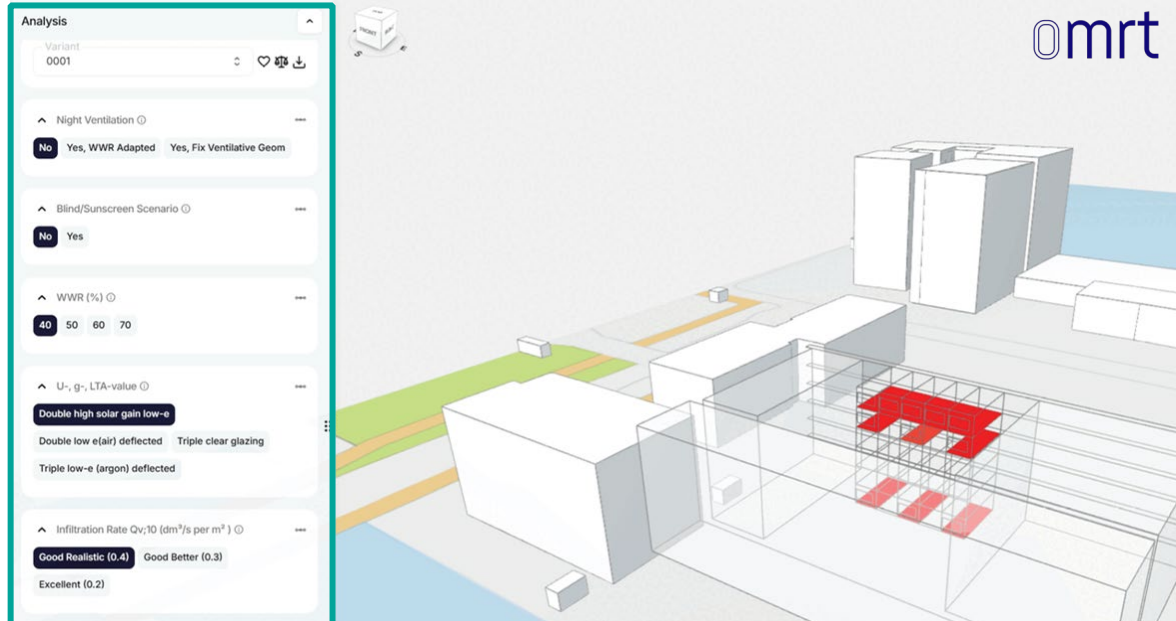
MULTI-DOMAIN



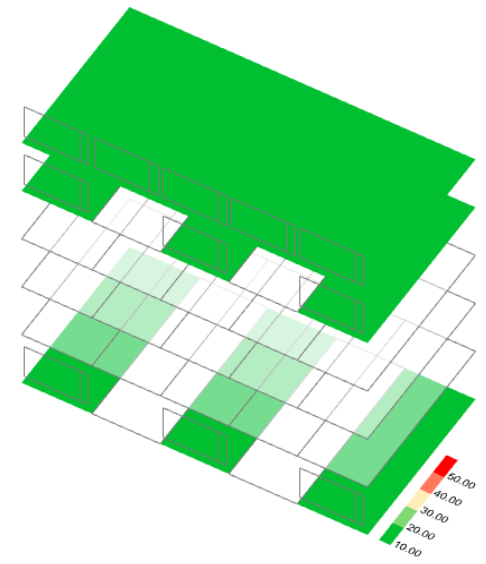
Design Methods

✓ Multi-Criteria Approach

Design criteria



Overheating risk

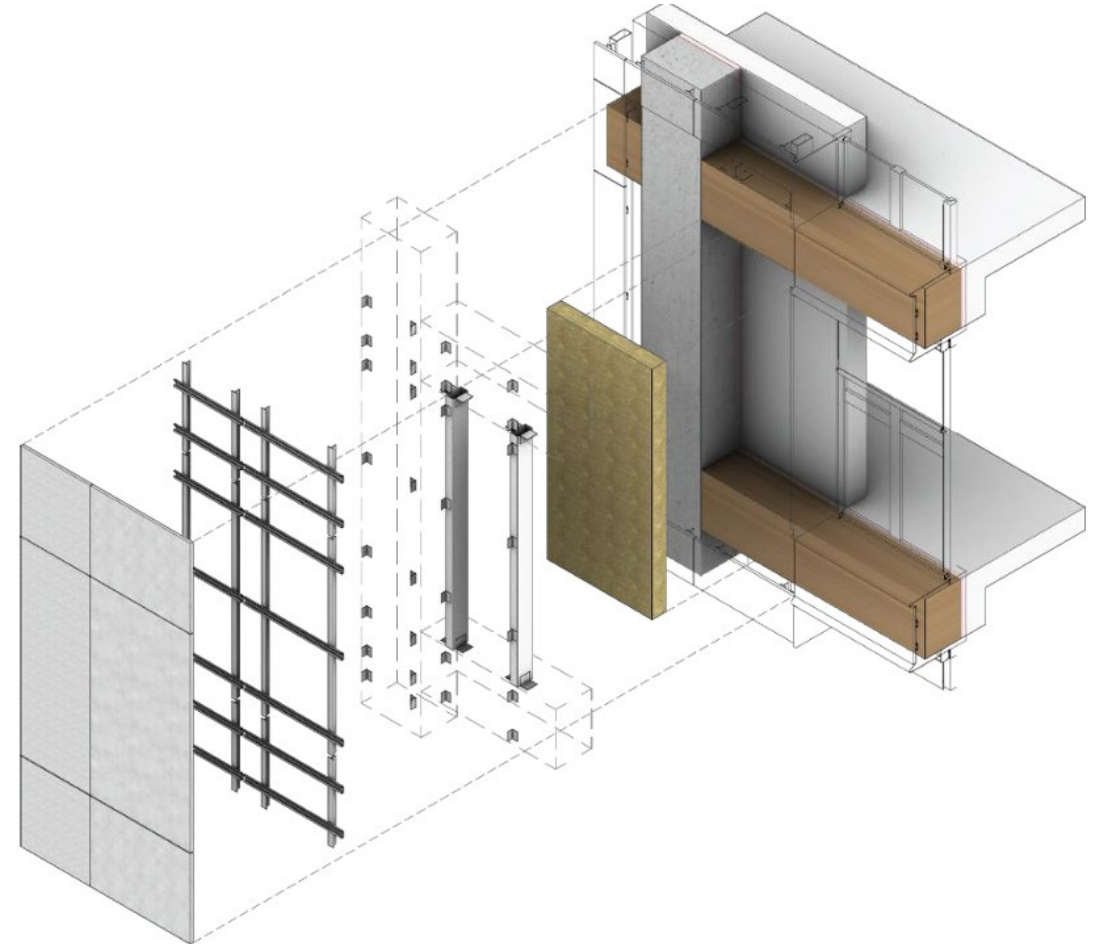
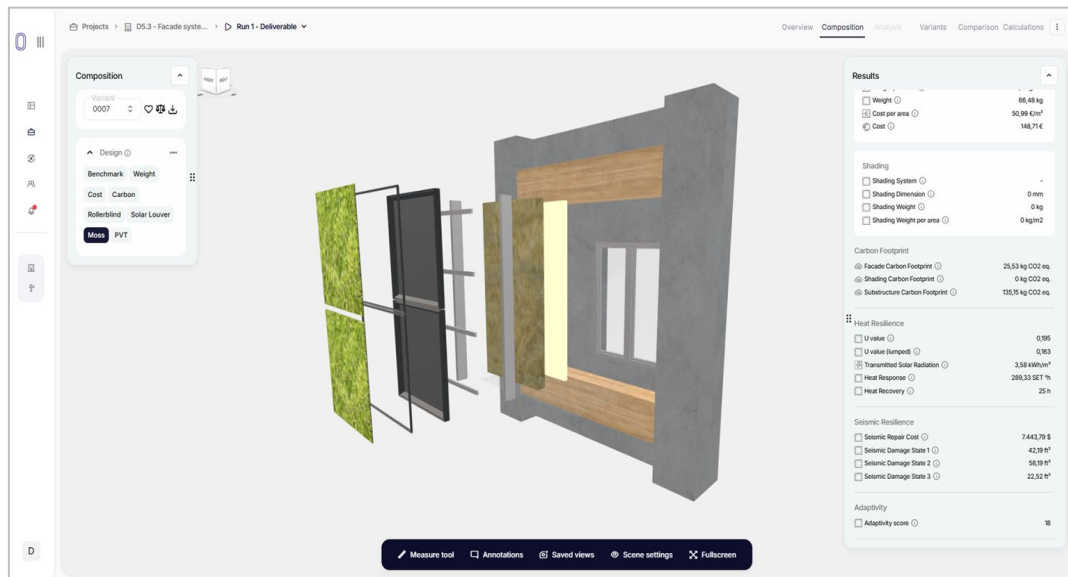


