



European Market for Climate Services

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Welcome to the last EU-MACS Newsletter

By Raffaele Giordano, CNR and Francesca Larosa, CMCC



The EU-MACS project is **completed**. Time for reflections and consideration has just started. It has been two intense years of work exploring barriers,

opportunities and challenges for the development of an effective market for climate services in Europe. We specifically tackled the financial, urban and touristic sector to

provide concrete examples of innovation and theories of change. We found a mounting international interest about how to adapt urban areas to climate change. All this underscores the importance of climate change adaptation planning in cities. This process can be boosted by improved use of climate services. Identifying and removing barriers and enhancing enablers for climate services market uptake for urban planning has been one of the main scopes of EU MACS. During the project implementation we learned that the peculiarities of this sector need to be accounted for: i) adaptation and mitigation are

intertwined; ii) urban planning interventions for climate change adaptation focus on medium- to long-term time scales; iii) the urban planning process has a multi-actor dimension.

The market for climate services is growing overtime with Europe leading the way across multiple sectors. Since the beginning of the project, changes happened. Private firms in the financial industry and tourism operators are progressively acknowledging the need for climate information. These include short and medium range forecasts (such as seasonal products) and climate scenarios. Urban areas also require a tailor-made approach to face increasing challenges posed by a changing climate: heatwaves and flooding on top. Together with MARCO, EU-MACS has been opening the debate about how to boost the commercial potential of climate services at national, regional and international level: the development of an efficient market is an ongoing effort and will require further analyses. EU-MACS materials now constitute part of the theoretical framework required to scan the evolution of this product. Findings from project deliverables and scientific publications are, instead, often the first collected in the field of sector-specific climate services.

Since the last time you heard from us, our consortium has been very busy. In our [Outputs](#) section on the EU-MACS website, you will see that new deliverables were uploaded and are ready for you to read. Partners met in Hamburg in early November and they actively discussed about policy instruments and policy frameworks suitable to boost the market for climate services. Throughout these months, the climate and business communities has successfully engaged in fruitful debate, trying to bridge the gap between science, policy and business. This is also valuable knowledge that will be fed into our sister project [MARCO](#).

As always, please do follow us on Twitter [@EUMACS H2020](#), as well as our sister project MARCO [@MARCO H2020](#).

Summaries from the focus sectors

A collection of project's insights through the lens of the different sectors

Urban planning: The **explorations** carried out in two urban case studies, i.e. Helsinki and Bologna, allowed EU MACS to draw some interesting conclusions about the main barriers hampering the actual market uptake of the **climate services**. Firstly, urban **climate services** should be able to work with diverse data. Planning processes for climate change adaptation are characterized by three main phases, i.e. understanding risks, planning the interventions, and monitoring and evaluating the effectiveness. Each of these phases requires different information, with different temporal and spatial scales. In order to be effective, climate-related information needs to be integrated with socio-economic information, information on community and health. Therefore, Climate Services for urban planning need to be conceived as platforms where different kinds of data and information can be integrated and retrieved. Secondly, **climate services** need to facilitate the sharing of information among the different decision-makers involved/interested in urban planning process. Thirdly, the information users, the information needed and how this information will be integrated in the urban planning process should be at the core of the **climate services** design and implementation. Finally, co-design is key for climate service development and uptake in the urban planning sector. The involvement of different stakeholders in defining the main characteristics of the climate service is a prerequisite for overcoming the barriers to

climate services mainstreaming in urban planning. This process should be supported by rigorous analysis to understand information flows and needs at the user side. The experiments carried out in EU MACS demonstrated that a collaborative design, acquisition and use of **climate services**, involving institutional actors, citizens and private actors, is feasible and can resolve broad scoped information need.

Tourism: By means of interviews, online survey and a workshop with tourism stakeholders from Austria and Finland we explored main barriers hampering the actual use and effectiveness of climate services in the tourism sector and identified potential drivers to support further product development and widespread uptake of climate services.

