IMPETUS 4CHANGE

Impetus4Change

Knowledge coproduction for resilient cities

ICUC-12; 10 July, 2025; Rotterdam

Dragana Bojovic[1], **Sam Pickard[2]**, Paloma Trascasa-Castro, Eren Duzenli, and Eulàlia Baulenas.

[1]dragana.bojovic@bsc.es / [2]samuel.pickard@bsc.es

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101081555

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Barcelona Supercomputing Center
Centro Nacional de Supercomputación

BSC

Earth Systems Services

Knowledge Integration Team (KIT)

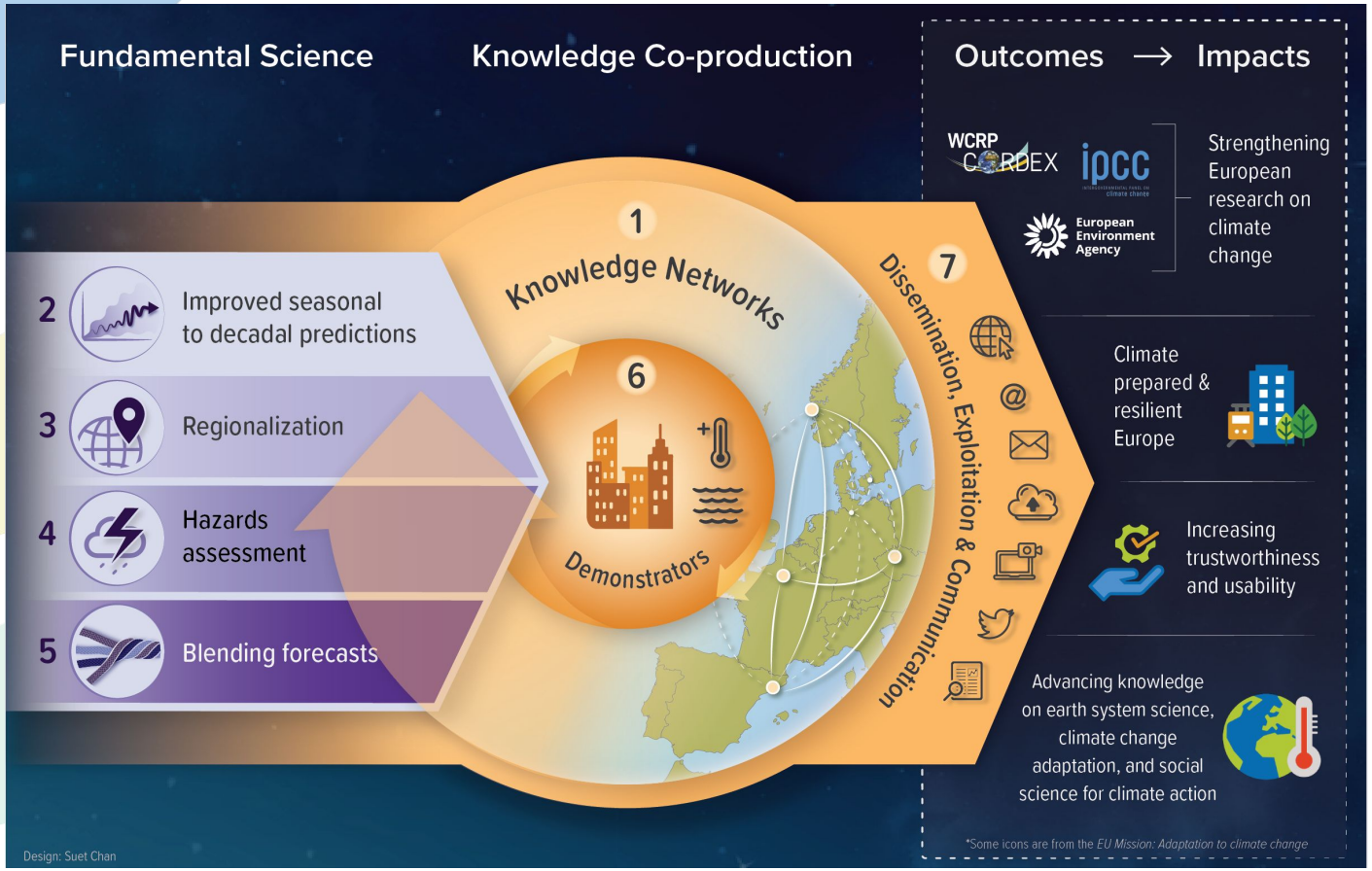
- Engagement & knowledge co-production
- Dissemination
- Operationalisation
- Science communication & outreach
- Policy engagement
- Services evaluation
- User experience & product design

What do we do?