Peak cooling loads

Building Technologies



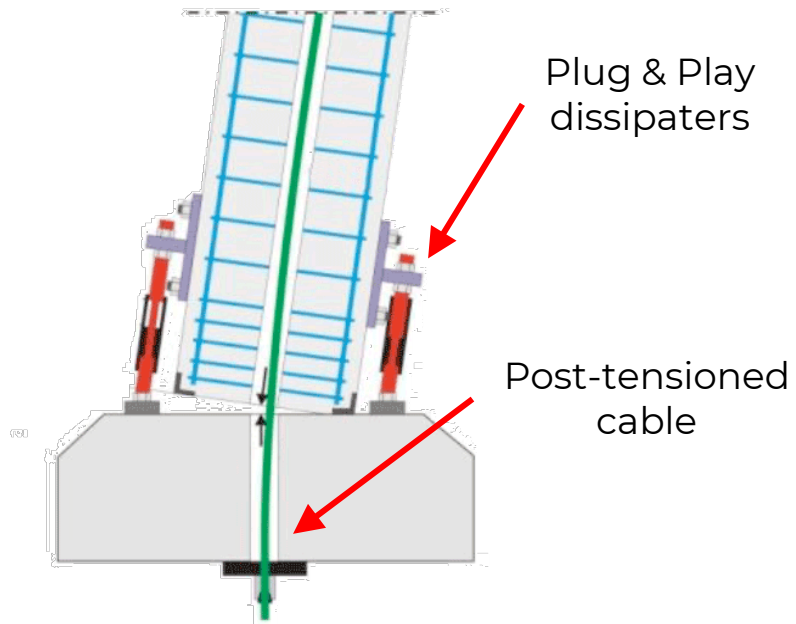
✓ Modularity & Reversibility



Building Technologies



✓ Modularity & Reversibility





From Theory to Practice

Integrated Retrofit Solution

- strengthening **seismic safety**
- improving **energy efficiency**



Acerra, Italy

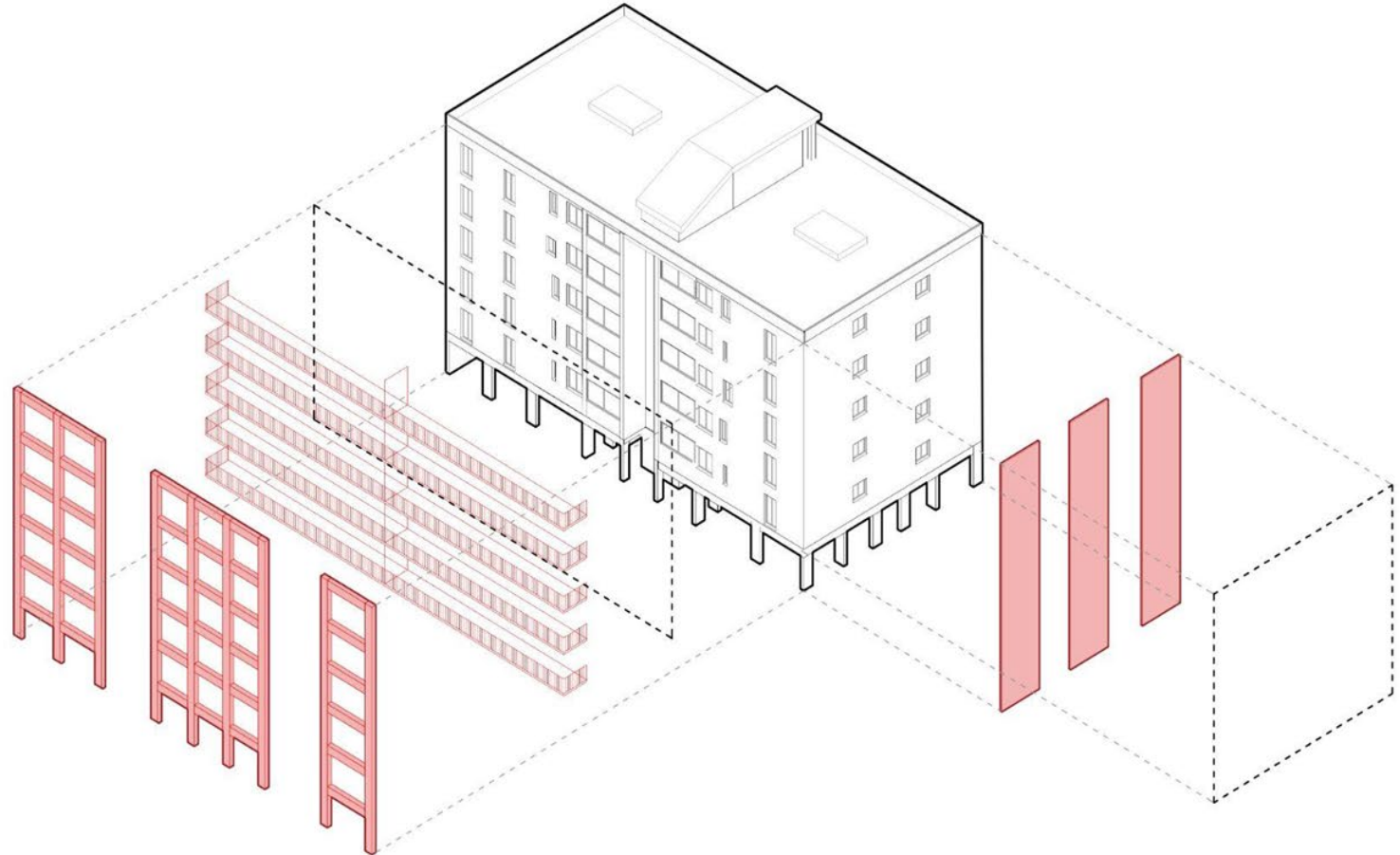


This project has received funding from the European Union under the Horizon Europe Research & Innovation Programme (Grant Agreement no. 101123467 MultiCare). Views and opinions expressed are however those of author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

From Theory to Practice



✓ Proposed Intervention



From Theory to Practice



This project has received funding from the European Union under the Horizon Europe Research & Innovation Programme (Grant Agreement no. 101123467 MultiCare).

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

From Theory to Practice



This project has received funding from the European Union under the Horizon Europe Research & Innovation Programme (Grant Agreement no. 101123467 MultiCare).

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

From Theory to Practice



PRE-INTERVENTION



POST-INTERVENTION





Resilient Building Design

- ✓ Design buildings to respond to **multiple risks** through context-specific analysis
- ✓ Use modular low-carbon plug & play systems to enable easy reconfiguration, upgrades and **long-term flexibility**
- ✓ Integrate smart systems and feedback loops to adjust environments based on **occupant needs**

Amsterdam, NL



Bucharest, RO



Acerra, IT



THANK YOU

✉ m.overend@tudelft.nl
s.bianchi@tudelft.nl



This project has received funding from the European Union under the Horizon Europe Research & Innovation Programme (Grant Agreement no. 101123467 MULTICARE). Views and opinions expressed are however those of author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

Give us a few words to describe how a sense of place, or attachment to place, can support community resilience.

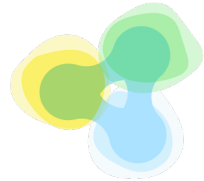
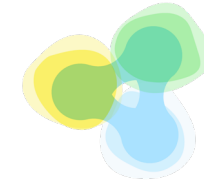


Mentimeter.com

**Join the live Menti using code:
8647 4342**



Discussion

-  How does an understanding of stakeholder 'lived-experience' that is grounded 'in place' contribute to the design of resilient communities?
-  Have you encountered examples where local or vernacular knowledge has informed holistic resilience strategies or nature-based solutions?
-  If solutions are highly place-based or very specific to place, how can these be replicated in other situations or locations?



Session 3 (14:00-14:50) - *Tools*



Tools, Technologies & Frameworks for Future-Proof Urban Transformation - How digital tools, construction innovations, and integrated frameworks support long-term, life-cycle adaptation in practice?



Niall Buckley
IES



Juan Pablo Aguilar Lopez
TU Delft



Moatasim Mahmoud
Singular Logic



Andrea Geyer-Scholz
Smart Cities

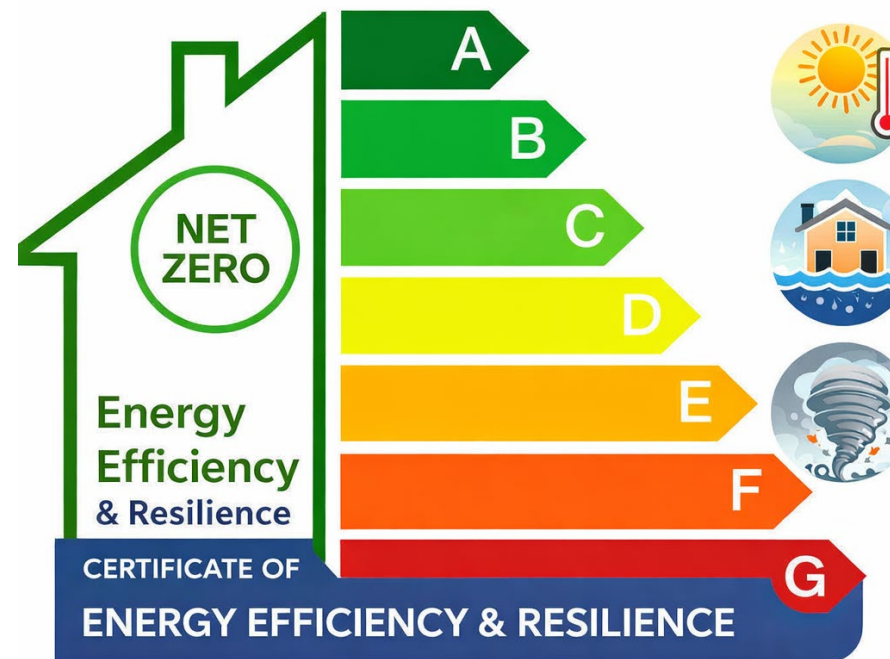


People-centred digital tools

Niall Buckley | Minority Report Project Coordinator



Generated with Co-pilot, Niall Buckley, 2026



✓ **Mitigation**
Energy Efficiency
(Net Zero)

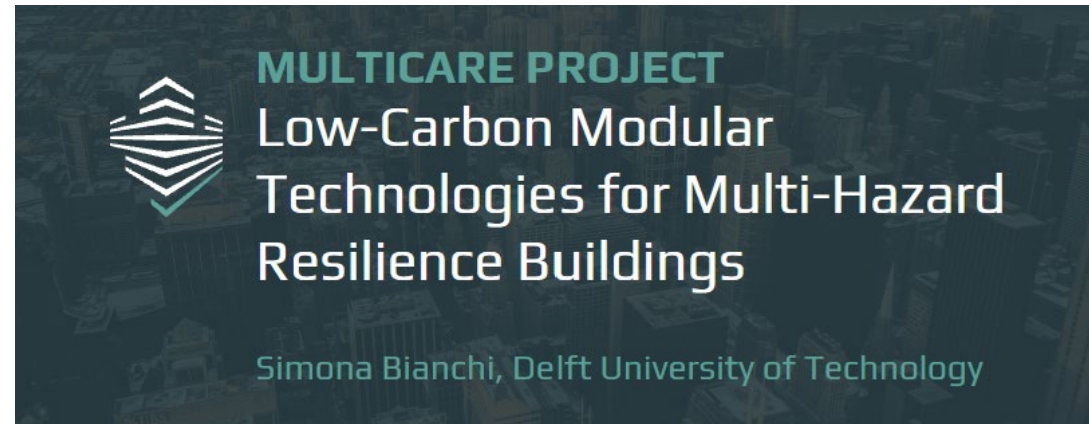
✓ **Adaptation**
Resilience (Heatwaves,
Flooding, Storms)

Generated with Co-pilot, Niall Buckley, 2026

Resilience Readiness Levels- MultiCare

Resilience Readiness Levels for buildings: Establishing multi-hazard resilience metrics and rating systems

Simona Bianchi ^a  , Michele Matteoni ^b, Kyujin Kim ^a,
Anna Maria Koniari ^a, Kyra Koning ^c, Romulus Costache ^d,
Nicu Ciobotaru ^d, Alessandra Luna-Navarro ^a, Zhikai Peng ^{a c},
Jonathan Ciurlanti ^e, Hamidreza Shahriari ^f, Divyae Mittal ^f,
Evdokia Stavridou ^f, Anna Silva ^{a c}, Michele Palmieri ^e, Stefano
Pampanin ^b, Francesco Petrini ^b, Mauro Overend ^a



