



“LIFE innovates Climate Action”



Day 2: LIFE presents: Innovative ways to enhance governance and participation

09:00	Welcome back: What did we get out of yesterday?	Anna Bonven, Academic Project Staff, Coast to Coast Climate Challenge
09:10	Keynote: <i>Systemic innovation in Climate KIC</i>	Pernille Modvig, Designer and Producer, Climate KIC
09:25	Session 3: Enhancing local and multi-level governance with systemic innovation	Anna Bonven, Academic Project Staff, Coast to Coast Climate Challenge
09:30	Special presentation: H2020 Climate Resilience Regions Through Systemic Solutions and Innovations – ARSINOE	Chrysi LASPIDOU, Project Coordinator
09:45	Pitch presentations	
	LOCAL ADAPT - Integration of climate change adaptation into the work of local authorities	Majana Heidenreich, Scientific Officer
	LIFE PlanUp - A multi-stakeholder platform for inclusive and ambitious 2030 climate plans	Miriam Vicente Marcos, Project and Membership Manager
	LIFE_ADAPTCITY_PL - Preparation of a strategy of adaptation to climate change with use of city climate mapping and public participation	Wojciech Szymalski, Project Coordinator
	LIFE-IP URBAN KLIMA 2050 - Systemic implementation of the CC action in the Basque Country for increased urban resilience as full territory enabler	Inigo Urrutikoetxea, Project Coordinator and Climate Action Technician at IHOBE
10:05	Plenary discussion	
10:45	Break	

“LIFE innovates Climate Action”

11:10	Session 4: Enhancing co-creation and participation with systemic innovation	Christina Marouli, Associated Professor, Founder and ex-Director, Centre of Excellence for Sustainability at the American College of Greece; Technical Monitoring Expert at NEEMO
11:15	Special presentation: Climate Road, a subproject of the LIFE IP C2C CC	Søren Erbs Poulsen, Head of Programme, Docent, from VIA University College
11:30	Pitch presentations	
	LIFE New Hyts - reNEWable green Hydrogen for TranSport	Daniel Bakker, Expert at KWR Water BV
	LIFE-MICACC - Municipalities as integrators and coordinators in adaptation to climate change	Zsuzsanna Herzig, Project Coordinator and Head of Secretariat - Ministry of Interior of Hungary
	LIFE CLIMATE SMART CHEFS - Empowering chefs for a climate-smart, sustainable and healthy food system in the EU	Marta Antonelli, Project Coordinator, Fondazione Barilla
	CLIMAFORCEELIFE - Climate-Smart Forest Management for Central and Eastern Europe	Lukas Bilek, Monitoring Coordinator, Czech University of Life Sciences
11:50	Plenary discussion	
12:35	Closing remarks	Christian Strasser, Head of Unit, LIFE Energy + LIFE Climate
12:50	Farewell remarks	Dorthe Selmer, Project Coordinator of LIFE IP Coast to Coast Climate Challenge



“LIFE innovates Climate Action”



Please turn OFF your microphone



Please turn OFF your camera



If you want to ask a **question** during the panel **discussions**, you will be invited to turn **ON** your **microphone** and **camera**. **Raise your hand** using the **teams** function 🖐️

NO questions in the chat.





LIFE Platform Meeting

“LIFE innovates Climate Action”