We co-design climate, air quality and health resilience services, while facilitating knowledge exchange and technology transfer of state-of-the-art research at local, national, and international levels.

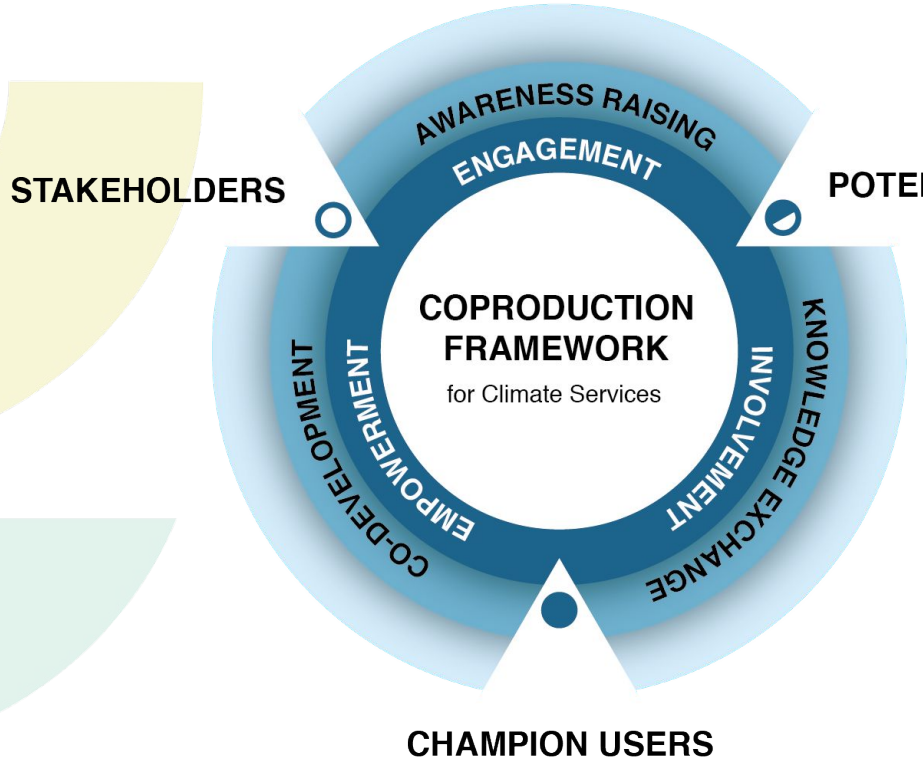
Generalitat de Catalunya
Departament de Recerca i Universitats
Gobierno de España · Ministerio de Ciencia e Innovación
UPC Universitat Politècnica de Catalunya BarcelonaTech
Unión Europea
Fondo Europeo de Desarrollo Regional