Heatwave Use Case - Heating Climate Building Performance

Baseline model

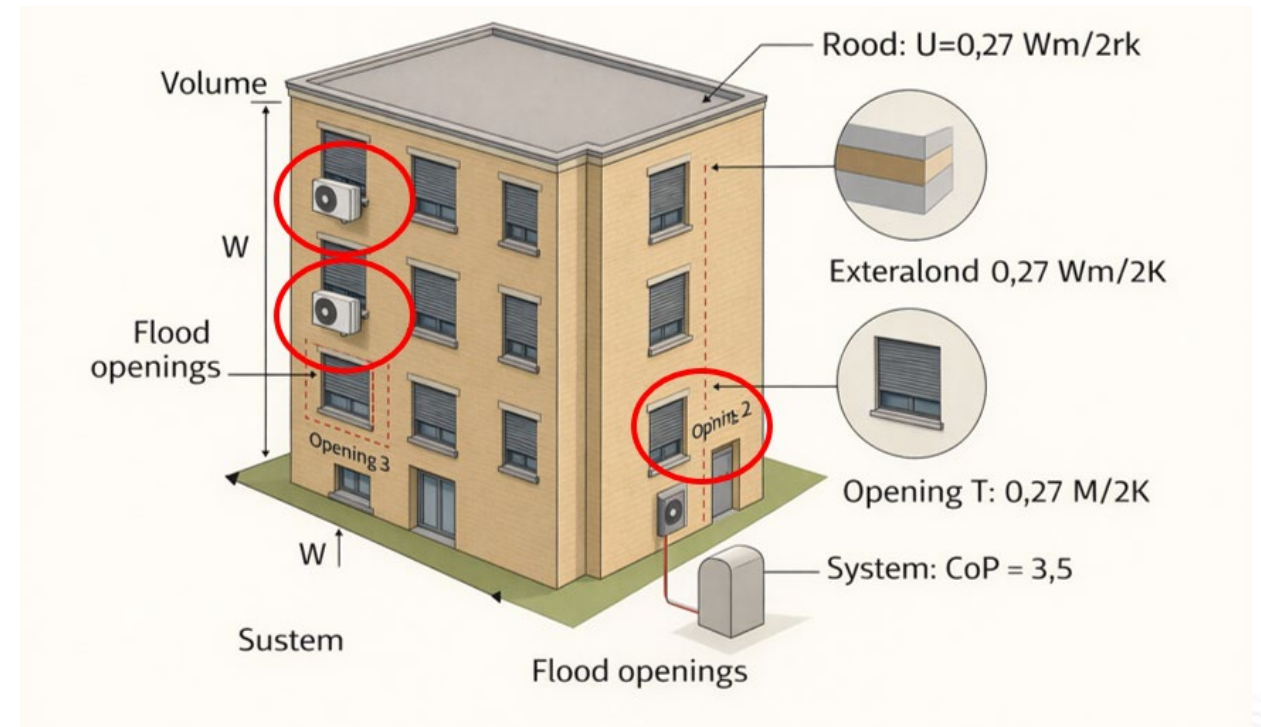
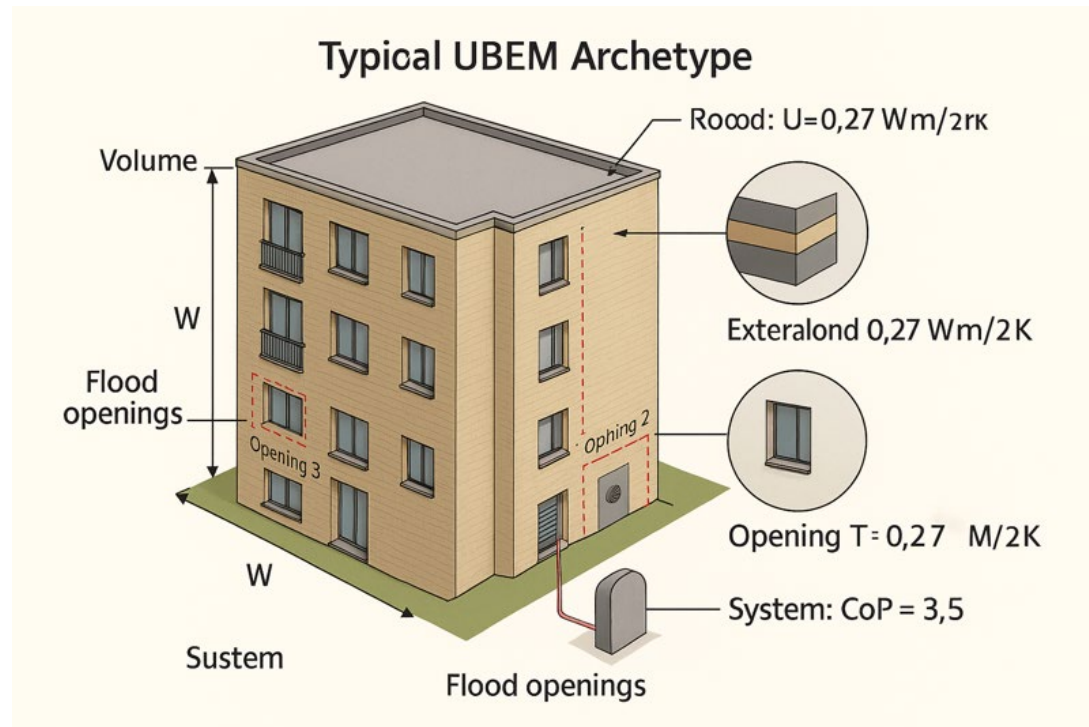


Generated with Co-pilot, Niall Buckley, 2026

Cooling scenario One



Heatwave Use Case - Heating Climate Building Archetypes



Generated with Co-pilot, Niall Buckley, 2026



Physics Modeling

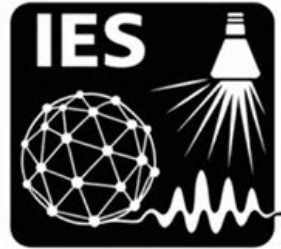
Using the IES physics engine with the DSY weather file, and building cache types generates results.



Heatwave Weather File



Building Archetype



IES Physics Engine



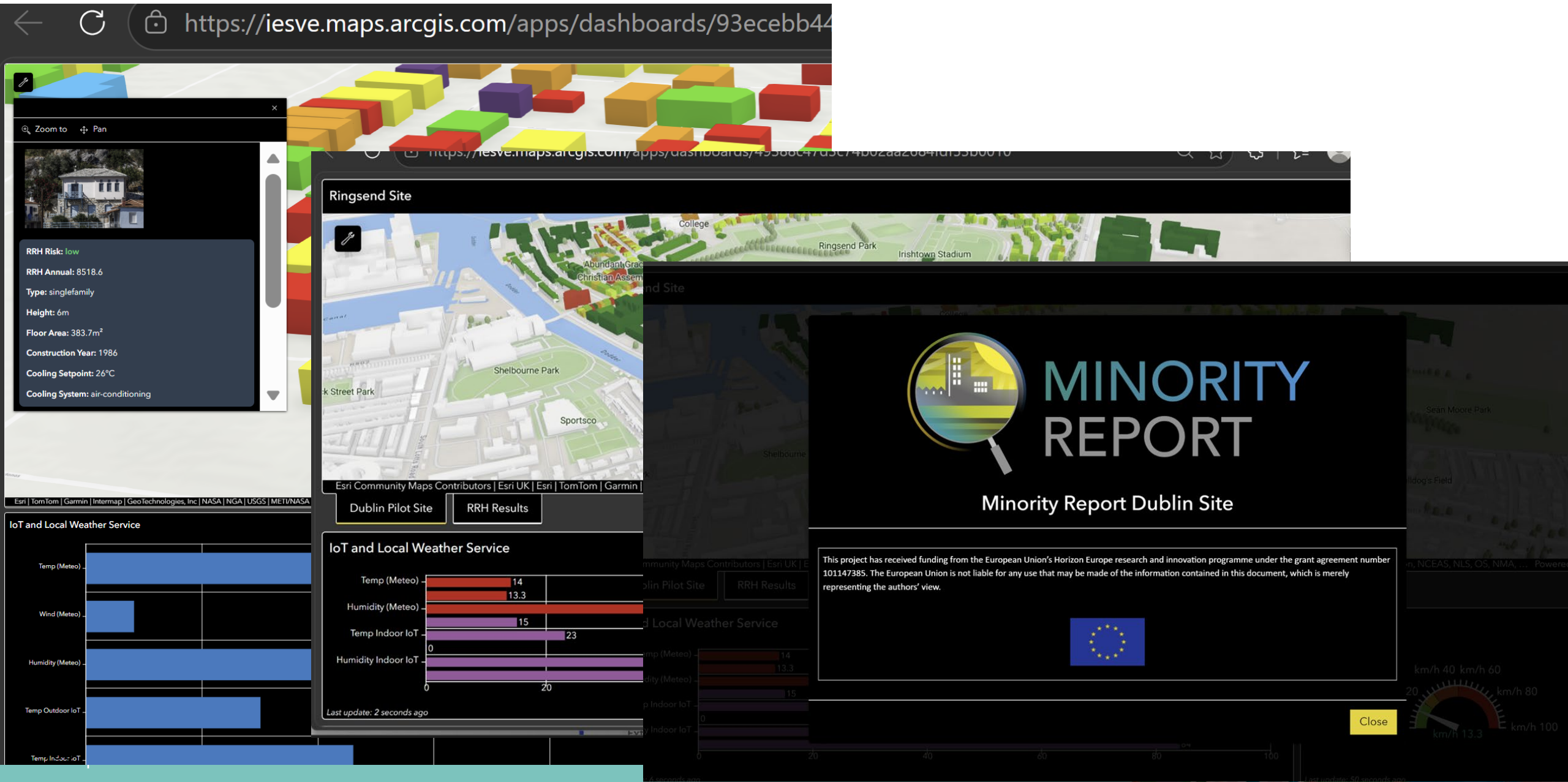
Generated with Co-pilot, Niall Buckley, 2026



Heatwave Dublin



Minority Report Platform (Resilience Road Mapping)