Despite the high vulnerability of tourism to climate variability and change, the actual use of climate services among tourism stakeholders is rather limited. The main barriers to the use of climate services in tourism include wide-spread low levels of risk awareness, a certain degree of risk denial, a lacking sense of urgency due to (yet still) little financial pressure, and rather short business decision cycles, which lead to a low prioritization of climate issues. Furthermore, lack of knowledge of existing services and their benefits, lack of applicability, and distrust in climate services restrict their use.

Recommendations for an enhanced uptake of climate services thus include the improved demonstration and communication of their added value. It is further recommended to increasingly integrate climate information into existing services and products already in use.

In order to increase affordability, joint acquisition of climate services (or of single climate services modules), that are of common interest for several users, could be an option. Here, umbrella organisations and regional

tourism associations may act as knowledge brokers.

Finance: Increasing interest from financial operators has also been noted. EU-MACS outputs include an exploratory study on climate services market for the financial sector. The work presents a baseline of current demand and supply of **climate services** across a range of segments of the finance sector. Demand is differentiated greatly by the context that financial institutions operate in. Insurance companies are interested in understanding the changing frequency and severity of extreme events under climate change, in order to price insurance premiums and products accordingly. Banks with investments in climate sensitive industries including agriculture have a vested interest in understanding seasonal drought impacts on crop production. Investors, including pension funds with long-term investments, may be more concerned with stranded assets and the transition risk this poses to their portfolio. Important changes in the regulatory landscape facing the finance sector regarding environmental and climate risks are underway. Financial regulators, central banks and governments around the world are increasingly interested in understanding climate risk as a risk to global financial stability. While this change is indeed global, European actors are leading the way. The insurance segment was seen to primarily use upstream **climate services** and services which are integrated into wider services, such as catastrophe modelling. DFIs encountered in the study showed a strong demand for advisory services, relating to the project or investment level. As some leading insurance actors and DFIs are now starting to provide **climate services** themselves, for their own and external use. Commercial banks appear to be in the early stages of their **climate services** use. While there are some examples of direct use of maps and apps, such as flood maps and climate data portals, there is a strong demand for the

translation of climate data into information which can be integrated in stress testing and risk assessments. Portfolio level analysis is currently important to this segment, mostly driven by interest in responding to disclosure frameworks. Collaborative efforts are important in this segment, as actors are currently developing capacities to utilise climate data and information.

Integration and good partnerships: the core features of a fully functional climate service

Interview with Mikko Halonen, Leading Consultant at Gaia



“In the past ten years we have contributed to bridging the gap between science and end users, hence adapting climate knowledge to businesses’ needs” – states Mikko Halonen, leading consultant

at GAIA, a Finland-based consultancy for Sustainable Business.

“Climate scenarios provided by Met Offices are the first products that entered our core business” – continues Mikko in our conversation. His experience in talking sustainability to clients and in shaping business innovation goes beyond the use of climate information and is dated twenty-five years old. It is only in the last decade that private companies have started to truly realize the value behind the inclusion of climate data in their forecasts and business planning. “Our work with climate scenarios focuses on two

challenges: (i) the identification and analysis of key parameters (rainfalls, droughts, windiness, weather extremes among others) to look at their evolution; (ii) the analysis of sectoral impacts that may span from agriculture to water and infrastructural projects, and in particular the implications for business models and market evolutions. The typical time horizon we consider is ten-twenty years ahead and we support a wide range of clients: NGOs, municipalities and private companies”.

Throughout our conversation, Mikko highlights the “strategic or systemic” nature of risks posed by climate change and the opportunities that these may create. Different clients require different entry points depending on the respective risk landscape of your client: skills and needs are heterogeneous depending on the agent. “This is where knowledge about your client becomes crucial. Knowledge about where and how to tackle them is vital to unleash the actual use of climate services”. Mikko exemplifies his view by presenting an example related to the financial sector: “financial operators – asset managers or investors – are very familiar with the use of probabilities or distribution functions. Hence, they have the right skills to understand the language used by the climate community. To make climate services effective and operational, it is crucial to know their entry point: what are these clients most interested in and what is the language to use?”.