The Impetus4Change Project



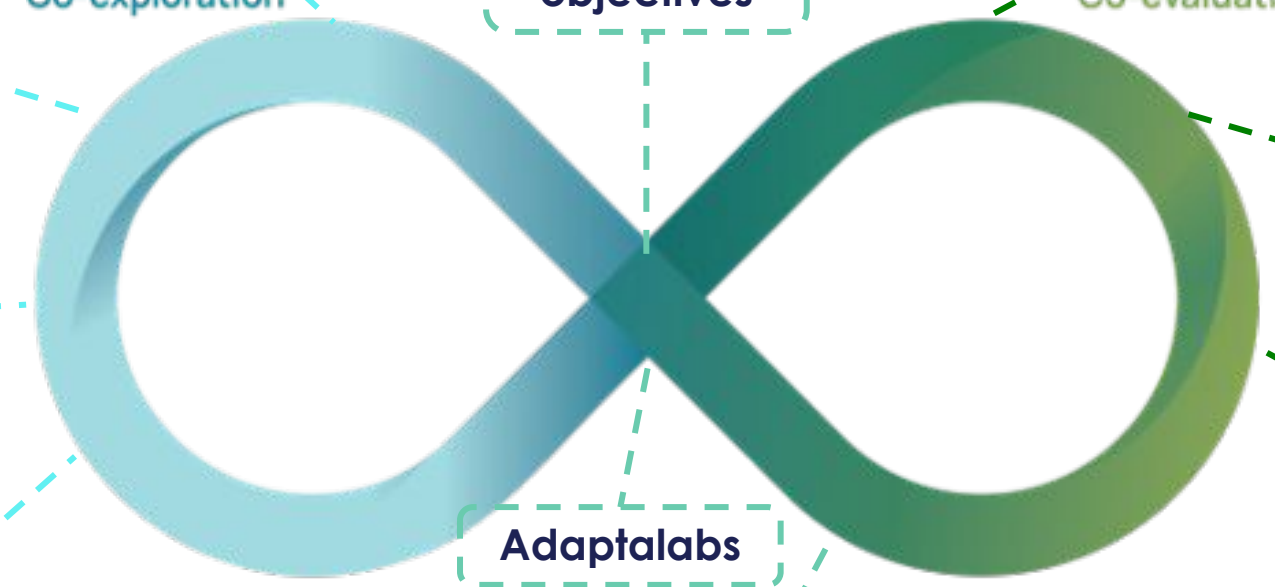
The overall objective of I4C is to improve the quality, accessibility and usability of short-term climate information and climate services at local and regional scales, where the impacts are most intensely felt, to strengthen and support final users in adaptation planning and action.

Co-production in four demonstrator cities



Bojovic, D. et al. (2021). Engagement, involvement and empowerment: Three realms of a coproduction framework for climate services. *Global Environmental Change*, *68*

The co-production loop



Establishing high-level goals

Concretising objectives

Implementing the framework

Explaining scientific limits

Iteratively developing a framework

Stakeholder mapping

Piloting services

Understanding decision-making contexts

Adaptalabs

Preliminary service iterations

With whom to co-produce?

Stakeholder mapping & user selection

Baulenas et al. (2023) User Selection and Engagement for Climate Services Coproduction. *Weather, Climate and Society 15*

What	Where	Whom	WHY	Which intensity	How
high-level goal conceptualization	defining the case	to include in the user selection	criteria for engaging which stakeholders	defining engagement intensity	iterate, adding the co- component to each step with the users