MR Platform RRL Roadmapping tool

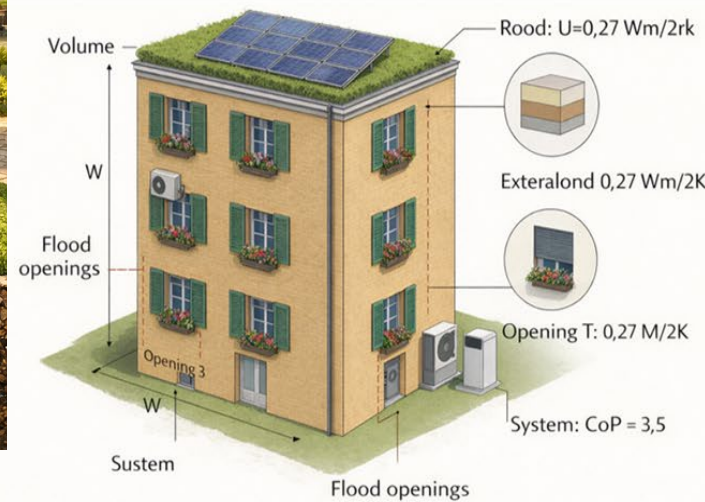


Utilize technology with passive NbS solutions



GreenIN Cities

Cooling scenario Two



Cooling scenario Two THERMAL GAINS



Monitoring and early warning technologies for flood resilient infrastructure

Juan Pablo Aguilar-López | MULTICLIMACT Project



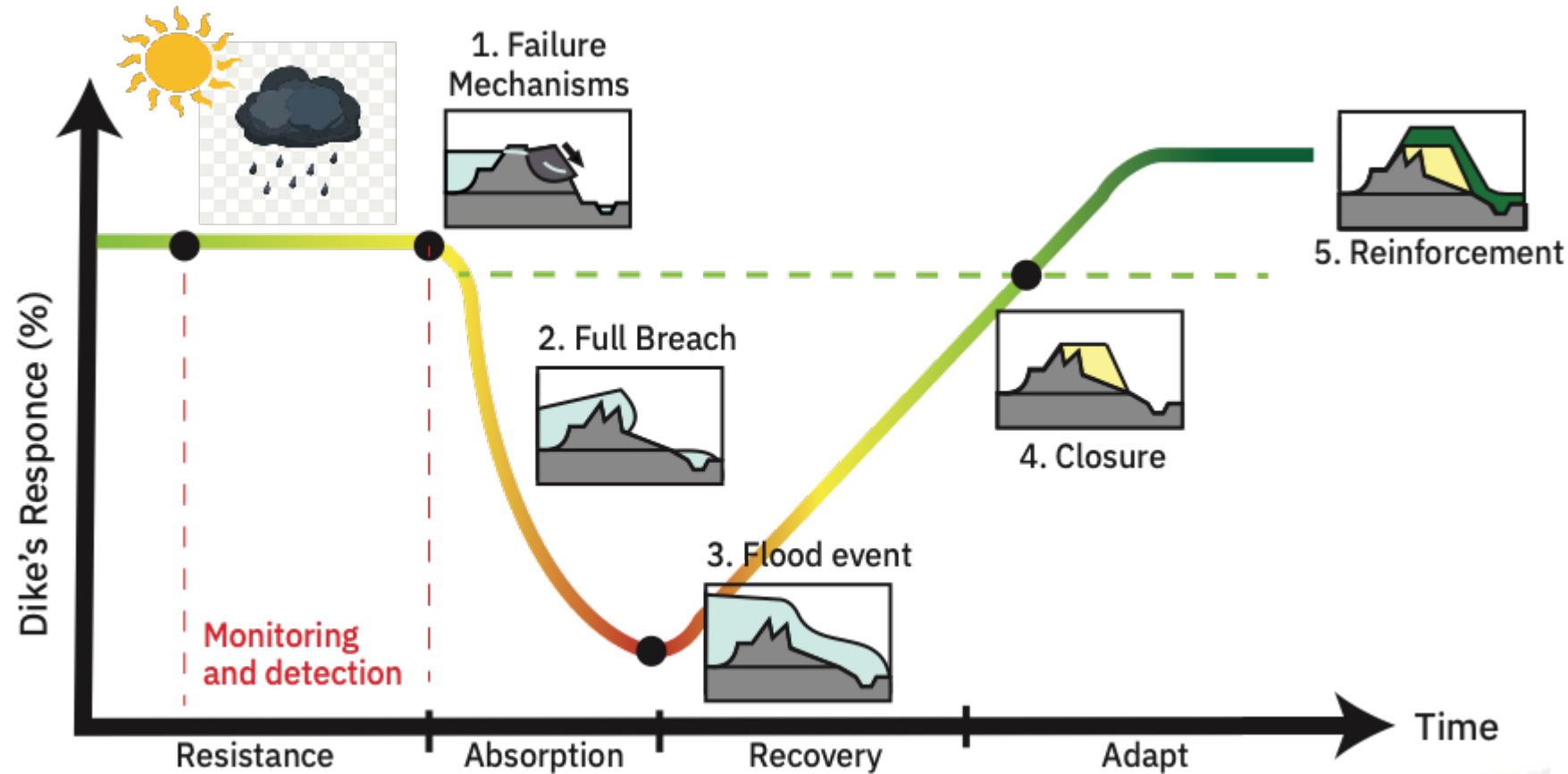
Leidschendam - Den Haag / Tedingerbroek Dike



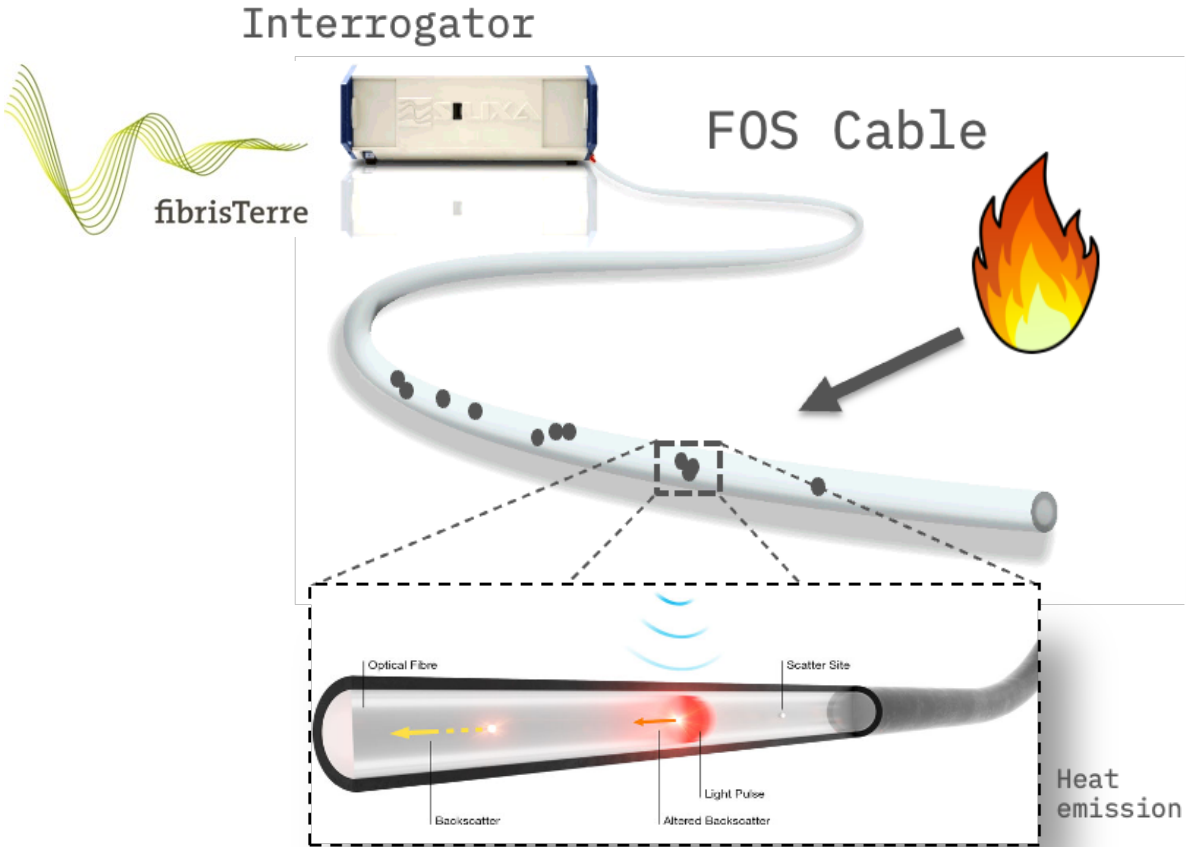
Temporal barrier - Flood Proof Holland



Flood Defence Systems Resilience

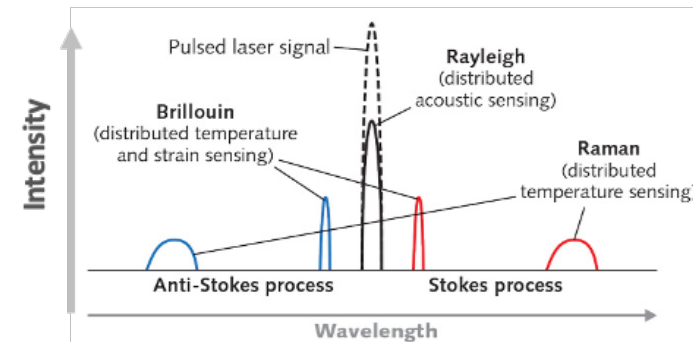
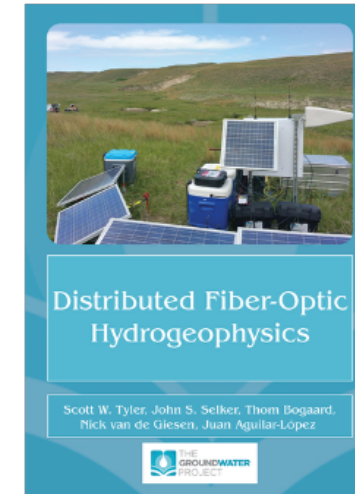


Fiber Optics Distributed Sensing



Animation borrowed from: <https://silixa.com/resources/what-is-distributed-sensing/>

Atomic structure and impurities of glass fiber re-organize due to local heat and strain which changes its photoacoustic intrinsic properties in time and space influencing light propagation properties such as intensity, phase, polarization and wave-length.