November 8 – 9 2022





Transformation, in Time

Our journey to net zero through
collaborative systems innovation

Pernille Martiny Modvig | November 2022

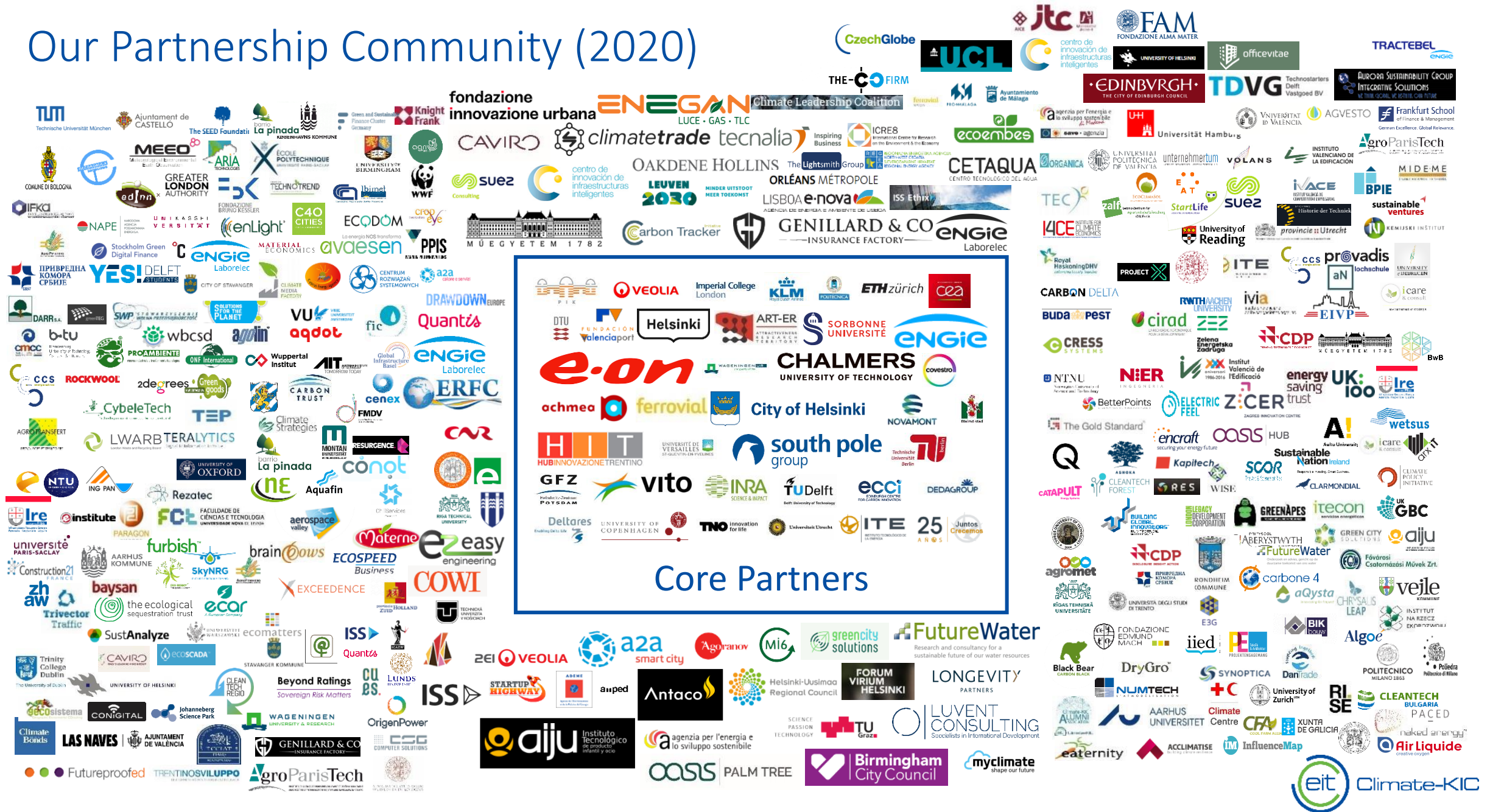
 @ClimateKIC



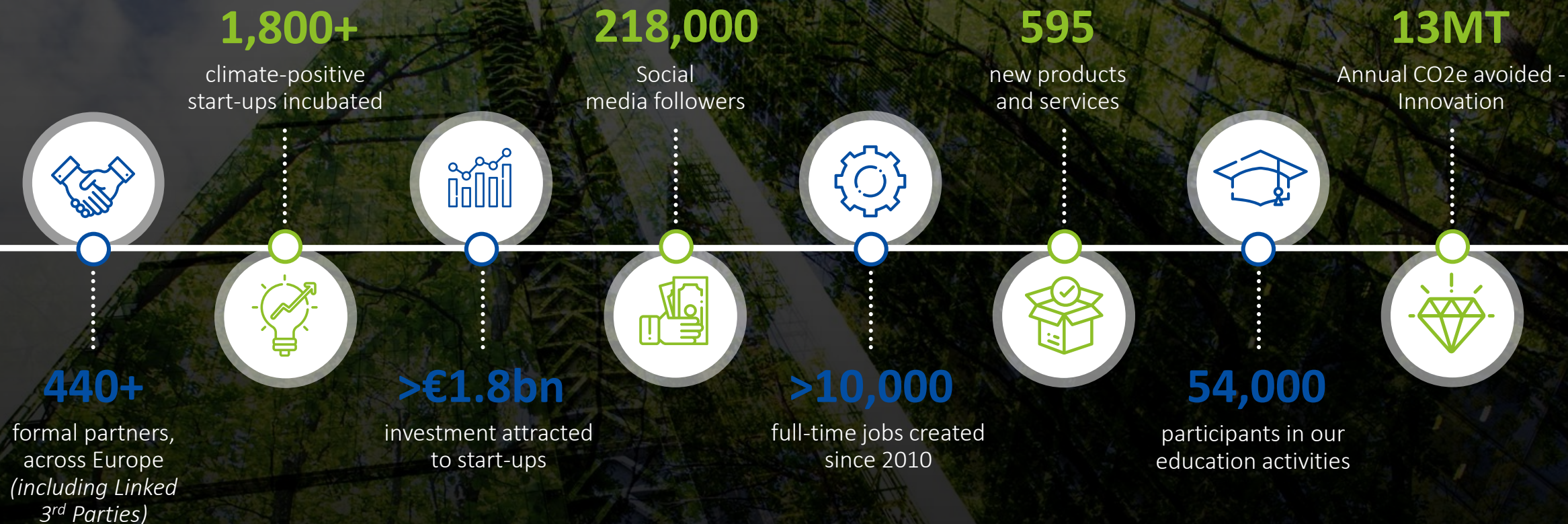
EIT Climate-KIC is supported by the
EIT, a body of the European Union



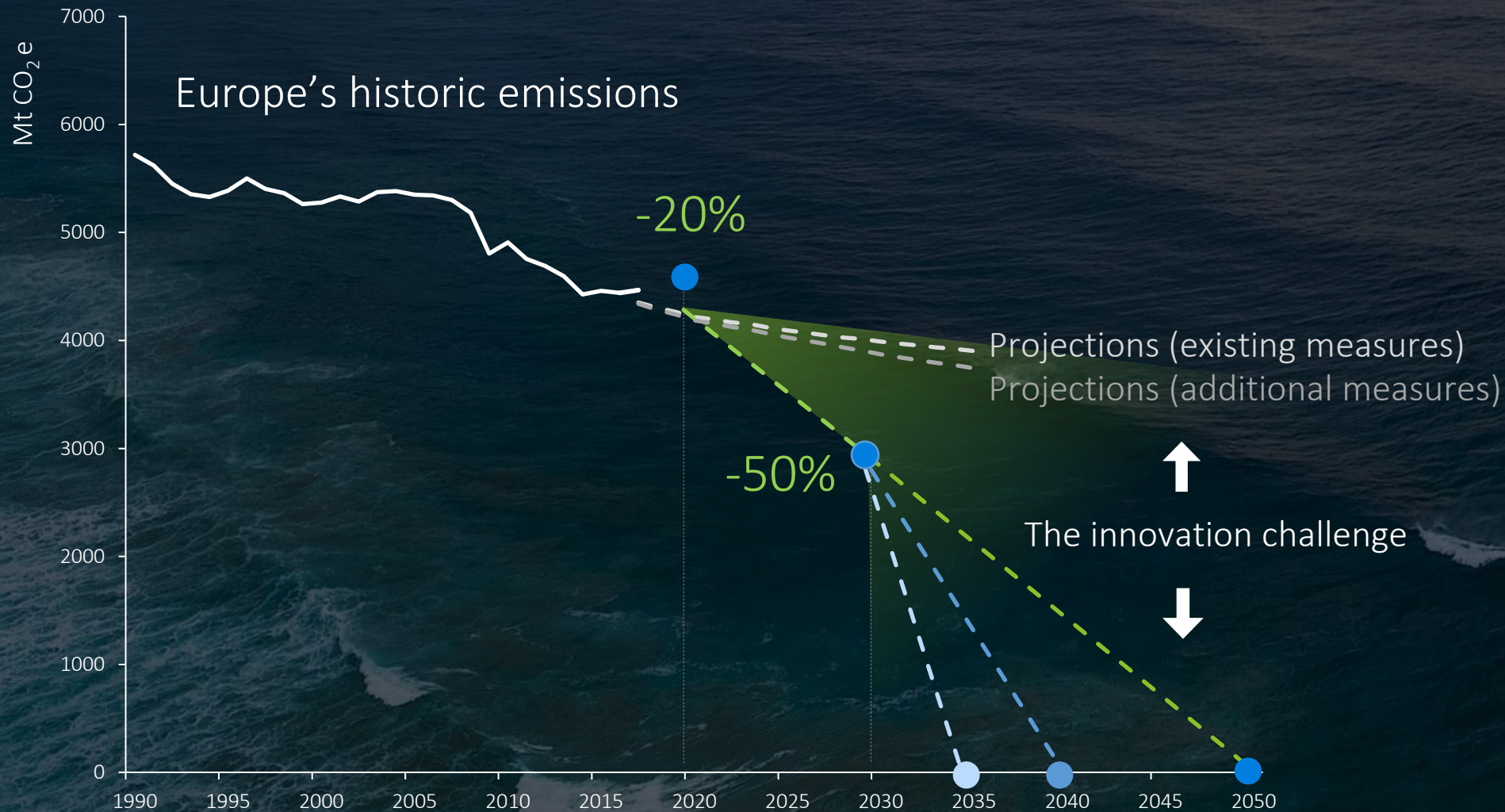
Our Partnership Community (2020)



Leverage: A decade-long record of strong results and a major catalogue of innovation to draw on



Business-, innovation- and investment-as-usual are not delivering a **1.5 degree world**. We're not on track in **Europe**...



Source: www.eea.europa.eu/data-and-maps/indicators/greenhouse-gas-emission-trends-6/assessment-2

Innovation is essential.
But not as we have
been doing it.

We need a **new model
of innovation** to
catalyse **systemic
change**.

Connected
innovations...

...acting
simultaneously

...across
multiple levers
of change

...triggering
massive leaps in
decarbonisation
and resilience.

...to transform
places, people,
sectors and
value chains...

10 years of experience has taught us that achieving the systemic change we need requires a different order of innovation.

Incremental

System innovation

Transformational

Project finance model

Portfolio finance model

Single projects and incremental change

Portfolio of connected innovation projects that learn from each other

Siloed and fragmented activities - focus on tech

Wide appreciation of change levers





4

Sensemaking and feedback loops

We generate actionable intelligence to accelerate learning about how to achieve transformation at scale. Feedback loops inform policymaking and dynamic management of innovation options.

3

Orchestrate a portfolio

For each challenge, we build and manage a portfolio of 30 – 100 connected innovation projects, designed to address leverage points identified in earlier stages.



1

Understand and map the systems challenge

We engage demand-side challenge owners – city mayors, regional leaders, government ministers and CEOs of major companies – to understand ambition and needs, identify constraints and secure intent for transformational change.

2

Define the intervention strategy

We identify where and how innovation can play a role in catalysing change dynamics, and start to design relevant innovation 'positions'.



Portfolio approach across different layers



An aerial photograph of a large, multi-lane circular roundabout in an urban setting. The roundabout has a central island with a decorative, tiered monument. Several lanes of traffic are visible, with cars and trucks circulating. The surrounding area includes green trees, sidewalks, and modern buildings. The entire image is overlaid with a semi-transparent blue filter.

Deep Demonstrations EU missions

A Deep Demonstration of...

