A systemized inventory of drivers, obstacles and mechanisms affecting the uptake of climate services

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with input from EU-MACS team

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Main features of EU-MACS

• H2020 project 2016 – 2018 twinned with MARCO project
• Assesses **drivers, obstacles and enablers** for climate service market development
• ... including the role of **innovation**
• Aims to promote **better matching** of supply options and user needs
• Engages with stakeholders from **finance, tourism and urban planning**
• Produces recommendations on policies and measures
• Offers tools and guidance for users and providers
Key building blocks

- Identifies & analyzes structural factors
  - Regulation
  - Market structure
  - Benefits
  - Risk scope

- Devises & applies interaction formats
  - In the project – stakeholders
  - In climate services provision & use

- Generates guidelines & tools
  - Policy briefs
  - Living Labs
  - FAQ
Main topics

• Structure of obstacles and mechanisms
• Value chain(s) of CS, business models, market structure
• Interaction formats (in the analysis; as tool)
• Obstacles and opportunities
• Inventory of policies & measures
• Towards a CS policy scenario
Obstacles and drivers can be arranged in 3 economically and policy relevant domains:

• **Demand** (for climate services)
• **Supply** (of climate services)
• **Matching** of offers and needs

**Structuring obstacle domains**

- **Governance / mind set**
  - Stance to climate change
  - Technology or social oriented driver

- **Demand creation factors (policy; trends)** such as:
  - Awareness, incentives
  - Climate risk reporting in finance & cities
  - Adaptation plan obligation for cities

- **Supply conditions**, such as:
  - CS RD&D budget & orientation
  - National regulations on WCS provision
  - Regulation on PPP
  - Information policy & R&D → instruments
  - Information based policies / open data realization

- **Transaction cost factors**, e.g.:
  - Search cost
  - Fitness uncertainty

- **Use probability; Demand volume**

- **Involved fringe for EU-MACS**

- **(Global) trends in technology, climate, risk attitudes, etc.**
### Value chain segments of climate service provision

(public) CS providers should realize their position

<table>
<thead>
<tr>
<th>Upstream</th>
<th>Midstream</th>
<th>Downstream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation infrastructure</td>
<td>Modelling (raw data)</td>
<td>Climate information</td>
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<td>Downscaling &amp; impacts</td>
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<td></td>
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<td>Translation layer</td>
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<tr>
<td></td>
<td></td>
<td>Use in end-user context</td>
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</tbody>
</table>

- International organisations*
- National meteorological services (NMS*)
- Public climate service centres – not NMS (PCS)
- Universities and research institutes (PCS)
- Private firms
- National / local public agencies
- NGOs

*) may also include hydrological services (NMHS); #) such as ECWMF and EUMETSAT
Value chain, providers, value added, obstacles

- It is very hard to combine skills for all 3 segments in one organization
- Seasonal and adaptation oriented climate services are largely separate w.r.t fitting interactive formats
- Market volume depends also on market structure
- Innovations in downstream and impact CS especially important
Exploration & interaction formats

Product scenario matrix

Initial palette of CS for tourism

Business model canvas

Living Labs

Cartel: CICs - climate impact and adaptation

Guidelines for Living Labs in Climate Services

Value Proposition Canvas

The Future of Climate Services

Assessment of impacts on cultural heritage Rallies assessment of resilience Projections of future heat stress

Mitigation/Sustainable Tourism

Guidelines for sustainable tourism (energy, food and beverages, waste management, mobility)

Analysis of Carbon and Ecological footprints

Discipline:

- Climatology
- Socio-economic aspects
- Environmental conditions
- Public health concerns

- Climate change models
- Land use change
- Agricultural impacts
- Urban heat islands
- Water resources management
- Ecosystem services
- Biodiversity

- Tourism and climate change
- Tourism demand forecasting
- Weather forecasting
- Climate adaptation planning
- Climate-proofing investments
- Climate-resilient tourism
- Tourism resilience and sustainability
- Tourism and climate change adaptation
Resource cost may be more in use than in acquisition even if climate service is charged.

Preparedness for joint acquisition of climate services

- No, because our climate service needs are quite specific
- No, because our climate services acquisition happens irregularly
- No, because it mixes with confidential or commercially sensitive information
- Yes, in order to better exploit the potential of climate services
- Yes, with organisations from same area
- Yes, in order to share costs / save resource use

Acquisition cost of CS
- 31% no purchase cost
- 56% modest purchase cost
- 13% significant purchase cost

Resourcing implications for use of CS
- 44% no or no notable extra resource use
- 34% moderate extra human resource and/or equipment
- 22% significant extra human resource and/or equipment
**Most prominent obstacles**

<table>
<thead>
<tr>
<th>Demand:</th>
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<tbody>
<tr>
<td>(preliminary) impact projections are of minor importance compared to</td>
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<tr>
<td>many other risks</td>
</tr>
<tr>
<td>inherently short term oriented business model (ruling out adaptation</td>
</tr>
<tr>
<td>CS)</td>
</tr>
<tr>
<td>no clue about how such information could be used in decision making</td>
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<tr>
<td>(i.e. no risk management)</td>
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<tr>
<td>lack of awareness of climate change or (seasonal) climate variability</td>
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<tr>
<td>or climate information (as regular input for decision making)</td>
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<tr>
<td>lack of incentives (e.g. if costs are (expected to be) fully</td>
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<tr>
<td>compensated)</td>
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<table>
<thead>
<tr>
<th>Supply:</th>
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<tbody>
<tr>
<td>available CS information is not really packaged as service (but e.g.</td>
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<td>rather as R&amp;D project output)</td>
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<tr>
<td>CS product portfolio is totally or largely out of scope for the user</td>
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<tr>
<td>group</td>
</tr>
<tr>
<td>insufficient resourcing of CS product development and delivery</td>
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</table>