Backscatter Spectrum

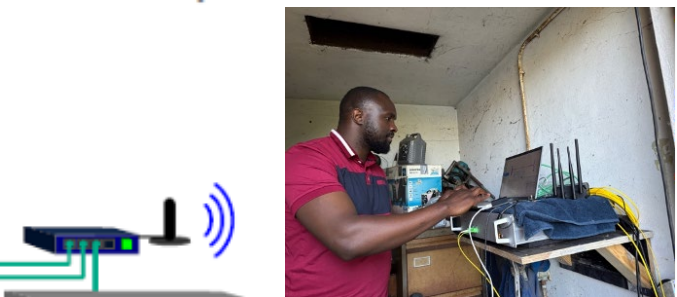


Fiber Optics Distributed Sensing Cloud based System

fTScope cloud platform

Monitoring Site

5G router with Wifi,
VPN, Ethernet switch
Local computer



ftView
Instrument control
Raw data processing
Local data storage

save to
proprietary
format



FTB 5020
Interrogator Unit
Fiber-optic switch
for channel extension



fTScope
Online Dashboard
Control Interface | Cloud Data Base
Easy multi-user data sharing
Data history and filtering
API: Direct data access via URL

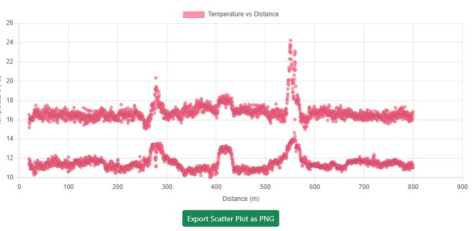
Control Room



fTScope
browser-based user interface
(no software installation required)



Multi-user access: Share your data
with your team, your customer etc.

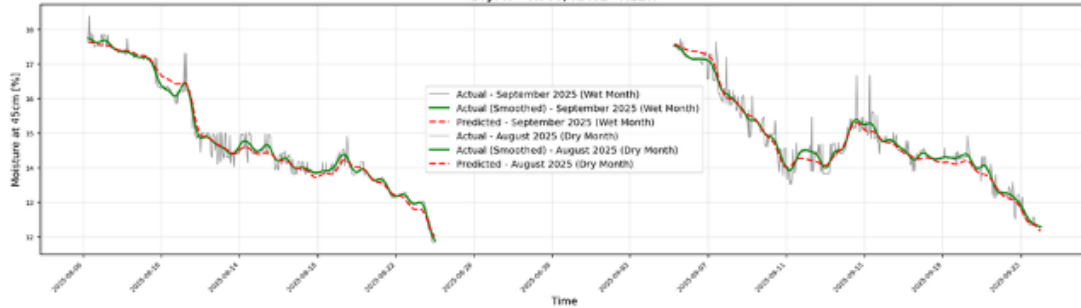


Fiber Optics Temperature Sensing

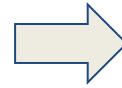
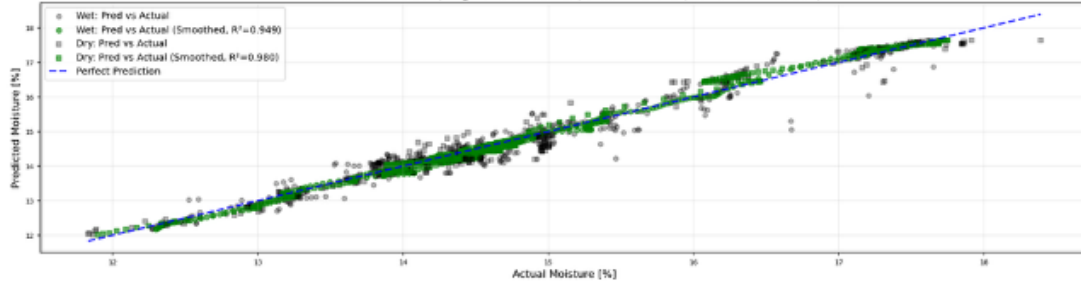


Temperature based safety factor surrogate model

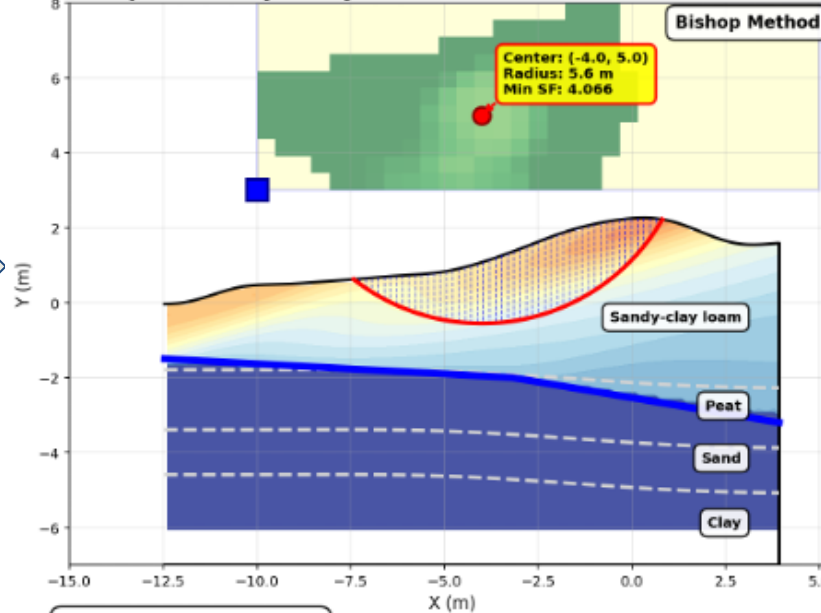
LSTM Moisture Prediction: A-CR at 45cm - Both Months (Single Model, Bias Corrected)
Combined: $R^2=0.967$, RMSE=0.25%, MAE=0.19%
Wet: $R^2=0.949$, RMSE=0.28%
Dry: $R^2=0.980$, RMSE=0.22%



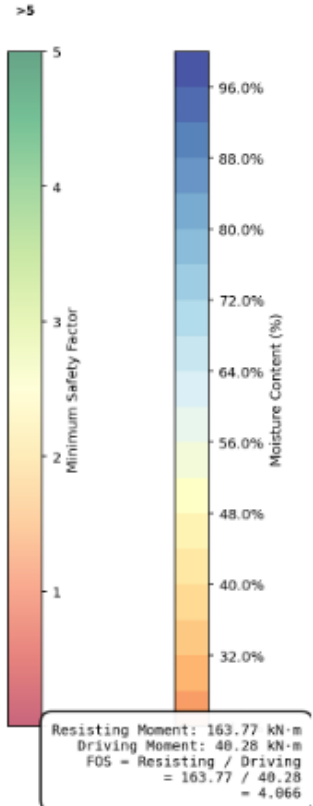
Predicted vs Actual (Original & Smoothed) - Both Months (Combined $R^2=0.967$)



Slope Stability Analysis with Suction (Date: 2025-05-25)



Critical slip surface found:
Safety Factor: 4.066
Circle center: (-4.00, 5.00) m
Circle radius: 5.56 m
Slip Area: 10.93 m²



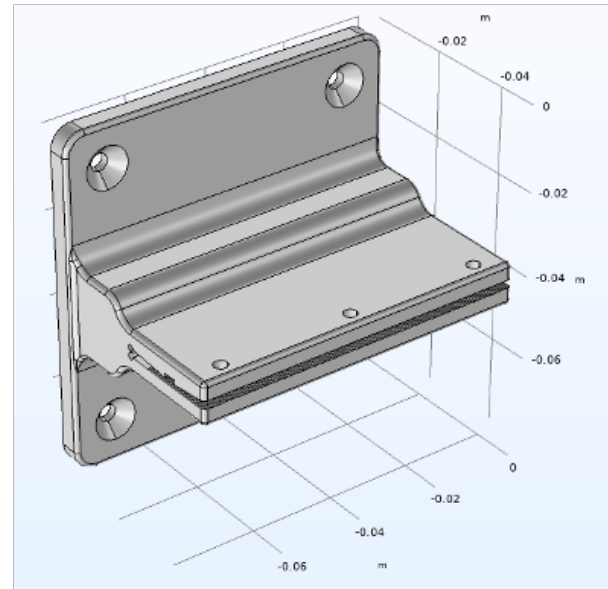
Fiber Optics Temperature Sensing



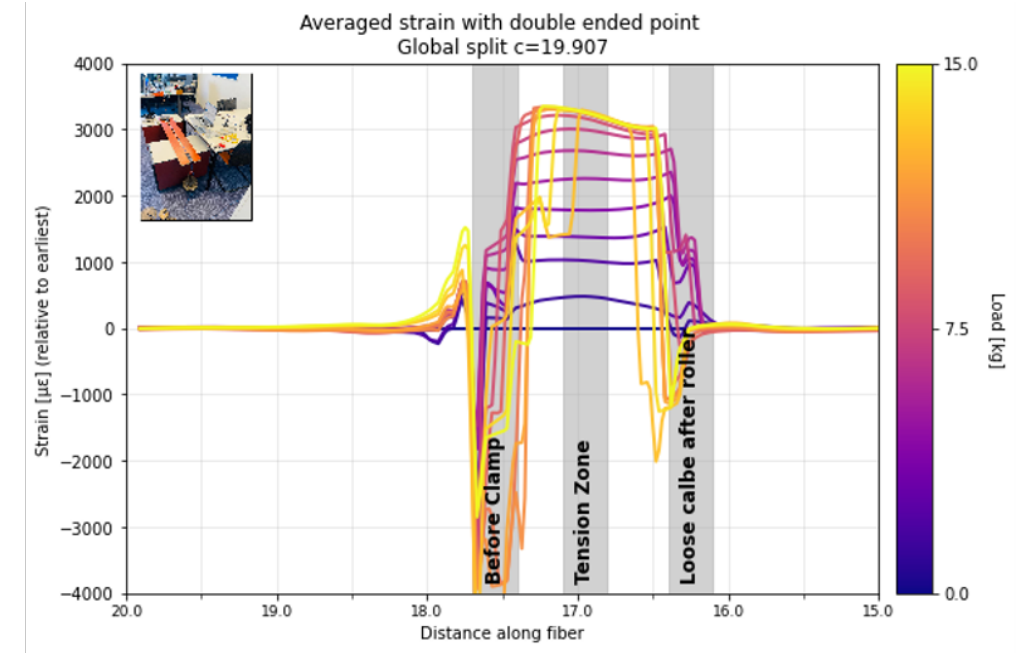
Real time strain monitoring of movable barriers



