

Market is king: climate services for whom

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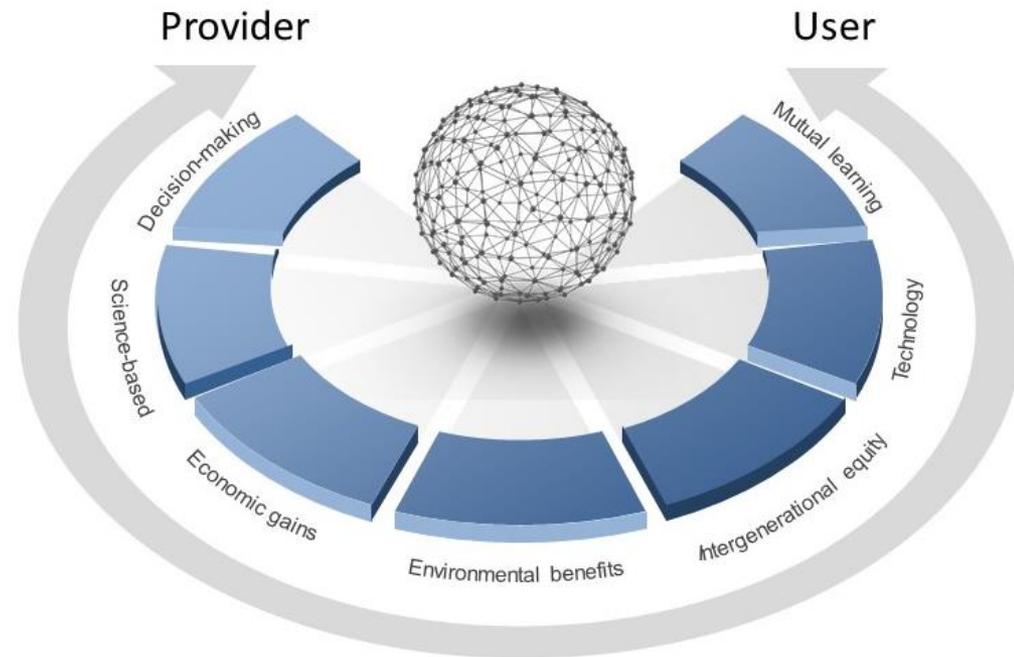
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CSs: rationale, benefits and features

- Support decision-making
- Build climate-resilient economic systems
- Advance science
- Accelerate climate adaptation and mitigation
- Promote coherent strategies through **co-development**
- Boost technology:
 - Machine Learning
 - AI
 - Sophisticated quantitative modelling products
 - High resolution Earth Observation (Eos) data



What are business models

The “*representation of a firm’s underlying core logic and strategic choices for creating and capturing value within a value network*” (Shafer, Smith, & Linder, 2005).

- **Market devices** (Doganova & Eyquem-Renault, 2009)
- **Productivity enhancement** factors (Tikkanen, Lamberg, Parvinen, & Kallunki, 2005)
- **Competition triggers** (Chesbrough, 2010)
- **Unifying frameworks** to capture value creation process (Afuah, 2004)
- **Connectivity factors** to interested agents in the network (Ritter and Lettl, 2018)