<table>
<thead>
<tr>
<th>Matching:</th>
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<tr>
<td>mismatch of provider’s and user’s ‘language’ and conceptions</td>
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<tr>
<td>uncertainty about the eventual relevance of the CS for the user’s</td>
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<tr>
<td>decision process (‘fit for purpose’)</td>
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<tr>
<td>temporal and/or spatial resolutions do not match with other user’s</td>
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<tr>
<td>data</td>
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<td>insufficient guidance and/or embedded consultancy</td>
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EU-MACCS results based on:
- Interactions with stakeholders (surveys, workshops, interviews)
- Obstacle list review
- Rating exercise by EU-MACCS experts
<table>
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<tr>
<th>Instrument categories</th>
<th>Public and sector policies</th>
<th>Measures at organisation level</th>
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<tbody>
<tr>
<td>Financial incentives</td>
<td></td>
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<tr>
<td>o subsidies</td>
<td>Climate communication fund;</td>
<td>Sponsoring networking between</td>
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<td>o sanctions</td>
<td>Public service contracts on CS;</td>
<td>business – experts – policy</td>
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<td></td>
<td>Promoting / supporting brokerage services (e.g. start-up subsidy)</td>
<td>makers;</td>
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<tr>
<td></td>
<td></td>
<td>Promoting / supporting brokerage services (e.g. start-up VF)</td>
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<tr>
<td>Obligations</td>
<td>Regulated climate proofing (incl. resilience level); Societal risk assessments; Public service contracts on CS;</td>
<td>Sectoral guidelines and standards (such as endeavoured in the TFCD process)</td>
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<tr>
<td>o Accountability</td>
<td></td>
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<td>o Disclosure</td>
<td></td>
<td></td>
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<tr>
<td>o Minimum standards</td>
<td></td>
<td></td>
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<tr>
<td>Information</td>
<td>Regulated climate proofing (incl. resilience level); CCAV as part of business education; Ambitious open data policy; W&amp;CS marketing packages; CS Best Practice programmes</td>
<td>Sponsoring networking between business – experts – policy makers; W&amp;CS marketing packages; CS Best Practice programmes</td>
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<tr>
<td>o Training</td>
<td></td>
<td></td>
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<td>o Campaigns</td>
<td></td>
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<tr>
<td>o Open access</td>
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<tr>
<td>o Communities of practice</td>
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<tr>
<td>o Quality standards</td>
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<tr>
<td>Hybrid</td>
<td>Public service contracts on CS; Exploration of new business &amp; resourcing models ('fremium'; P&amp;U clubs; etc.); Promoting / supporting brokerage services;</td>
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</tr>
<tr>
<td>o Feebates (performance dependent) e.g. related to progress in uptake</td>
<td></td>
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<tr>
<td>o Sanctions combined with standards / open access / disclosure rate</td>
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Still in preparation: CS Policy Scenarios

Transformation ambition levels facilitating:
1. Service niches
2. Market niches
3. Regime shifts

Policy scenarios
- open data
- market separation
- charging
- obligations & accountability
Conclusions (selection)

• The greater part of current climate services (CS) related activities is realized under non-market conditions; yet there are signs of change

• Public CS providers of CS provision should pay sufficient attention to business model development, in connection with proper understanding of viable positions in the value chain (role creativity!) - also users can organize themselves by region / sector, as well as user-provider groupings

• Benefits of climate services need to be better demonstrated and communicated

• Consequent and comprehensive open data policy is key enabler, but needs careful reflection on charging and public-private domain delineation

• Given the novelty of CS for many users joint promotion of different CS (seasonal, adaptation oriented, …) is not helpful for the promotion of CS uptake

• Well communicated and harmonized standards and quality assurance will promote uptake of CS, especially if it includes links regarding climate ↔ non-climate data

• Funding limitations seem more crucial for regular CS delivery than for CS development; at the demand side funding (WTP) depends on clarity of expected benefit
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<thead>
<tr>
<th>Participant</th>
<th>Type of organisation</th>
<th>Country</th>
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<tbody>
<tr>
<td>FMI (coordinator)</td>
<td>Met-services; climate &amp; adaptation research;</td>
<td>Finland</td>
</tr>
<tr>
<td>HZG-GERICS</td>
<td>Climate services &amp; research</td>
<td>Germany</td>
</tr>
<tr>
<td>CNR-IRSA</td>
<td>Hydrological research &amp; consultancy, incl. adaptation</td>
<td>Italy</td>
</tr>
<tr>
<td>Acclimatise</td>
<td>Climate services provider</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>CMCC</td>
<td>Climate research and services</td>
<td>Italy</td>
</tr>
<tr>
<td>U_TUM</td>
<td>Market start-up support for innovations</td>
<td>Germany</td>
</tr>
<tr>
<td>U_Twente</td>
<td>Research in innovation mechanisms and policy</td>
<td>Netherlands</td>
</tr>
<tr>
<td>JR</td>
<td>Technical &amp; social innovations for climate change issues</td>
<td>Austria</td>
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<tr>
<td>ENoLL</td>
<td>Promotion and support of Living Lab applications</td>
<td>Belgium</td>
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EU MACS media & contacts

Website: http://eu-macs.eu/#

TWITTER: http://eu-macs.eu/#

Newsletter: http://eu-macs.eu/....

Publications:
• http://eu-macs.eu/outputs/#
• Climate Services – special issue with MARCO
• (spring 2019)
• Urban Climate – special issue (spring 2019)

Further questions: adriaan.perrels@fmi.fi
Thank you