BoxBarrier



Clamp V3.0



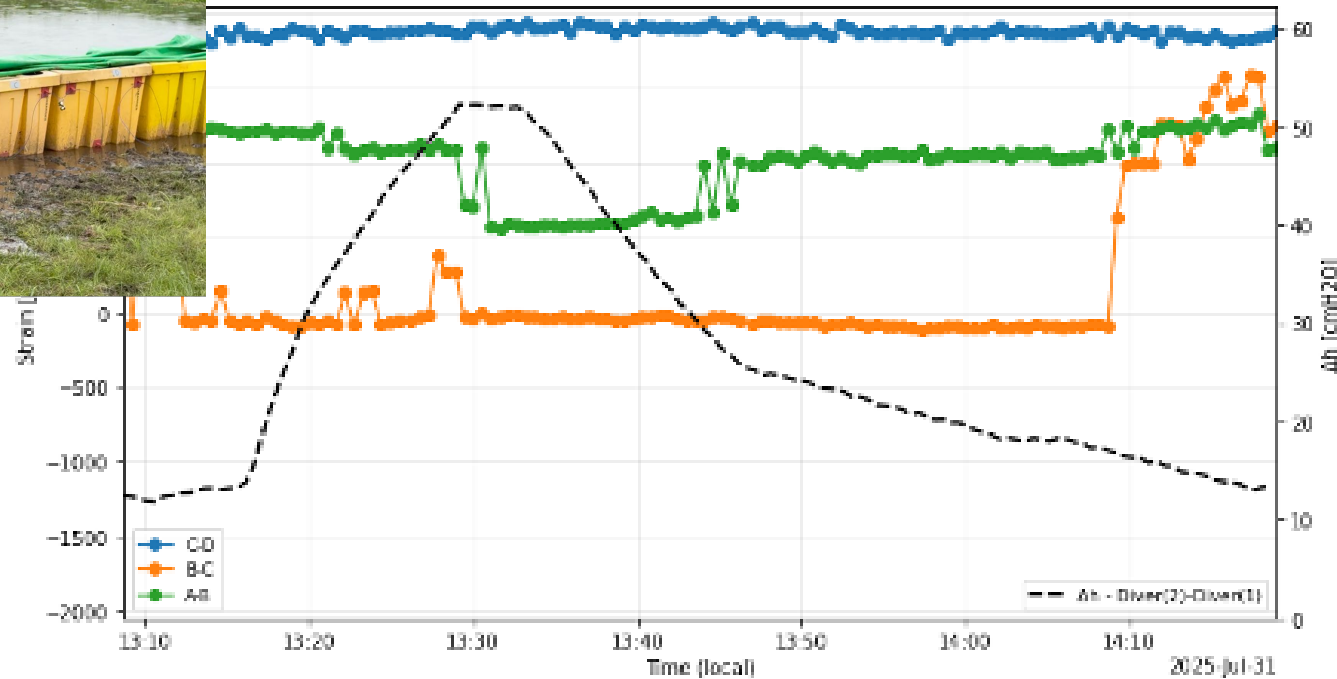
Strain Test



Real time strain monitoring Demonstrator



Initial Condition



Strain evolution in time

Imposed Failed Condition



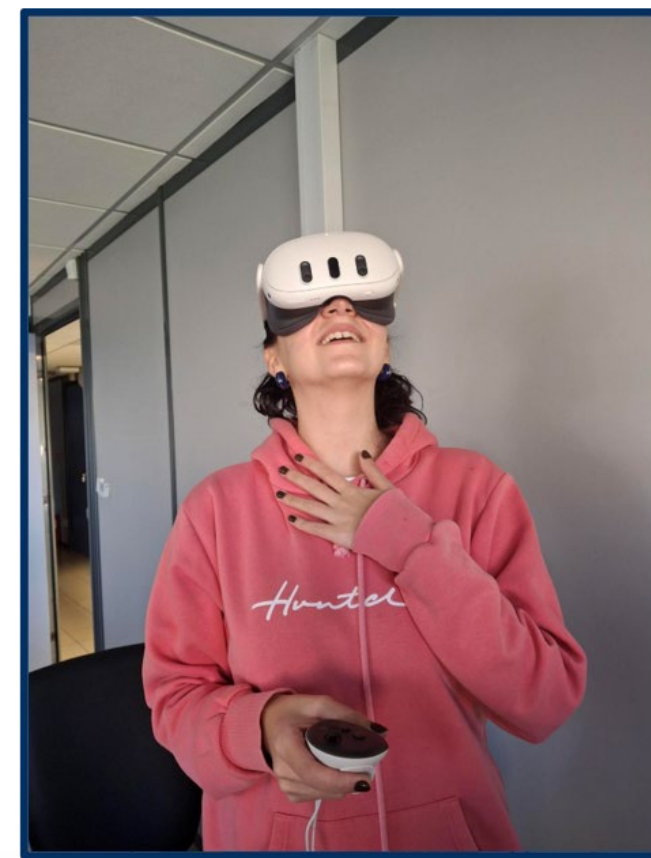
Following steps

- Develop user's interface for movable barrier.
- Update the surrogate model with 6 months of new fresh data.
- Monitor the performance of the dike system in time and characterise “noise from signal”.



Immersive Virtual Reality (VR) Application for Fire Preparedness Training

Moatasim Mahmoud | CLIMRES Project



Benefits of Virtual Reality (VR) for Fire Evacuation Training



Safe Training Environment

Trainees experience high-stress elements like thick smoke and blocked exits in a completely safe, controlled environment.



Cost Efficiency

Eliminates the need for expensive physical props, specialized burn facilities, or the cleanup of fire suppressant chemicals.



Muscle Memory & Repetition

Users can instantly restart a scenario to perfect their evacuation route, turning conscious thought into split-second instinct.



Data-Driven Feedback

Systems track precise metrics, such as reaction times and pathfinding choices, identifying specific bottlenecks in a person's response.

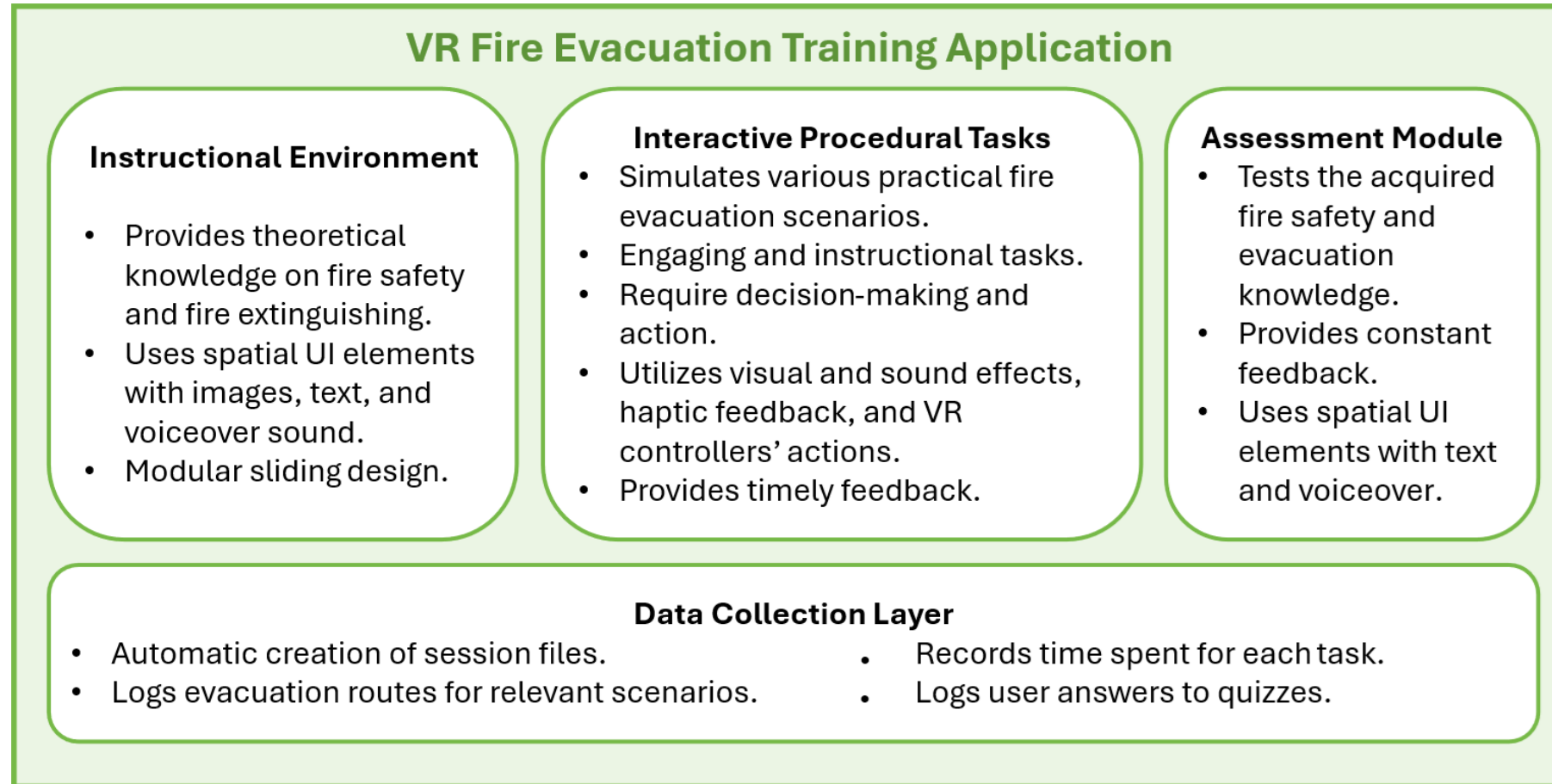


Zero Operational Downtime

Training can be done individually or by department at a desk. No need to evacuate the entire building or halt business operations to run a drill.