Resilient Regions

EIT Climate-KIC will take a systems innovation approach to forging resilience, working with regions that are:

- Ambitious to be European and global leaders;
- Committed to placing climate resilience at the heart of their socio-economic agendas;
- Have a high level of vulnerability and exposure; and
- Demonstrate a commitment to using innovation as a tool to catalyse transformation.



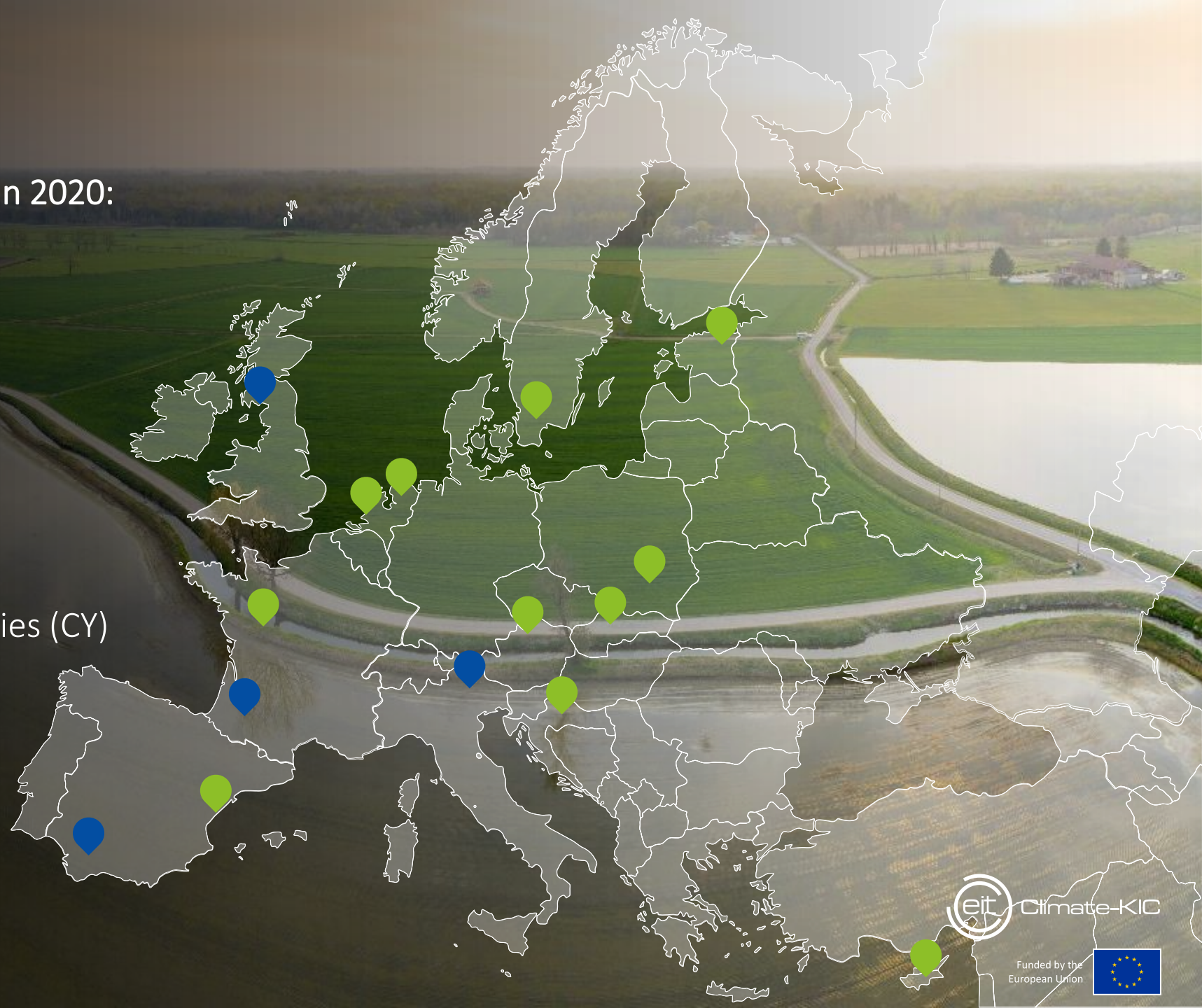
*Deep Demonstration Forging Resilient Regions –
Sensemaking workshop, 1-3 July 2020*

Cartoonists: Rebeka Ryvola

Regions

Engaged communities and regions in 2020:

- Centre-Val de Loire (FR)
- Den Haag (NL)
- Friesland (NL)
- Ida-Viru County (EE)
- Northern Croatia (HR)
- Upper Austria (AT)
- Skåne County (SE)
- Troodos Mountainous Communities (CY)
- Valencia (ES)
- Wisloka (PL)
- Zilina Region (SK)



Resilient Regions

Designers

We have progressed to the portfolio design phase for this demonstration and are working with the following partners to design projects in six key areas.



IIASA



Red Cross Red Crescent
Climate Centre



E3G



Fondazione
Edmund Mach



Hub Innovazione
Trentino



University
of Trento



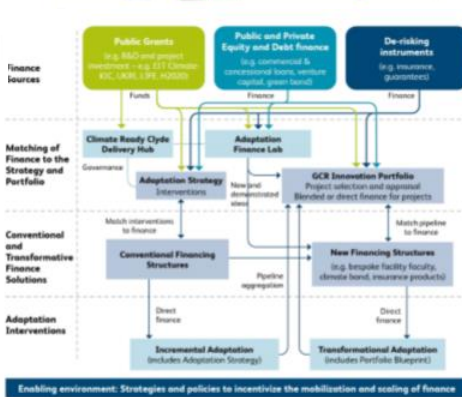
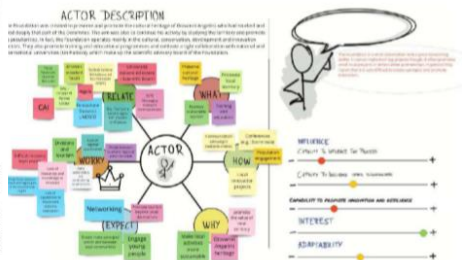
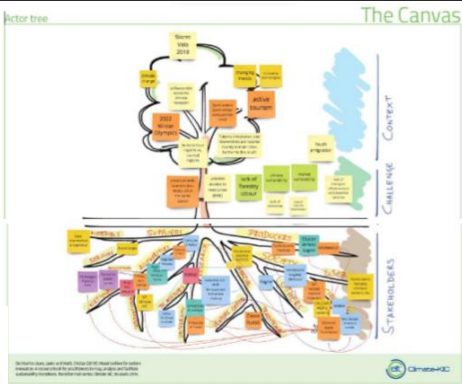
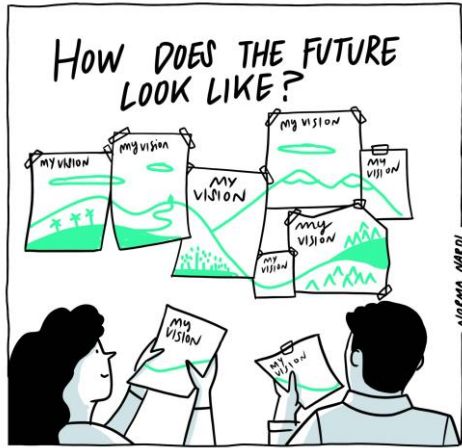
Sorbonne
Université