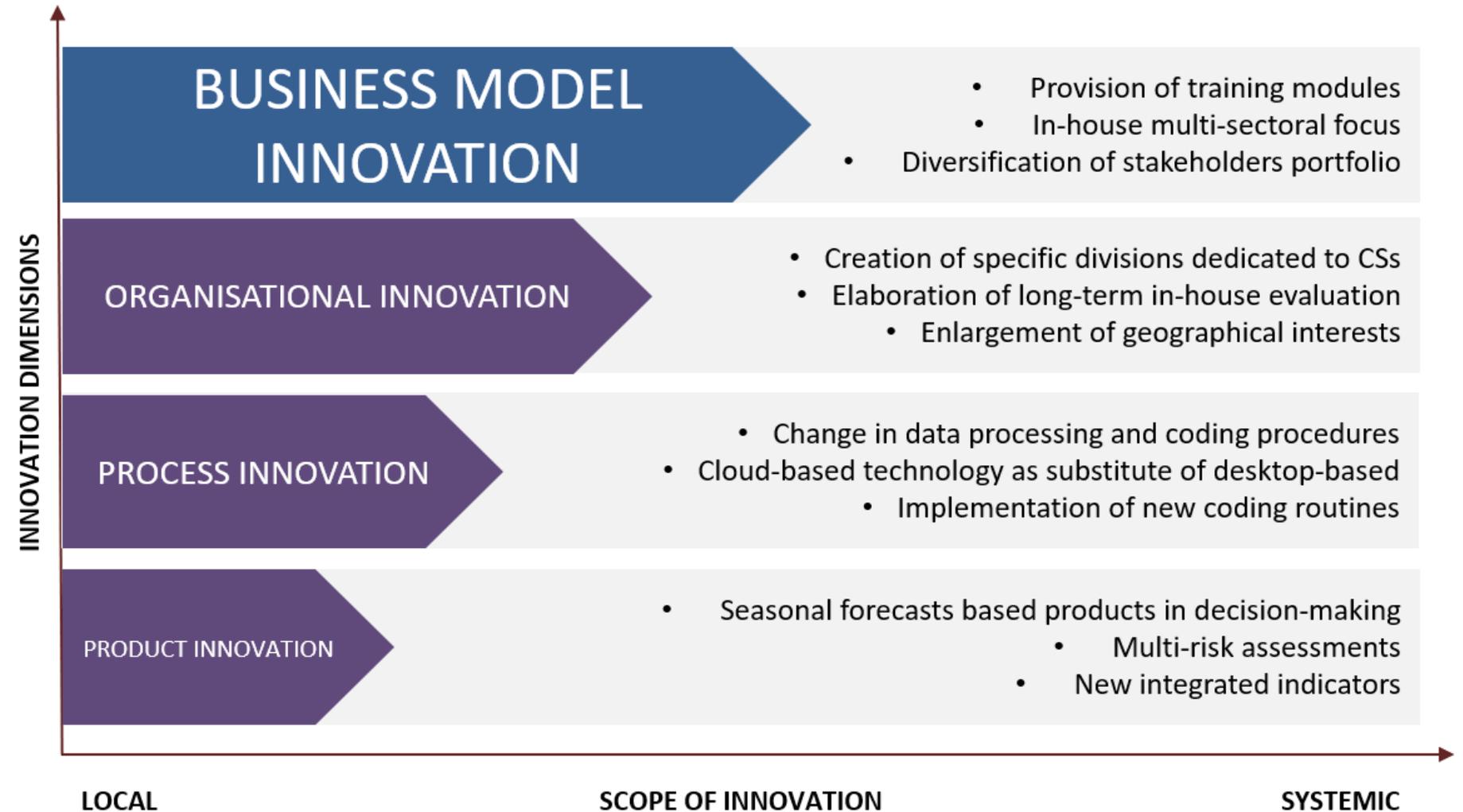


Business models for climate services

Business models for climate services (BM4CS) entail the evolving logic of an organisation to co-create value with its users so as to promote innovation and support decision-making through the transformation of climate data into bespoke knowledge services



The Market-Science-Technology nexus



From theory to practice: the research question

Theorizing and understanding mechanisms through which innovation takes place is vital to overcome bottlenecks. Despite the benefits they generate, CSs are still poorly adopted. The market the EU wants to build is not flying. Why?

Identify the main barriers and bottlenecks of existing climate services by using business models as unified framework of analysis.



Empirical insights: the sample

Semi-structured interviews with 14 CSs **co-generated** prototypes developed within the CLARA project framework.

About the project

Research and Innovation Action funded under H2020 framework.
Aim: create cutting-edge, science-based and tailored CSs while also sustain their marketing and value



About the services

Six priority sectors, five countries.

- Disaster Risk Reduction
- Water Resource Management
- Agriculture and Food
- Renewable energy
- Public Health
- Horizontal and transversal services

Special features:

- Near-term forecasts (Seasonal and Decadal) + Long-term (climate projections)
- Downscaled procedures & bias-corrections
- Technological advancements (ML, cloud-based, AI)



Empirical insights: methods

Data collection within the CLARA project:

- Face to face interviews with service development teams
- Group exercise during an event platform

Barriers are addressed per business model type for:

- *Product* innovation
- *Process* innovation
- *Market* innovation
- *Input* innovation
- *Organisational* innovation



The identified BM patterns for CSs



Access provision

Imply modifications of the value proposition and/or the channels used. They build markets for otherwise neglected groups. Service innovation achieved via: (i) new service features (growth); (ii) processes are modified and made more agile