CLIMRES VR Fire Evacuation Training: Overall Design





CLIMRES Data Platform Integration: Supporting Building Safety Managers

DatasetsOrganizationsGroupsAbout

Search

A. / VR Fire Evacuation Data

DatasetGroupsActivity Stream

Manage

VR Fire Evacuation Data

PRIVATE

Data and Resources

EvacRoute_user_0008Quest3_01_2026-04-17

Automated upload from VR Headset

Explore

EvacRoute_user_0009_Quest3_01_2026-04-17

Automated upload from VR Headset

Explore

EvacRoute_user_0010_Quest3_01_2026-04-17

Automated upload from VR Headset

Explore

EvacRoute_user_0011_Quest3_01_2026-04-17

Automated upload from VR Headset

Explore

EvacRoute_user_0012_Quest3_01_2026-04-17

Automated upload from VR Headset

Explore

Scenario_times_user_0012_Quest3_01_2026-04-17

Automated upload from VR Headset

Explore

Scenario_times_user_0013_Quest3_01_2026-04-17

Automated upload from VR Headset

Explore

EvacRoute_user_0008Quest3_01_2026-04-17

ManageDownloadData API

URL: https://

Automated upload from VR Headset

Data Explorer

FullscreenEmbed

Add Filter

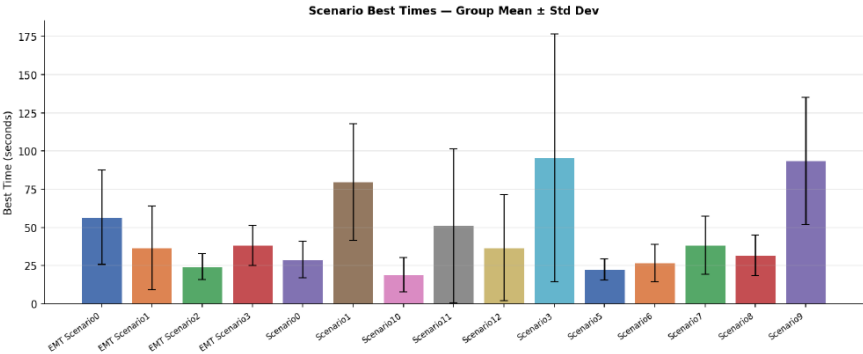
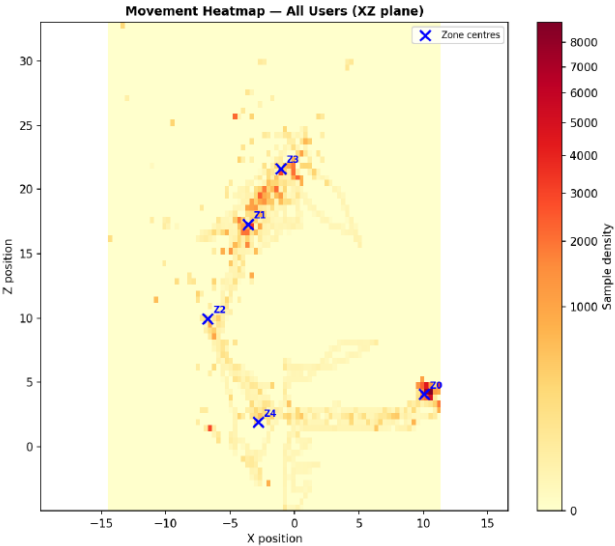
GridGraphMapabout 1000 records1100

Search data ...

Go

Filters

_Id	Timestamp	PosX	PosY	PosZ
1	35.65179	10.35565	-0.8461298	4.15252
2	35.69366	10.35558	-0.8461243	4.152471
3	35.70789	10.35554	-0.8461413	4.152454
4	35.71968	10.35545	-0.8461663	4.15242
5	35.73263	10.35542	-0.8461748	4.152397
6	35.74813	10.35539	-0.846174	4.152384
7	35.76265	10.35537	-0.8461319	4.152436
8	35.77687	10.35534	-0.8461014	4.152485
9	35.7912	10.35531	-0.8461041	4.152463
10	35.80622	10.35528	-0.8461285	4.152442
11	35.82042	10.35525	-0.8461453	4.152429
12	35.83478	10.35524	-0.8461663	4.152414
13	35.84944	10.35522	-0.8461829	4.152396
14	35.86414	10.35521	-0.8461951	4.152382
15	35.87831	10.35526	-0.8461691	4.152361
16	35.89196	10.35532	-0.8461736	4.152322
17	35.90678	10.3553	-0.8462026	4.152296



The MAIA Discovery Services - What if HE projects had a sales department?

Andrea Geyer-Scholz | MAIA Project



From “outcome” to “services”

- **Transferability** of project *use cases and outcomes* - *accelerate transition*
- Develop **Business Cases** - *scalability for novel products and services*
 - Business cases for end users
 - Business cases from ***project perspective***, for project partners

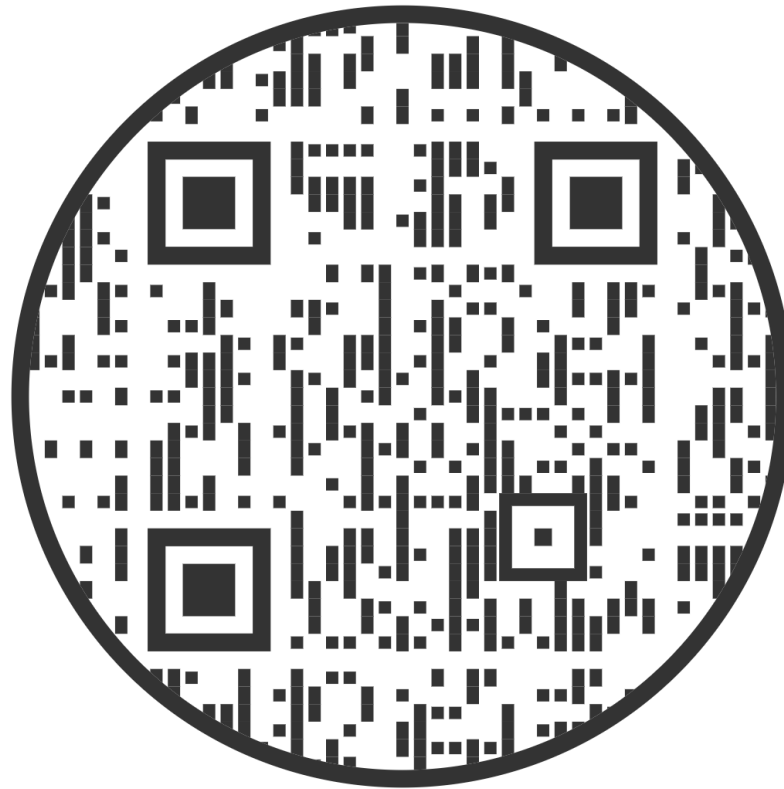
Wait a moment - **business cases for research near projects?!**

Share your ideas on Menti <https://www.menti.com/>



MAIA Business school

Are you a start-up, early-stage entrepreneur, or researcher with an idea that is yet to be realised? Register your interest now for the MAIA Autumn School Programme and we will develop the program around the most cited needs.



Acts as sales department for projects

Onboarding Services

- From project outcomes to services and value chains
- IPR strategy as precondition



Continuos support and training services according to service level agreement

Pillar I

Innovation
Catalogue

Marketplace

Pillar II

Media Service
and syndicated
content

Pillar III

Trade Missions
for distribution to
foreign regions



Pillar I: Innovation Catalogue and Marketplace

- **Innovation Catalogue** subject to project - vague, notional
 - *ongoing development and co-creation*
 - *granularity, room for “bundling”*
 - *from “outcome” to “service”*
- **Marketplace (more a department store)** for services and knowledge items
 - “services” will be made available publicly, can be found and sourced
 - HTML5 Widget can be integrated in 3rd party websites - enrich websites with climate services
 - Power users promote and sell climate services from the European community
 - Develop an ecosystem, revenue streams

<https://maia-project.eu/maia-marketplace/>



Innovation Catalogue - impressions

[Home](#)

Register your climate adaptation / mitigation solution

[add project](#) [add organisation](#) [add person](#) [add solution](#) [connect organisation with project](#)

[View](#) [Test](#) [Results](#) [Build](#) [Settings](#)

1 2 3 4 5 6 7 8

6 of 13

Dependencies

Is the solution a standalone one, without dependencies?

- ☐ Yes
☐ No

Which stakeholders do you envision? What are their roles?

200 characters

Which resources or other inputs are required for the solution?

e.g. data sourcing, automated data exchange, execute models and simulations, etc. 500 characters

What are the solutions and knowledge that are relevant to your solution? Outline where the solution fits into a value chain solutions?

[Save Draft](#) [< Previous](#) [Next >](#)

[Data Packages](#) [Taxonomies](#)



SMART CITIES CONSULTING BUSINESS INTELLIGENCE

[Home](#) [Organisations](#) [Persons](#) [Projects](#) [Solutions](#) [Questionnaires](#) [My account](#)

[Home](#)

Propose knowledge items

[add project](#) [add organisation](#) [add person](#) [add solution](#) [connect organisation with project](#)

[View](#) [Test](#) [Results](#) [Build](#) [Settings](#)

You can upload a file which describes the knowledge item and we will try to fill some fields for you.

[Durchsuchen...](#) Keine Datei ausgewählt.

1 2 3 4 5 6 7 8 9 10 11

3 of 12

Description of knowledge item

select_your_type_of_the_offer

- ☐ Best practice / report
☐ Concept note / working paper
☐ Education and training: media (video, presentation, podcast,...)
☐ Education and training: template
☐ Education and training: textbook
☐ Guideline
☐ Policy Brief
☐ Study

[Save Draft](#) [< Previous](#) [Next >](#)

[Data Packages](#) [Taxonomies](#)

[Durchsuchen...](#) Keine Datei ausgewählt.

1 2 3 4 5 6 7 8 9 10 11 12

5 of 12

Usage of the knowledge items

Who will use the knowledge item and what industries will benefit from it? This information will be used for matching knowledge items with user queries.

You also have the opportunity to claim the value proposition of your knowledge item or bundle of knowledge items.

Who is intended to use the knowledge item?

- ☐ Technical engineers
☐ Applied developers, software engineers
☐ Planners
☐ (strategic) Consultants
☐ Data analysts; modelers
☐ Legal professionals
☐ Staffs in (public) administration to support policy making
☐ Innovation agents
☐ Agents for regional (economic) development
☐ Trainers and moderators - capacity building and training
☐ Knowledge processors including journalists, teachers
☐ Social scientists
☐ Natural scientists and engineers

Which sectors will favor/benefit from the solution?

- ☐ Agriculture, forestry, fishing
☐ Construction & infrastructure
☐ Real estate & facility operation
☐ Defence, security & safety
☐ Education and sport
☐ Energy and Water
☐ Facility & fleet management and equipment
☐ Food
☐ Health
☐ ICT, cloud and dataservice
☐ Manufacturing
☐ Mobility & transportation
☐ Professional services
☐ Tourism, culture & art
☐ Waste management
☐ Other

Value proposition

500 characters

Which value provides your knowledge item to its users and their stakeholders?