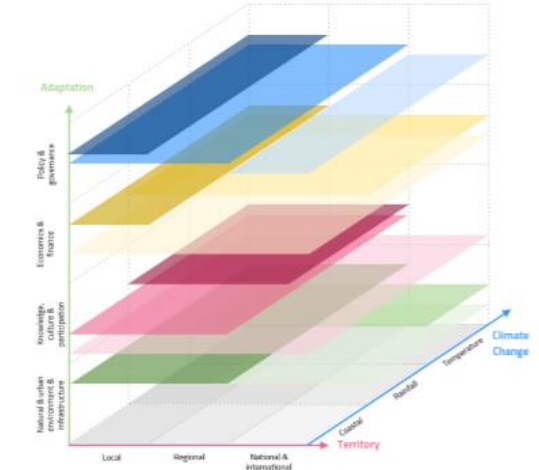
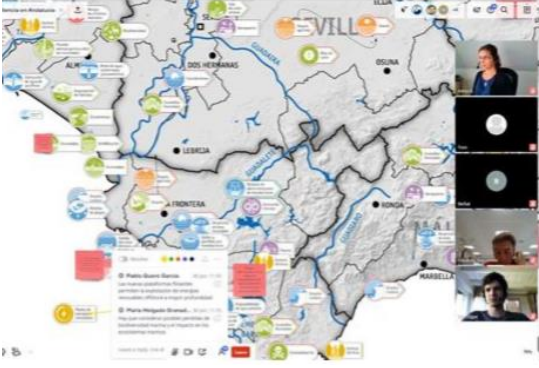
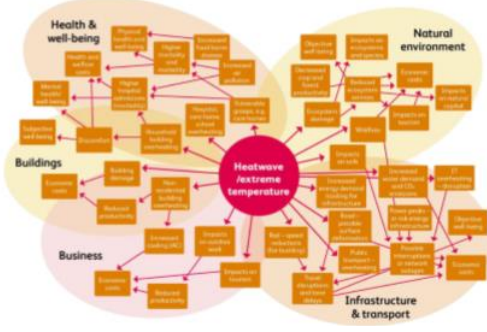
Visualising this...



Challenge-led system mapping
A knowledge management approach
Handbook for practitioners to design and implement a participatory



Extreme heat
Emergent properties of the mal-adapted system



Resilient Regions – Dolomites (2020)

A proposed portfolio logic

- Dimensions to learn from and define innovation actions
 - Resilience (stability, adaptive capacity, readiness)
 - Systems (tourism, communities, forestry & wood)
 - Response (adapt, mitigate, prevent)
- Emerging needs
 - Innovation capacity
 - Finance and insurance schemes
 - Engagement and cooperation in risk management



EU Missions

EIT Climate-KIC is a vehicle for the EIT community to shape the European Union's biggest challenges and priorities

Press release | 29 September 2021 | Brussels

Commission launches EU missions to tackle major challenges

1. Adaptation to Climate Change
2. Cancer
3. Restore our Ocean and Waters
4. 100 Climate-Neutral and Smart Cities
5. A Soil Deal for Europe

Cities Mission
Pilot
EIT Climate-KIC
(lead)



- Net Zero Cities is the biggest of all the EU Green Deal pilot projects, commenced Oct 2021
- Designed to kickstart the Mission on Cities in Horizon Europe – with the goal to decarbonise 100 + 100 cities by 2030
- Programme is €53mIn over 4 years



Co-funded by the
European Union





climate-kic.org

 @ClimateKIC



Funded by the
European Union





LIFE Platform Meeting

“LIFE innovates Climate Action”

November 8 – 9 2022





*LIFE platform meeting
LIFE innovates Climate Action
9 November 2022*

Professor Chrysi Laspidou - University of Thessaly
Vice President of Research & Technology - Water Europe



This project has received funding from the European Union's Horizon H2020 innovation action programme under grant agreement 101037424.

Key facts



Climate-resilient regions through systemic solutions and innovations

41

Partners
coordinated by
the University of
Thessaly

15

European
countries

9

Case studies in
Europe

15

Million Euros

48

Months
(October 2021 –
September 2025)

Challenges & approach



Climate change is complex and interconnected with other global challenges such as food security, water scarcity, biodiversity depletion and environmental degradation.

Adaptation refers to all approaches taken to adjust, prepare for, and accommodate new conditions that are created by changing climates.



ARSINOE will apply a 3-tier approach to address the growing complexity, interdependencies and interconnectedness of modern societies and economies and propose climate change adaptation solutions.

Objectives

- 1** Facilitate a **fundamental transformation** of economic, social and financial systems that will trigger an exponential change in decarbonization rates and strengthen climate resilience
- 2** Support recovery from the **COVID-19** crisis and climate resilience
- 3** **Support communities and scientists** in efficiently evaluating the environmental and economic effects of climate change
- 4** Offer **Advanced Environmental Intelligence** services and tools
- 5** Quantify, model and manage **climate risk** in a systematic way through resilience
- 6** Facilitate **knowledge transfer and exploitation** for start-ups and SMEs



3 Tier Approach



SYSTEMS INNOVATION APPROACH

The Systems Innovation Approach addresses the growing complexity, interdependencies and interconnectedness of modern societies and economies. It focuses on the functions of the cross-sectoral system “as a whole” and on the variety of actors.



CLIMATE INNOVATION WINDOW

The Climate Innovation Window is the EU reference innovations marketplace for climate adaptation technologies. It facilitates the market exploitation of validated tools and technologies by interested parties.



CLIMATE CHANGE ADAPTATION SOLUTIONS IN THE INNOVATION PACKAGES:

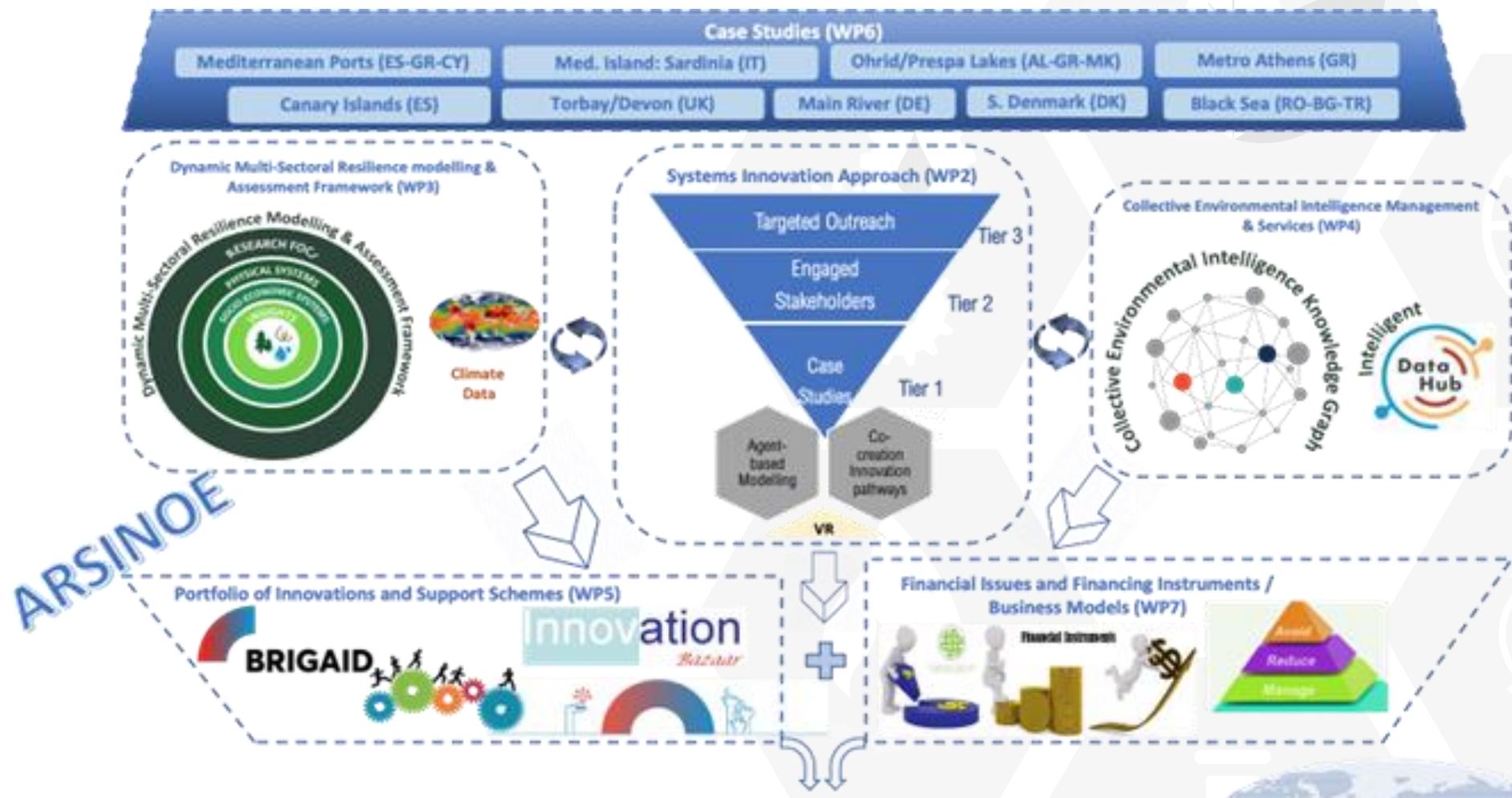
Pathways to solutions are co-created and co-designed by stakeholders to form an innovation package for resilience to climate change.