Challenges for the development of an effective market for climate services are also linked to communication issues. According to Mikko “the climate community has done great work in promoting a comprehensive and plural knowledge about causes and impacts of climate change. However, while fully understandable from a science community perspective, perhaps there has been too much caution in speaking about uncertainties. This has diminished the effectiveness of interaction, and delayed action – even if most other policy decisions are likewise taken under multiple uncertainties”. More could be

done e.g. in communicating in terms of economic consequences (of action and/or action not taken) and climate services could be an important tool and contributor for change in this respect". Fortunately, the Paris agreement has been a "wake up call" for businesses and societies more broadly: the severe consequences of advancing climate change and terminology overall is becoming progressively more familiar to non-expert users.

When asked more in detail about barriers he sees in fully including climate services in business activities across sectors, Mikko mentions a gap between science and the private community: "financial actors and companies in general often do not know what scenario to use. They lack knowledge about credibility, accuracy and availability of climate products. The provision of simple guidelines could help solving this divide, even in the form of a dedicated section on the climate service's web-page". The market is still at early stages and may even not take-over as an independent field. Hence, there is room for improvement and innovation. "Climate services may be even incorporated as complementary to the consulting market: climate risks are part of the risk universe a firm is facing. Their inclusion in a multi-risk framework requires interdisciplinary teams and competences.

What is the secret then to make climate services fly? Mikko has an idea: "Strong partnerships are core. Still rather few climate scientists are excellent at communicating findings of the climate community to a broader audience, in particular to the business community. By building effective collaborations, climate change can be successfully integrated in clients' everyday activities. Climate services are Knowledge-Intensive business services. Hence, they are constituted by multiple pieces. Partnerships reduce complexity behind this process and help merging different competences. Only a strong partnership, with the end users and local partners can allow a Met Office in Europe to deliver a climate service for Ethiopian farmers: such a partnership helps reduce costs and maximize impact. . The

business case behind climate services is becoming clearer everyday: avoided costs and increased resilience are essential for profitable and sustainable businesses. Obviously, the magnitude of their effects on firms' balance sheets varies depending on the sector, location and type of value chains. Therefore, successful business models for climate services must recognize these differing client needs in order to make climate information commercially valuable".

Reports from recent events

A journey through Climate Innovation: when science meets business (InnoSpace Journey and Pioneers into Practice Programs, Summer 2018)

Climate-KIC is Europe's largest public-private innovation partnership focused on climate innovation to mitigate and adapt to climate change. Among others, its educational programs are helping to link science, business and policy-making through the enthusiasm of innovators-to-be. The InnoSpace Journey and the Pioneers into Practice are two of them and saw the participation of two CMCC post-lauream researchers: Francesca Larosa and Andrea Staccione.

The [InnoSpace Journey](#) is supported by Copernicus and it is aimed at combining Earth Observation (EO) data and products with entrepreneurial skills. The forty selected participants gather knowledge of Copernicus platform, with the objective of applying them to create the business plan of a disruptive ready-for-market service. The program is a five-week intensive Summer School and offers the InnoSpacers the opportunity to travel in three different countries (Italy, Sweden and The Netherlands). The format allows participants to interact with Climate-KIC broad network of partners and stakeholders and to acquire the adequate skills in data, business models, design thinking and communication. Francesca (from CMCC

Climate at Ca' Foscari) is one of the forty participants of this year edition. Together with her team, she created BalanceShift, a climate service dedicated to revalue companies' assets accounting for climate change. The idea was deemed the best during an event at the European Space Agency Business Incubator Center (ESA-BIC) in late July and was then accepted in two accelerator programs: the Copernicus Accelerator and the Astropreneurs Accelerator.

[Pioneers into Practice programme of Climate-KIC](#) is a professional mobility programme, developing skills for climate change innovation projects. Pioneers explore Transition Thinking and System Innovation tools for climate actions, both working on a real climate challenge and spending a mobility period in Europe, hosted by organisation from across public, private, research and not for profit organisation, contributing to climate innovation projects.

Andrea Staccione, from CMCC has been selected and worked on the requalification of Villa San Martino area in Pesaro (Italy) as a Smart Sustainable District as real climate challenge. She spent her placement period (August 27-September 21) at the Aalto University (Helsinki, Finland) working on 'regenerative nature-based solutions for health and well-being in urban environment' task.