Collaboration - interdisciplinary

City Demonstrators & Test Beds

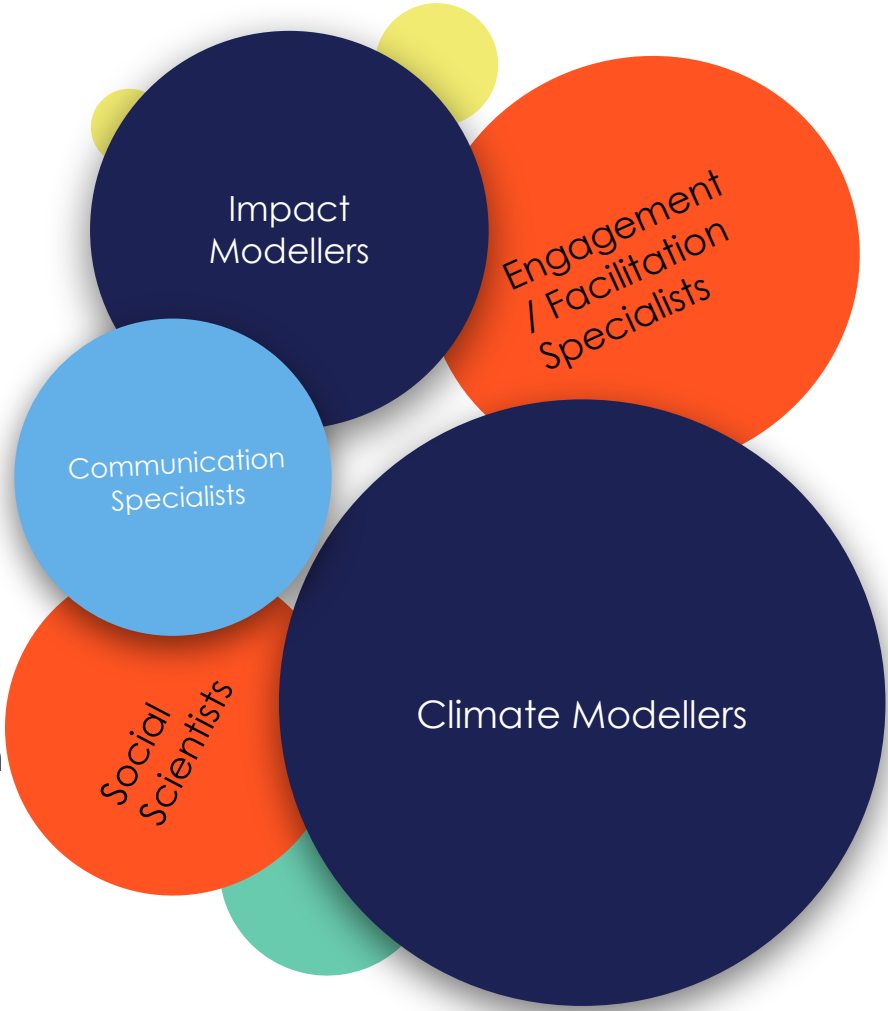
- Interdisciplinary work package (across 6 case study cities); led by co-production coordinator (social scientist), but mainly physical climate/impact modellers
- Developing social science tools for non-social scientists (e.g. templates for structured stakeholder mapping, diary, co-evaluation framework)

Demonstrator task team

- Meets bi-monthly, rotating coordination between disciplines
- Focuses linking advances in climate science WPs to work in demonstrator cities
- Important to create direct links between **people** as well as research in different WPs

Consortium-wide seminars

- Combine presentations from different disciplines in single events (to bring diverse audience)



Collaboration - transdisciplinary

Adaptalabs (3 during the project)

- 3-day hackathons
- mixed groups of city decision makers, climatologists & social scientists,

Working with non-researchers

- 300K (architects & urban design think tank) & ICLEI within the project as partners
- Extensive research efforts to understand local (in Barcelona and Hamburg) and European knowledge networks
- I4C as an opportunity for local stakeholder meetings (expert workshops, seminars, networking events)