The ARSINOE Concept

- User-Validated Climate Resilient Innovation Packages
- Socio-Environmental Systems Participatory Modelling
- Natural and Societal Systems Interplay and Knowledge Graph Development
- Multy-System Dynamic Modelling Framework for Resilience Management
- Systems Innovation Approach/Behavioral Models/Sustainable Finance & Economic Instruments
- Governance Assessment Tool Integrated to Systems Innovation Approach



The ARSINOE Methodological Approach



9 Case studies in Europe



CS#1: Greening the Athens metropolitan area



CS#2: Mediterranean Ports



CS#3: Main River



CS#4: Ohrid/Prespa lakes



CS#5: Canary Islands



CS#6: Black Sea



CS#7: Southern Denmark



CS#8: Torbay and Devon county



CS#9: Sardinia



THANK YOU

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 [ARSINOE_EU](https://www.instagram.com/ARSINOE_EU)

 [ARSINOE EU](https://www.youtube.com/ARSINOE_EU)



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July 2016 – December 2021

4 Regions, 6 Partners

- Technische Universität Dresden
- Climate Service Center Germany
- Provincial Government of Styria
- Saxon State Agency for Environment, Agriculture and Geology
- Czech Globe - Global Change Research Institute
- Valka Municipality Council

Project actions, e.g. ...

- Development & enhancement of climate information tools
- Improvement of heavy rain and heat stress resilience
- Establishment of permanent advisory service and information about funding opportunities
- Pilot measures in selected municipalities

www.life-local-adapt.eu

The project aimed to ...

- improve data and information base on CC and CCA to enhance knowledge of municipalities
- integrate CCA into the administrative work of local authorities
- implement specific measures of CCA in close cooperation with the municipalities

Focus on small and medium-sized municipalities!

In Saxony...

- closed and permanent cooperation with municipalities
- CCA-Contest 2017 und 2019: 100 % funding of non-investment-related measures, e.g. planning of CCA measures, for winning projects
- Online Tool ReKIS kommunal
- Public relations: website, flyer, guidelines, brochures, conferences, workshops

MULTI-LEVEL CLIMATE GOVERNANCE

5 countries (ES, IT, HU, RO & PL)

plan
Up.eu

*Strengthening the governance processes by
involving local & regional authorities and civil society
organisations on the development and implementation of the
National Energy and Climate Plans (NECPs)*

*For strong and inclusive
energy and climate plans*

*The importance of civil society as the liaison between national/local actors & the EU legislative process
+ transparency and engagement from all governmental levels to drive systemic change*



ADAPTCITY in Warsaw



Two consultation meetings were attended by more than 80 people, who submitted more than 240 comments on the strategy.

PREPARATION OF A DRAFT ADAPTATION STRATEGY

Public consultation of the assumptions for the adaptation strategy

Public consultation on adaptation strategy

Submission of a draft adaptation strategy to the Warsaw City Council.

Development of more than 150 maps, 69 of which are posted for informational purposes on mapa.um.warszawa.pl and www.adaptcity.pl/mapa-klimatyczna-warszawy.

DEVELOPMENT OF CLIMATE MAPS

PREPARATION OF ASSUMPTIONS FOR THE ADAPTATION STRATEGY

Launch of the Warsaw Roundtable on Climate Change Adaptation (WOSAK).

Start of work of the Committee of Scientific Consultants

Stuttgart - learning about best practices

The Scientific Committee of Consultants consisted of 2 climatologists, a physiographer and an urban planner, who gave direction and a positive opinion to the work on the climate map of Warsaw during 8 meetings.

There were 18 consultation meetings for all districts of Warsaw, a consultation process during outdoor picnics, online consultations and an Idea for Climate competition. A total of more than 1,345 people took part in the process, and that is how many proposals were collected.



8 WOSAK meetings, with the participation of 18 representatives of NGOs, industry organizations and city hall offices, which developed goals, vision and directions for the future strategy.

GOVERNANCE

- Basque Government
- Public societies/agencies/bodies
- 3 Provincial councils
- County entities
- City councils<



Hydrographic confederations
Demarcation of coasts of the Basque Country

The Basque Country (Euskadi)



A long road enhancing multilevel climate governance through collaborative projects ➡ Shortcomings in the implementation of actions

LIFE IP Urban Klima 2050



- ✓ Co-responsibility
- ✓ Shared project

Policy review

Sectorial analysis

Pilot projects



Basque energy transition
and climate change
Transition plan + Roadmap

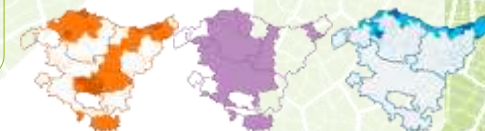


Mainstreaming climate change into health,
water and land-use planning policies

Sectoral Territorial Plan for the coast



Pilot projects: 3 levels of intervention





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Find vejen frem
VIA University College

The Climate Road – sector integration of water & energy

Full-scale demonstration of combined thermonet and SUDS



The Problem



The climate is changing

Increased temperatures, more precipitation, rising sea levels



Hot and dry summers

The likelihood of extreme temperatures increases significantly



Wet and mild winters

Lower heat consumption and a greater need for handling extreme precipitation



Lack of technology

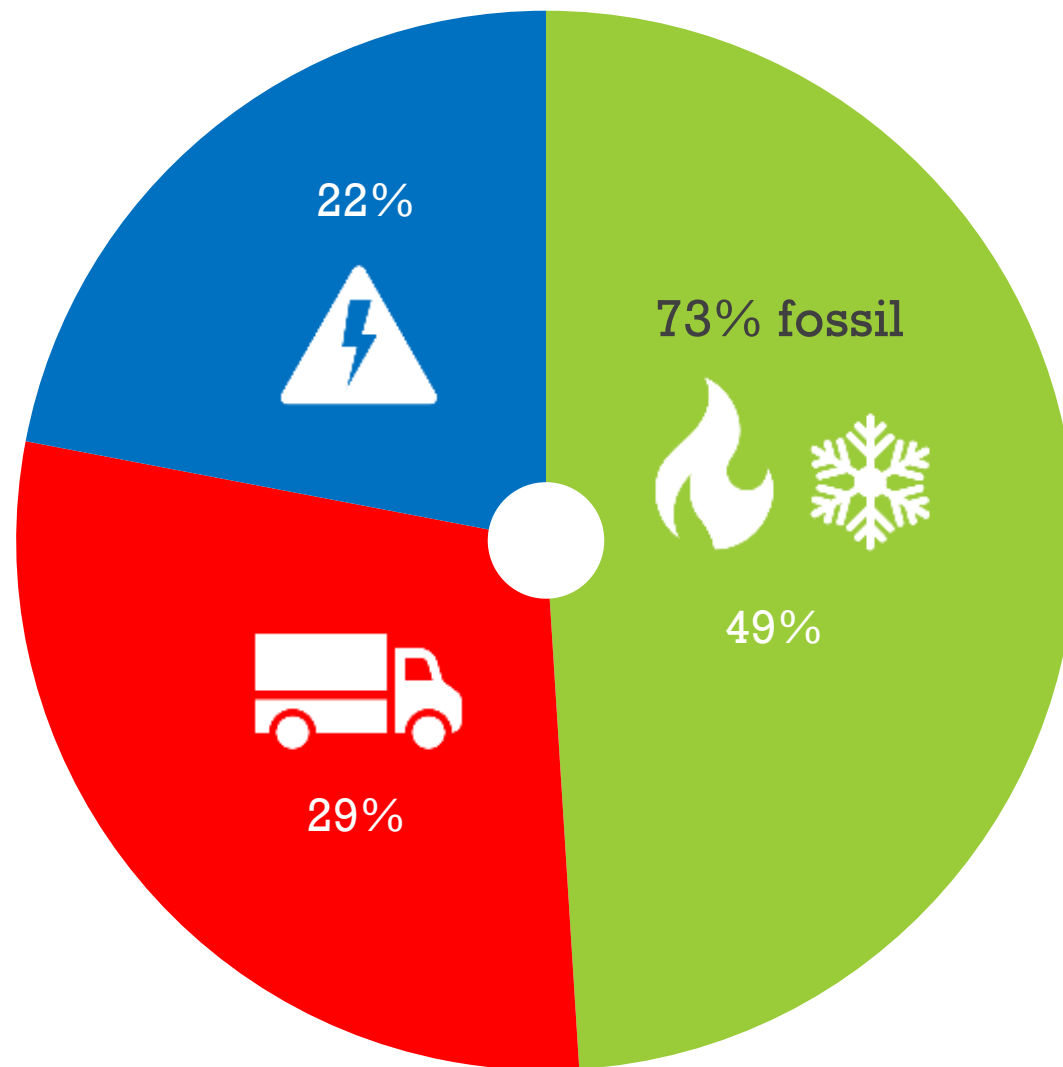
Utilities today are largely separate and synergies are difficult to realize