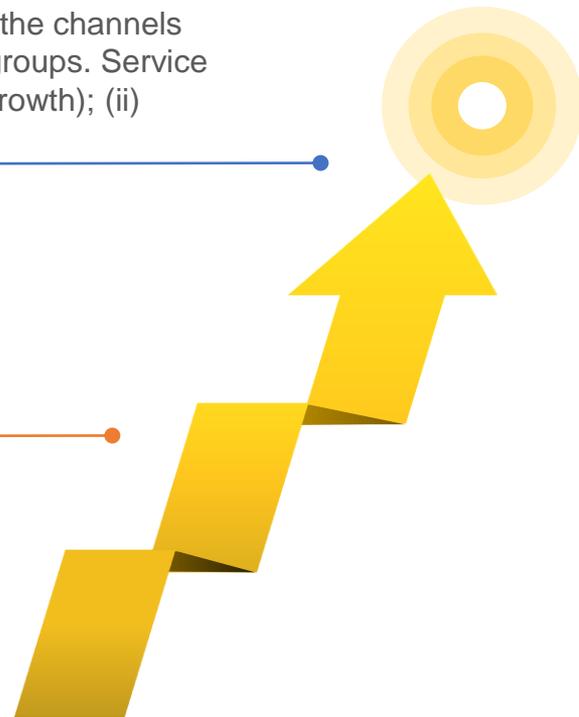
Service and Performance

Associate a service value to a product. Focused on outcomes. Strong changes in input and organizational structures. May be result-oriented, use-oriented or product-oriented CSs.



Supply chain

Service innovation achieved through upstream and downstream changes in the supply chain. Two suitable channels: (i) producing on-demand; (ii) shortening the supply chain. Appropriate for municipalities and public actors



Tackling barriers: the Access provision BM

Barrier / Type of BM	Modification of the value proposition	Change of channels to deliver the service	Revision of the financial structure
PRODUCT	The service innovation is not commercially more viable than the precursor (Value)	The user perceives the needs to incorporate the service innovation with too many additional parts (Co-dependence)	The innovation is too expensive, or the effort required to learn the new features is too high (Economic risk)
	The innovation is not compatible with precursor or consumer's routine (Compatibility)	Difficulties in observing the innovation at work (Visibility)	The use of the innovation disrupts the existing routines (Usage)
	The innovation is too difficult to understand (Complexity)	Benefits arising from the innovation's use are not well communicated (Communicability)	

Market research and identification of users' needs allows overcoming some of the listed shortcomings. Analysis of competences and skills of selected new stakeholders and partners is essential to guarantee compatibility on both a technological and content-related side. Cost-revenues, rather than Cost-benefits analysis, would help



Tackling barriers: the Service&Performance BM

Barrier / Type of BM	Result-oriented	Use-oriented	Product-oriented
PRODUCT	The service innovation has very few possibilities to be modified by the user: poor satisfaction (Amenability)	The innovation is used by groups or firms not compatible with the user's set of values (Image)	The innovation is not compatible with existing technologies (Compatibility)
	Dysfunctionalities especially at initial stages – can discourage the uptake (Functional risk)	Benefits arising from the innovation's use are not well communicated (Communicability)	The use of the innovation disrupts the existing routines (Usage)
	The innovation is not as valuable as its precursors (Value)		
The inclusion of the innovation may harm an established routine on the user side, discouraging the uptake of the climate service (Usage)			

Result-oriented innovations' barriers: logistic issues and communication with partners can increase the amount of workload, as well as creating disruptions in ordinary routines. Use-oriented innovations threatened by a wrong pricing policy; product-oriented innovations are operating in niche markets



Tackling barriers: the Supply Chain BM

- Lack of scalability: their routines, client portfolios and procedures may be too locally tailored
- Small network
- High exposure to market shocks
- Poor automatisisation

Open source policy and shared business models, as well as common practices in data management and processing may help → especially true for seasonal forecasts and subscription-based products.



Conclusions and discussion

- The study of business models for climate services is one of the possible available tools to detect barriers and opportunities
- A stronger integration between disciplines would help reaching coherence → CSs are NOT truly interdisciplinary. Yet.
- CSs as sustainable and knowledge-intensive service innovations rather than purely science-based and information-led products → new lens for analysis and discussion



Thank you

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