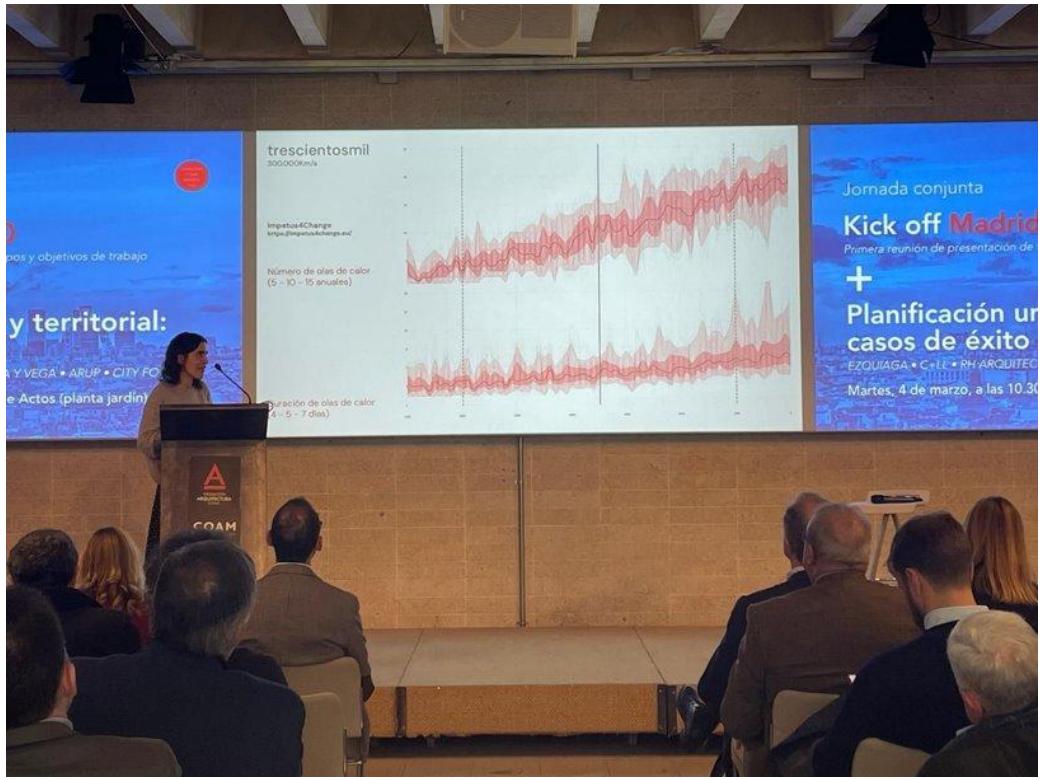
Beyond I4C - Upscaling and outscaling

Individual efforts

- Continual effort to bring in new users to the climate services ecosystem within demonstrator cities
- Also work to raise awareness with entirely new SH groups

Project-level

- Key deliverables (in different WPs, led by different parts of the consortium) bringing together research about:
  - how climate information flows through local knowledge networks
  - the experiences with co-production in the demonstrator/test bed cities



How are we doing? Co²-evaluation

2 - What themes emerge?

Process	Outputs	Outcomes	Impacts
Engagement & Collaboration	Relevance & Usefulness	Application & Use	Ecomonic & Financial
Inclusivity & Diversity	Accessibility	Enhanced knowledge	Benefits
Communication & Understanding	Understandability	Influence on Actions & Decisions	Social Benefits
Transparency & Reliability	Usability	User Feedback	Policy & Regulatory
Goal-setting & Relevance	Feasibility	Measurability	Benefits
Feasibility	Reliability		Positive Feedback
	Suitability & Adaptability		Measurability
	Up-to-date & Timely		
	Scope		

1 - What is important at each stage?

3 - Climate services that:

1. are inclusively co-produced by the actors they will impact
2. foster open and clear communication that develops climate knowledge
3. contribute to real, relevant and impactful adaptation action
4. are reliable, transparent and trusted

4 - What to evaluate...& how?

I4C evaluation pillars. Climate services that:	...to evaluate	Co-production process	Outcomes	Impacts
contribute to real, relevant and impactful adaptation action	What...	Identying enough "mass" to benefit from the outcomes of the project (e.g. VitiGeoss focusses on one small set of wine producers) Be mindful of the timescale of the adaptation measures that the CS can inform. Is it aligned with the CCA measures at different timescales (to avoid mis adaptation) Seek to understand the needs of decision makers during the development (in order to ensure the information in the CS flows to them when it is finalised) Start with an outline of the need and outline of the possible solution tools (not an empty box) and then seek to modify both during the co-production process.	The outcomes should identify who else might benefit from the project Be mindful of the timescale of the adaptation measures that the CS can inform. Is it aligned with the CCA measures at different timescales (to avoid mis adaptation) The CS should provide scientific evidence that supports the "radical" adaptation action we need Data that visualises scenarios (e.g. Santa Coloma want to know "what could we do differently?...) Provides information that is tailored to a real-world challenge	The project results are upscalable beyond the directly involved SHs to all similar SHs (e.g. ensuring that the CS could apply to ALL wine producers not just those involved) Accessibility of the service (e.g. in S2S4E collaboration with private companies meant it could not be used further). But in FocusAfrica, also worked with private sector but negotiated to have the platform open. But, in Africa all info had to go through NHMS...which meant local DMs stopped the flow even though project allowed it Also need a lasting project, that has legacy, requires resources. The CS should generate next-steps (future questions and needs) - e.g. about what uncertainties to tackle next / in future work. Where relevant, climate services may move from research projects --> operational projects (challenging to understand long-term societal impact for research projects only)
	How...	Purposeful case study selection (with an aim to generalise the results to others) overlap with Pillar 1 on inclusive co-production? Synthesise I4C specific outcomes from the heat-health workshop. A good co-production process would mean no surprises in the co-evaluation results! Collect initial outlines of possible needs and solutions as early co-production step.	Consider climate information across timescales How many decisions / decision makers have been influenced by (if) have read / are aware of the work. Do we have a specific solution? Survey / interviews can be used for ex post SH evaluation: Was the information used? Was it helpful? Would SHs use it again? Technical evaluation can cross-check with observations	Develop the CS's project "afterlife" during the project How many policies have used (I4C) data to support their decision making. Project legacy: are I4C data outputs still used / planned to be used into the future, and / or are they taken up by higher levels of governance (e.g. in regional health/territorial planning.