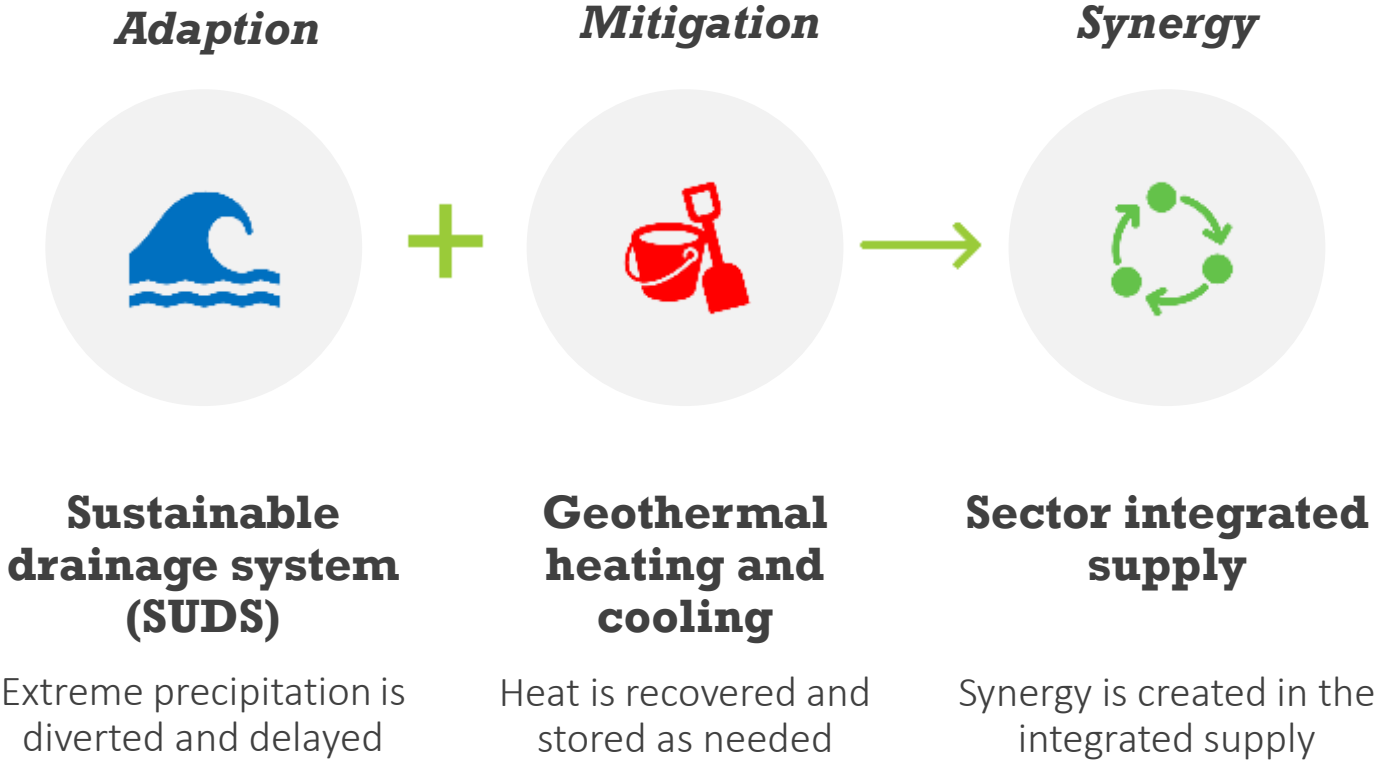
Lack of innovation

We cannot solve the problem with the technologies that have created climate change

Total energy consumption in Europe



The Solution



The Climate Road

Geothermal energy is extracted from the roadbed

The roadbed also delays **extreme precipitation**

Synergies

- Extended use of existing infrastructure
- No land use
- Improved heat extraction
- Improved water quality at recipient
- Noise and aesthetic issues are eliminated (air-source heat pump)
-



The Climate Road



50 meter

Both permeable and traditional asphalt are used



120,000 litres of water

The road can retain 300 mm of precipitation



Lille Dalby kindergarten

The road supplies the kindergarten with space heating and domestic hot water



Results



Article

Full-Scale Demonstration of Combined Ground Source Heating and Sustainable Urban Drainage in Roadbeds

Søren Erbs Poulsen ^{*}, Theis Raaschou Andersen and Karl Woldum Tordrup

R&D Centre for the Built Environment, Energy, Water and Climate, VIA University College, 8700 Horsens, Denmark; thra@via.dk (T.R.A.); kart@via.dk (K.W.T.)

^{*} Correspondence: soeb@via.dk; Tel.: +45-87554209

Abstract: This paper proposes and demonstrates, in full scale, a novel type of energy geostructure (“the Climate Road”) that combines a ground-source heat pump (GSHP) with a sustainable urban drainage system (SUDS) by utilizing the gravel roadbed simultaneously as an energy source and a rainwater retarding basin. The Climate Road measures 50 m × 8 m × 1 m (length, width, depth, respectively) and has 800 m of geothermal piping embedded in the roadbed, serving as the heat collector for a GSHP that supplies a nearby kindergarten with domestic hot water and space heating. Model analysis of operational data from 2018–2021 indicates sustainable annual heat production levels of around 0.6 MWh per meter road, with a COP of 2.9–3.1. The continued infiltration of rainwater into the roadbed increases the amount of extractable heat by an estimated 17% compared to the case of zero infiltration. Using the developed model for scenario analysis, we find that draining rainwater from three single-family houses and storing 30% of the annual heating consumption in the roadbed increases the predicted extractable energy by 56% compared to zero infiltration with no seasonal energy storage. The Climate Road is capable of supplying three new single-family houses with heating, cooling, and rainwater management year-round.

Keywords: energy geostructure; ground-source heat pump (GSHP); sustainable urban drainage system (SUDS); sector integration; 5th-generation district heating and cooling; permeable asphalt; rainwater retardation; full-scale demonstration; numerical modelling; analytical modelling



Citation: Poulsen, S.E.; Andersen, T.R.; Tordrup, K.W. Full-Scale Demonstration of Combined Ground Source Heating and Sustainable Urban Drainage in Roadbeds.