She explored and investigated the potentiality of using nature-based solutions (NBS) in urban context to improve health conditions and quality of life in future climate change conditions. Providing climate regulating functions and green spaces for recreational activities and social cohesion, NBS can have a key role in changing lifestyle and improving environmental quality for urban citizens.

Final stakeholder meeting of H2020 projects MARCO and EU-MACS in Berlin (28/09/2018)

COPERNICUS Climate Change Services (C3S) is a large endeavour funded by the European Commission and implemented as part of the COPERNICUS programme to create a very versatile climate data hub as basis for climate services development. ECMWF is the coordinator and host of the programme. It should be realized that long term projections are available via C3S in the Climate Data Store (CDS), but are hitherto not the mainstay of C3S. A C3S survey showed that users of CDS, which are mainly active in upstream and midstream parts of the value chain, were mostly quite satisfied with the features and



products of CDS. So far 81% of the European users has a public or academic status (figure below).

It was admitted that despite the openness of CDS, de facto a high expertise level is needed to make proper use of CDS. Also more attention for linkage to downstream CS would be welcomed, and a growth in CDS based downstream CS product portfolios was desired (even though that goes beyond the remit of C3S).

The MARCO and EU-MACS projects presented the highlights of their projects, in as far as results are already reported. Particular interest caused some of the recommendations, such as regarding more attention for business model designs also for publicly provided CS, as well as the realization that public CS providers not necessarily have to cover the whole value chain themselves, QA for non-climate data. On

Friday 28.9 the stakeholder event was opened with a similar presentation of MARCO and EU-MACS highlights as on 26.9. Feedback from the audience concerned, among others, the role of public vs. private CS providers in conjunction with open data policies and degree of separation of public and private CS domains [EU-MACS], as well as the possible roles of a so-called market observatory [MARCO].

Subsequently, the use of business model identification tools (e.g. BM canvas) was illustrated and comments from the audience elicited. There was a solid common understanding that essential ingredients for a successful CS are: (1) relevance for the user, and (2) economic value unleashed by CS. The BM concept was further elaborated and tested in a task group session dealing with CS for different sectors. In the afternoon a highly interesting panel discussion was staged, including Jean-Noël Thépaut (C3S), Robin Hamaker-Taylor (Acclimatise/ EU-MACS), Markku Vieru (University Lapland), Marc Weissgerber (Climate KIC Germany), Jürgen Kropp (Potsdam Institute for Climate), Jörg Cortekar (HZG GERICS/EU-MACS & MARCO) and moderator Jaroslav Mysiak (CMCC/EU-MACS).

In response to the preceding exercises the panel emphasized the **importance of clarifying the benefits which can be generated by using CS**. In turn this requires a genuine affinity of the CS provider with the decision context of the user. For upstream – data centred – CS providers it may mean that they don't need to listen so much to so-called end-user needs, but rather to the midstream and downstream CS providers, which reprocess climate data into sector relevant (downstream) CS. Different sectors may need quite different approaches, e.g. in the electricity sector final stages of the CS as part of a broader decision process are often carried out in-house, whereas in the tourism sector CS

will often constitute decision ready information.

Adriaan Perrels, Finnish Meteorological Institute (FMI), Helsinki, Finland

Climathon: how a 24-hour hackathon can help solving climate change (26/10/2018)

Can a pool of brilliant minds find a solution to challenges posed by Climate Change in 24 hours? The global answer to this question is “yes” according to Climathon – a disruptive hackathon that happened worldwide on October, the 26th. The event involves citizens', students, researchers, professionals' ideas and expertise to address specific city challenges. Torino (Italy) was chosen as global venue: more than 50 people gathered together to propose efficient management solutions of hydric resources.



In Venice, participants focused on waste reduction, recycle, reuse and management. In Lecce, the focus was on urban green spaces.

