I-CISK used a co-creation framework to develop user-centered climate services that address user needs and incorporate local knowledge. This framework consisted of different phases, from building continuous engagement, to co-delivering pre-operational climate service innovation systems (Figure 1). The project developed co-creation guidelines at the start of the project which were implemented in seven Living Labs in Greece, Georgia, Hungary, Italy, Lesotho, Netherlands and Spain. We found that co-creation follows a non-linear, iterative process. Allowing and facilitating these iterations is important to adapt to and incorporate new circumstances, changing conditions and evolving needs and desires for climate information and decision-support.



Figure 1. The I-CISK co-creation framework

**Phase 0:** The approach starts from designing a process that allows for continuous engagement with stakeholders along the climate service value chain, building a common understanding and shared objectives.

- → a clear roadmap and accounting for the different capacities and resources of different stakeholders helps to manage expectations for the project
- → stakeholder mapping and ensuring inclusive stakeholder representation of multiple-sectors enhances the usefulness of the climate services

Phase A: The Living Labs then co-explored climate information needs and desires, as well as the barriers towards uptake of existing and new climate services

- → needs and desires evolve over time during the project
- → exchange of knowledge between stakeholders adds value and builds mutual understanding

Phase B: The stakeholders in the Living Labs tailored the design of the climate services to their climate adaptation and disaster risk reduction plans. Their decision-making space is shaped by their experience, socioeconomic context, institutional setting and current climate services (Figure 2). We explored new adaptation possibilities that new climate services could support.

- ightarrow The co-creation process helps build awareness about climate change adaptation and risk reduction
- → Understanding institutional mandates and responsibilities is paramount for engagement and use

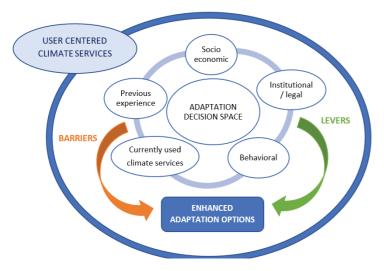


Figure 2. Understanding the decision-making space in phase B

Phase C: After deciding on the characteristics and applications of the new climate services, the Living Labs discuss available climate data and local knowledge embedded in the climate service.

- → Bringing in local knowledge enhances the potential uptake of the climate services
- → Many end-users primarily rely on local knowledge to make adaptation decisions

**Phase D:** Through multiple interactions between stakeholders, scientists and designers, new climate services adapted to the needs of the users are designed.

- → Striking a balance between remaining flexible and unbiased towards project designs but also sharing very rough prototypes of potential climate services, helps to shape expectations but also allows for adapting climate services plans as conditions change
- → End users not only want climate data at a suitable temporal and spatial scale for their locality, but also further support that helps them take effective adaptation decisions

**Phase E:** A set of evaluation criteria is used to assess whether the prototype climate services are useful and usable by end-users and help them adapt to climate change (Figure 3).

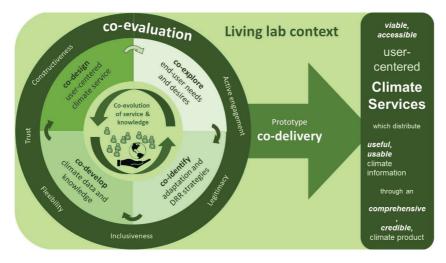


Figure 3. The co-creation process and its evaluation criteria to deliver user-centred climate services.

## **Contact information and further reading:**

Further information and publications can be found on the website of the I-CISK project. **Contact:** Marije Schaafsma (m.schaafsma@vu.nl) or Micha Werner (m.werner@un-ihe.org)

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