Energies **2022**, *15*, 4505. <https://doi.org/10.3390/en15124505>



The Climate Road can supply 3-4 new family houses



Infiltration increases the heat extraction by 26%



Seasonal heat storage increases heat extraction by 56%

Dissemination

The citizens



Education

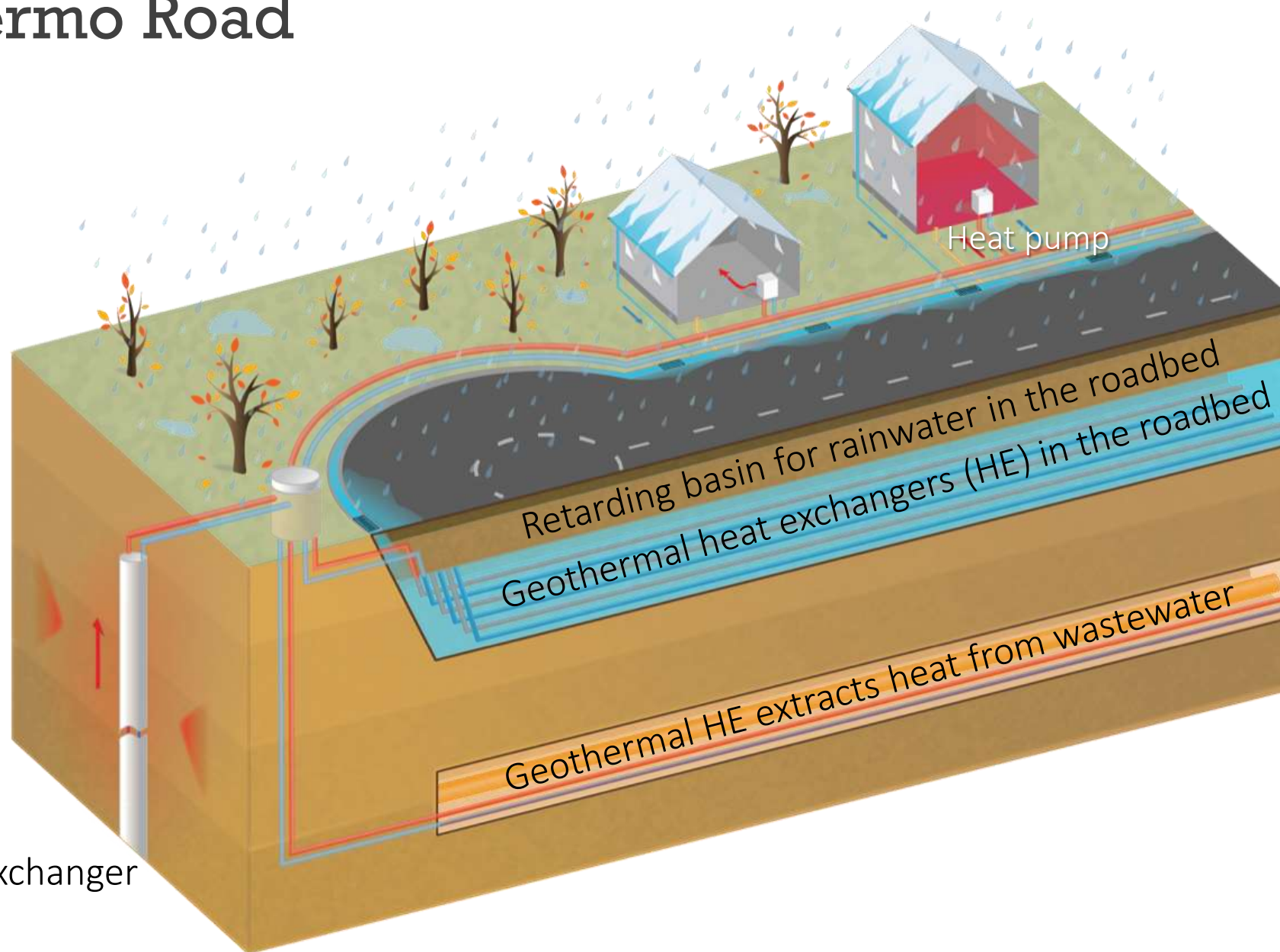


The Value Chain

Termonet DK



The Thermo Road





Borehole heat exchanger




Thanks!



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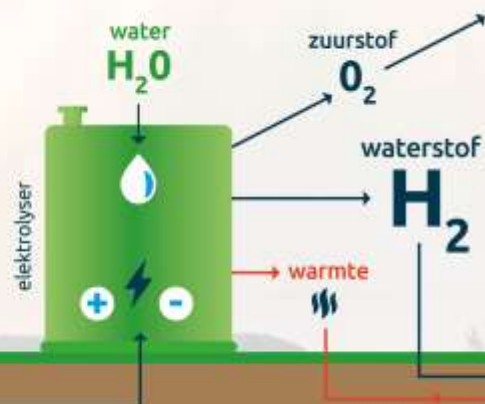
LIFE NEW HYTS



Zero emission with green hydrogen



Green electricity



THE LIFE-MICACC PROJECT

- Municipalities
- Climate change adaptation
- Pilot NWRMs
- Raise awareness + share information + show practical solutions

Systemic innovation: unique or unusual frame/dimension of the partnership → multi-level cooperation





UP TO 37%

of global **greenhouse gas emissions** are emitted from farm to fork



70% ON AVERAGE

of **freshwater withdrawal** is used for agriculture



1/3

of **global food production** is lost or wasted



LIFE
CLIMATE
SMART
CHEFS



LIFE CLIMATE SMART CHEFS is a European project receiving funding from the **LIFE Programme** of the European Union. It aims to contribute to the development and implementation of the **EU Climate Policy** and the **Farm to Fork (F2F) Strategy** by:



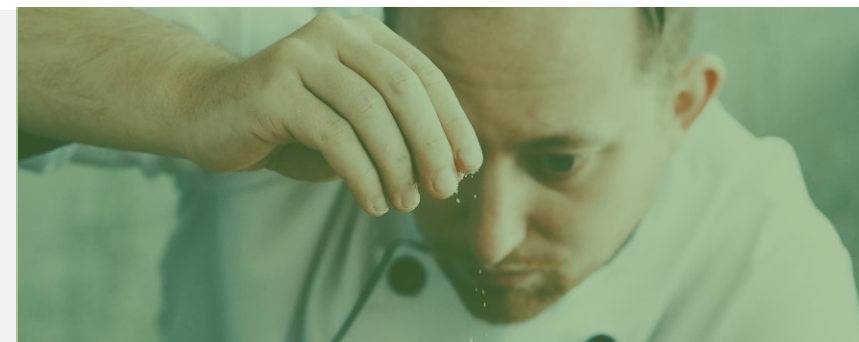
actively **involving European chefs** as promoters of low emission, nutritious and affordable diets



providing chefs with the **knowledge and tools to generate change** in recipe design, menu planning and communication with customers, fostering awareness on climate and environmental issues



promoting a mainstream **debate on food** as a key factor for climate change mitigation



Key **project activities** include:

- 1** the implementation of a **high-level training course** for chefs
- 2** the development of a **digital tool** to design climate smart menus
- 3** the creation of an **Award dedicated to climate smart chefs** and local initiatives promoting sustainable diets
- 4** the creation of an **EU Network** of chef associations
- 5** the implementation of the **Life Climate Smart Chefs Vision 2030**, a strategic paper aimed at providing policy recommendations and supporting EU Climate Policy

Project partners:

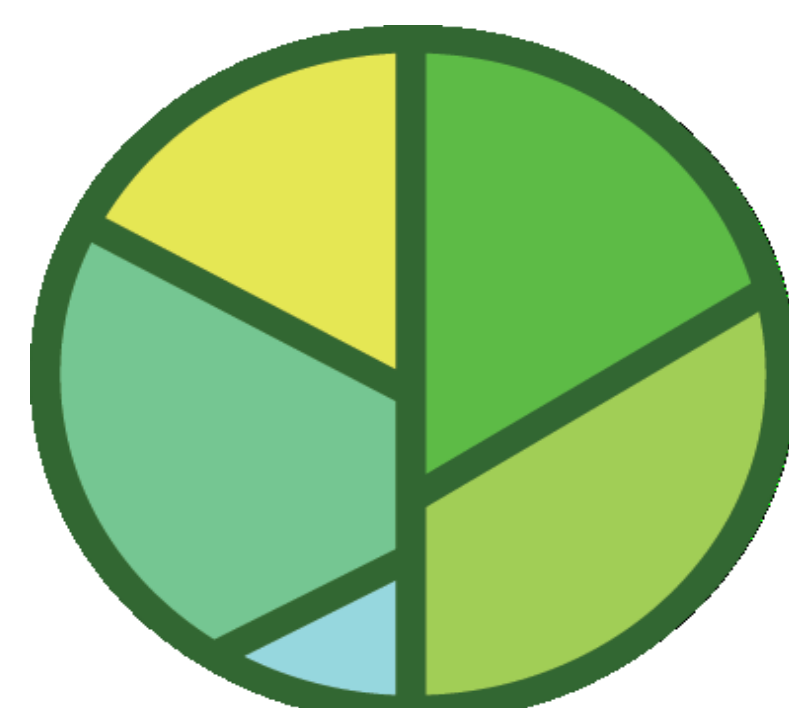

**Fondazione
Barilla**
il tuo cibo, la tua terra

 **ALMA**
THE JOURNAL OF ITALIAN CULINARY ARTS


ENAIIP NET

jamk | University of
Applied Sciences

 **NUTRITICS**



**CLIMA
FORCE**



Climate-smart Forest Management for Central and Eastern Europe- CLIMAFORCEELIFE (LIFE19 CCA/SK/001276)

Project is co-funded from LIFE Programme of the European Union, state budget of the Slovak Republic through the Ministry of the Environment of the Slovak Republic and own contributions of the project beneficiaries

Forests of the Central and Eastern Europe (CEE) represent an important natural resource. To maintain forests their products and services in CEE, forest management have to shift from conventional to climate-smart. With this aim WWF Slovakia joined forces in the CLIMAFORCEELIFE project with partners from 5 EU countries: Forests of Slovak Republic, Czech University of Life Sciences, and South-Western State Forest Enterprise of Bulgaria.

Project title: Climate-Smart Forest Management for Central and Eastern Europe (CLIMAFORCEELIFE)

Project number: LIFE19 CCA/SK/001276

Project period: 01/09/2020 – 31/12/2027

Total budget: 5,587,063 EUR

EU financial contribution: 2,969,208 EUR

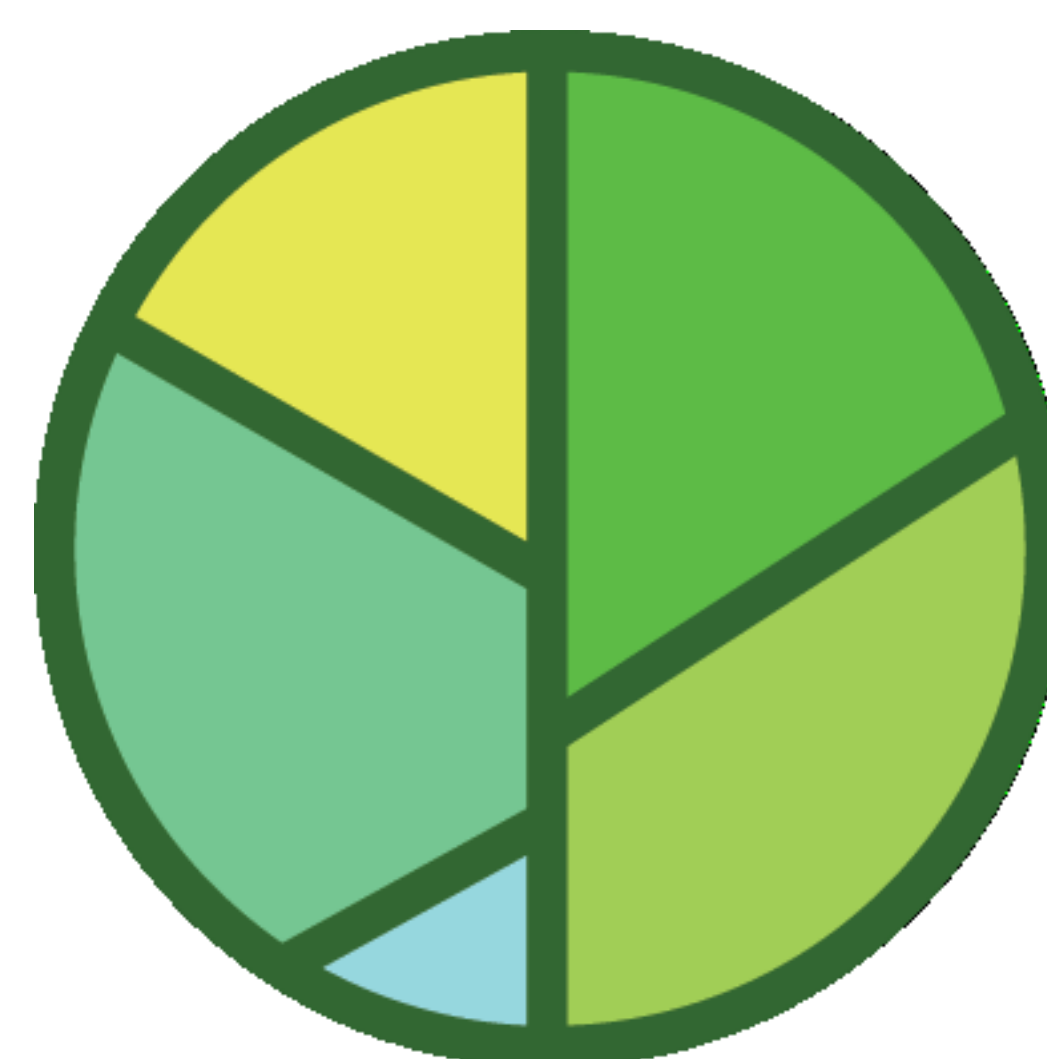
Beneficiaries: WWF Slovakia (Coordinating Beneficiary), WWF Bulgaria, WWF Hungary, WWF Romania, Czech University of Life Sciences, Forests of the Slovak Republic, National Association of Private Forest Owners and Forest Managers from Hungary, Southwestern State Forest Enterprise of Bulgaria.

Adaptation measures

Thinning in homogeneous pine stands aims to improve the vitality and resilience of forest, to diversify their spatial structure and species composition.

If successful, shift from clear-cut to shelter-wood or selective management system will be possible in the future. Water retention measures will improve forest resilience. The CSFM will be applied at 1793 ha.





CLIMA FORCEE



Climate-smart forest management for Central and Eastern Europe - Systemic innovations

- Involvement of national solid forest companies (Forests of Slovak Republic, South-Western State Forest Enterprise of Bulgaria)
- Strong involvement of landowners and municipalities in the implementation of project actions, conferences, study tours and technical workshops regularly organized (WWF Hungary, MEGOSZ, WWF Romania, WWF Bulgaria, Scientific and expert community involvement)
- Advanced approaches, including remote sensing tools, are used in the monitoring of applied project measures (Czech University of Life Sciences Prague)

More information:

Website:

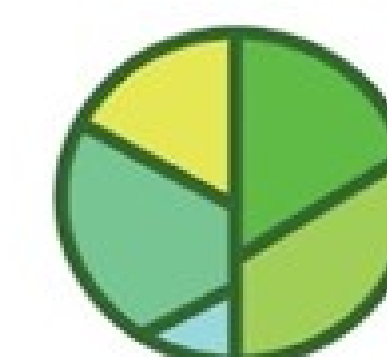
<https://clima4ceelife.eu/>

Contact person: Milan Janák

E-mail: mjanak@wwfsk.org

<https://www.facebook.com/hashtag/climaforceelife>

***The strong consortium
representing several countries
and stake-holders foster the
dissemination of project results in
the region of central and eastern
Europe***



CLIMA
FORCEE