Thank you for your attention!

dragana.bojovic@bsc.es / samuel.pickard@bsc.es

IMPETUS 4CHANGE

ICUC12-762 | Posters | SE1
Co-producing urban climate and air-quality services in Barcelona

This project has received funding from the European Horizon Europe research and innovation programm grant agreement No 101081555

Abstract

Improving Near-Term Climate Predictions for Social Transformation (Impetus4Change) is a Horizon Europe research project where urban practitioners, social scientists and climate modellers work together to improve the quality and accessibility of near-term climate information in cities and regions. Impetus4Change provides seamless climate information across timescales ranging from sub(seasonal) to a few decades at local spatial scales where impacts and risks are most keenly felt and where on-the ground adaptation interventions are being implemented.

Impetus4Change co-produces this highly localised near-term climate knowledge with stakeholders in four Demonstrator cities: Barcelona, Bergen, Paris, and Prague. The first step in the coproduction process was co-exploration, which included stakeholder mapping and initial discussions between scientists and these local stakeholders to understand how and what climate services may best fit the local context. This involved appreciating how each city currently approaches climate adaptation, its climate information needs and the current use of climate services to support the formulation of adaptation strategies and decision making. The users from the stakeholder group who were interested in working with Impetus4Change then helped to co-design mock-ups of climate services using existing climate data. This allowed profound discussions related to the structure, data post-processing and delivery formats expected for the final urban climate services at Adaptalabs ('hackathons' dedicated to co-producing urban climate services) and other participatory events. The new climate data produced during Impetus4Change was used to co-develop the final climate services. Running alongside these steps was the co-evaluation stage which included a focus on the coproduction process itself as well as the value of the end products. The results from these four-year case studies will form the climate services implementation and adoption support guidance pack for each demonstrator from which we will synthesise an overall roadmap of best practices for coproduction of urban climate services.

How to cite: Bojovic, D., Pickard, S., Trascasa-Castro, P., Duzenli, E., and Baulenas, E.: Impetus4Change: knowledge coproduction for resilient cities , 12th International Conference on Urban Climate, Rotterdam, The Netherlands, 7–11 Jul 2025, ICUC12-760, https://doi.org/10.5194/icuc12-760, 2025.

Spare slides

Why co-develop co-evaluation?

The UK's first Climate Change Risk Assessment was seen as a success by many of the physical scientists involved in terms of its scientific accomplishments but a failure by government officials because its findings were not able to meaningfully inform the subsequent National Adaptation Plan (Porter and Clark, 2023) DOI:10.1016/j.envsci.2022.10.018

"Deciding which standards of quality should be deployed in assessing a climate service is then a highly political choice of which characteristics of knowledge or information are most important for supporting climate adaptation" Bremer et al. (2021)
DOI: 10.3389/fclim.2021.627665

Framework is:	Developed	Co-developed
Evaluated	My views & My assessment	Our views & My assessment
Co-evaluated	My views & Our assessment	Our views & Our assessment

Co-evaluation reflections

- Perspectives on what makes a “good” (or “bad”) climate services vary significantly
- Fair evaluation therefore requires a diversity of views from different types of stakeholder
- The other Co^2
- Don’t wait until the end to begin evaluating
- Keep a diary

- When was the last time someone asked what you thought was important for a good climate service?
- How would you answer that question?
- How would you measure it? When?
- What impact might that have on your work?
- When was the last time you asked someone else?