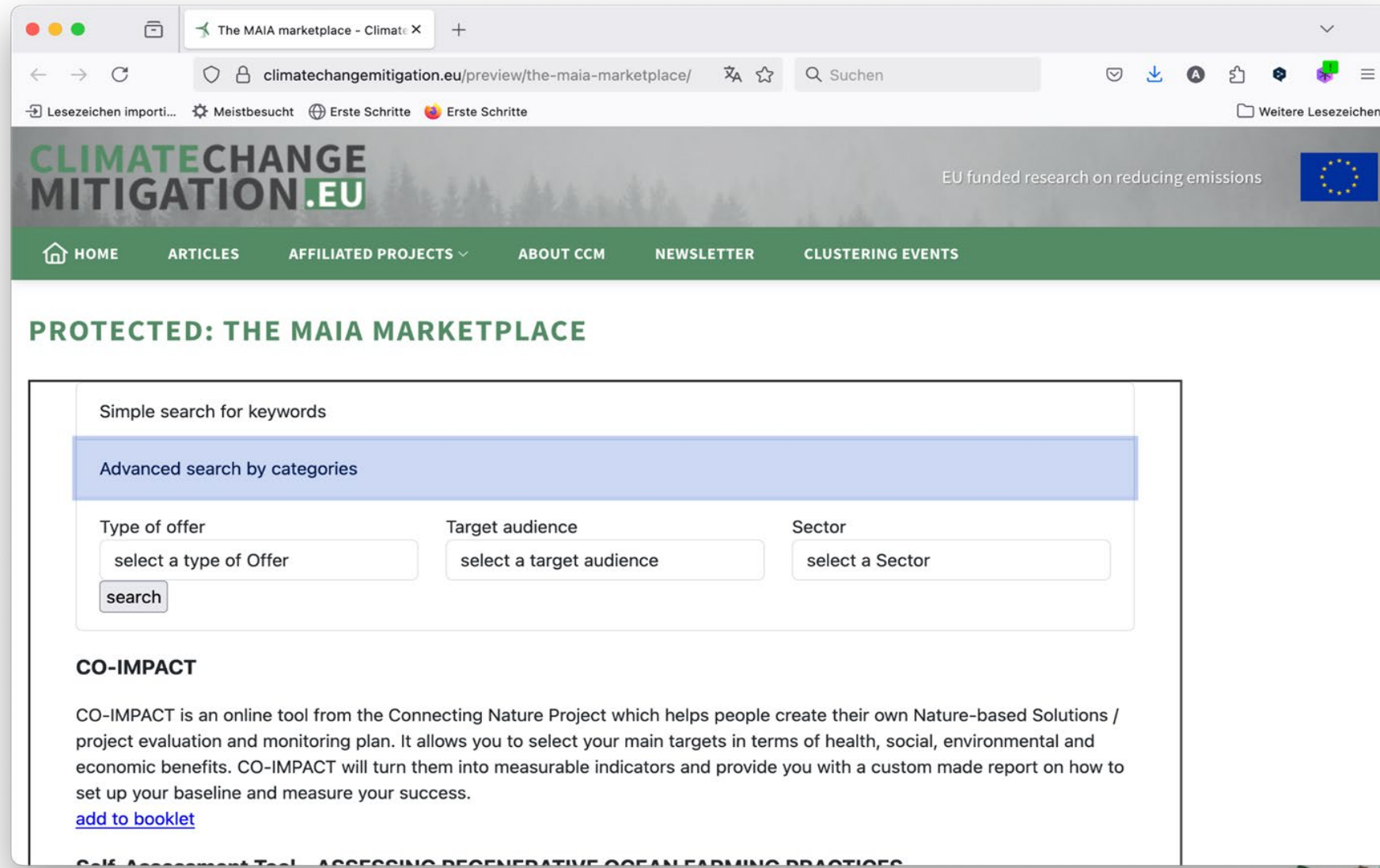
What distinguishes your proposal from others?

[Save Draft](#) [< Previous](#) [Next >](#)

[Data Packages](#) [Taxonomies](#)



Marketplace - sneak preview



Pillar II: Media Service and syndicated content

- **PRINCIPLE**

- Content creators from projects - science, end users
- curated by journalists
- syndicated with online and offline media, negotiate framework contracts

- Produced once - published multiple times

- Sales focus on local media with no/too small science editorial staff
 - Scientifically trustworthy, perceivable for diverse end user groups

- Business Case

- royalties for content creators





MAIN CATEGORY

- ☐ Earth System Models (13)
- ☐ Gases (3)
- ☐ Grass / crop land management (4)
- ☐ Emission trading systems (2)
- ✓ More options

ECONOMIC SECTOR

- ☐ Built environment (9)
- ☐ Energy (40)
- ☐ Industry (2)
- ☐ Transport / mobility (2)

Articles

148 articles

ESM2025 outputs : High level summary

A high-level summary of ESM2025 key research outputs and their policy relevance.

December 4, 2025 Mariana Rocha

Emission reduction targets Side benefits Policy

Sort by

Date



ESM2025 outputs : High level summary
November 2025

READ ARTICLE



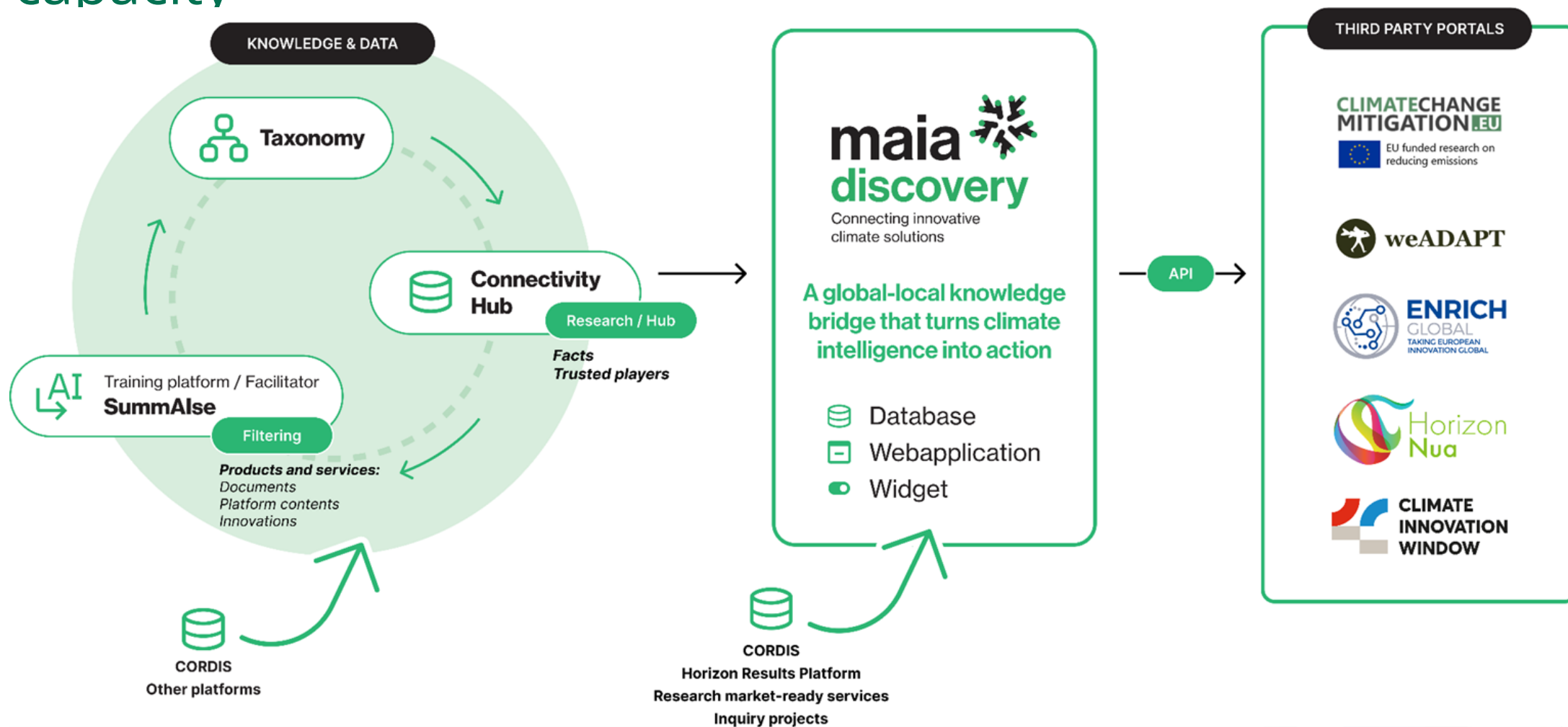
Pillar III: Trade Missions - engage with the EU Missions, NEB

● PRINCIPLE

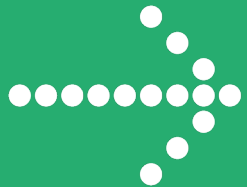
- Detect/assess local or sectoral challenges
 - Societal, economical, environmental
 - Build a narrative and select suitable proposals from the marketplace
 - Plan and execute a promotional tour
-
- Consider **public procurement regimes**
 - Innovation networks, public buyers communities, etc.
-
- Reach out to SME associations
 - complement their services with scientifically sound services for climate mitigation and adaptation across industries, e.g. tourism, agriculture, forestry, bio based economy



From Data to Action: Implementation with existing resources and capacity



What's in for you?



Support SMEs at international scale

- Organize and participate in MAIA Trade Missions
- Obtain and promote services, goods, knowledge all over Europe

Increase visibility for solutions

- Contribute solutions to the MAIA Marketplace DB
- Publish promotional content on multiple online media (network under development)

Connect and exchange with like minded eco-systems in Europe



MAIA Consortium

Maia Project
coordinator:

bc³ | BASQUE CENTRE
FOR CLIMATE CHANGE
Klima Aldaketa Ikergai
Sustainability, that's it!

AIT AUSTRIAN INSTITUTE
OF TECHNOLOGY
TOMORROW TODAY

AQUATEC

Research & Innovation
Information Technologies **ATHENA**

**BRIGAD
CONNECT**

**Horizon
Nua**

ICATALIST
Shared Value
Innovation

in
media

OFF COURSE

Regions4 20
Sustainable Development

SEI Stockholm
Environment
Institute

sp

smartcities
consulting

THATZ AD
THAT'S ADVERTISING

BPx

Contact us: andrea.geyer@smartcitiesconsulting.eu





MINORITY REPORT



Closing remarks

Niall Buckley



INTEGRATED
ENVIRONMENTAL
SOLUTIONS

niall.buckley@iesve.com



This project has received funding from the European Union's Horizon Europe research and innovation programme under the grant agreement number 101147385. The European Union is not liable for any use that may be made of the information contained in this document, which is merely representing the authors' view.



Site visit (15:20- 16:30)

“The Green Village”- TU Delft



THE GREEN VILLAGE



MINORITY
REPORT

1st International event



New
European
Bauhaus

Thank you for
joining us today!

E²ARC
Architects for future cities

Co-creating Green &
Climate Resilient Cities
NEB Satellite Event