Winners of every Italian city participated to Ecomondo in Rimini. There, a jury elected “LightBlu”, the Venice winner as the most innovative and technologically feasible solution presented. The concept aims at combining economic incentives and technology to address and reduce the impacts of the plastic produced by tourists in Venice every year. LightBlue will promote the development and distribution of sustainable and eco-friendly water bottles that represent a real “ticket for Venice”: the QR code printed on the front side of the bottles guarantees

discounts for local transport and museums. A way to encourage the enjoyment of the beauty of Venice in a green perspective.



Francesca Larosa, Euro-Mediterranean Center on Climate Change (CMCC), Venice, Italy

Climate Services at COP24 in Katowice in a joint side event

Climate services and climate innovation support transitions to low-carbon and climate resilient societies. This paradigm is even more relevant if we consider the brand new [2050 energy strategy](#) launched by the European Union to build a carbon neutral European economy.

Together with other European Innovation actions (CLARA, COACCH, EUCP, PLACARD, CLARITY, MED-GOLD and S2S4E), EU-MACS participated to a jointly organized side event at COP24 led by Dr. Jaroslav Mysiak (CMCC). Prof. Adriaan Perrels brought to the table the findings and lessons learnt acquired during the project. The session was held in Room Brussels on December, the 5th at 4pm and delivered insightful messages on how to use tailor-made and user-friendly climate services to promote climate-resilient transitions.

Webinar on climate services for Finance

On 12 December 2018 Robin Hamaker-Taylor (Acclimatise) presented an overview of

lessons learned for the financial sector. The webinar attracted a substantial audience and can be still watched through [this link](#). The good news is that the financial sector has started to include climate change and climate policy in its risk assessments. The bulk of the sector is however at the very beginning of such an integration process, leaving still a lot of questions on most useful climate services. The variety will be large, but climate service providers should budget for high reliability standards and new forms of cooperation and new value chains.

Outputs of the project

During the last two months the project spawned a flurry of reports: on prospects and obstacles for the financial sector (D2.1), on the project synthesis – including an assessment of climate services promoting policy packages (D5.1, D5.2), and on the overall synthesis with twin project MARCO (D5.3), which includes also numerical assessments of market prospects as well considerations about a so-called *market observatory*. Also two policy briefs were published (D2.3 – finance; D5.4 – overall).

Below we present short summaries of the report type of deliverables D2.1, D5.1, D5.2, D5.3. These and all other new output can be found from <http://eu-macs.eu/outputs/#>. If you lack time, just jump directly to the [Policy Brief](#) covering the messages of the whole project?

The web-site has a [brand new look](#): reports, deliverables, publications and contributions are now easier accessible for consultation.

Deliverable 2.1 – Policy implications (December 2019)

Important changes in the regulatory landscape facing the finance sector regarding environmental and climate risks are underway. Financial regulators, central banks

and governments around the world are increasingly interested in understanding climate risk as a risk to global financial stability. While this change is indeed global, European actors are leading the way. Insurers and Development Finance Institutions (DFI) represent more experienced user segments in finance. The insurance segment was seen to primarily use upstream climate services and services which are integrated into wider services, such as catastrophe modelling. DFIs showed a strong demand for advisory services, relating to the project or investment level. These user segment also start to offer climate services themselves. Commercial banks appear to be in the early stages of their CS use. While there are some examples of direct use of maps and apps, such as flood maps and climate data portals, there is a strong demand for the translation of climate data into information which can be integrated in stress testing and risk assessments. Portfolio level analysis is currently important to this segment, mostly driven by interest in responding to disclosure frameworks.

Deliverable 5.1 – Reviewing and rating obstacles (December 2019)

D5.1 provides a systematic review of obstacles and mechanisms affecting the uptake of climate services. It also presents a rating and an analysis of causal relations within and between obstacles affecting demand, supply and matching respectively. From these findings can be inferred that policies aiming to mainstream or oblige climate change risk disclosure across many sectors is crucial. At the supply side a much better integration of user needs and views in climate services design and delivery is important, whereas public providers should also timely and systematically ponder appropriate and viable resourcing models for (new) climate services.

Deliverable 5.2 – Policy implications (February 2019)

D5.2 offers (1) an assessment of appropriate business models for various climate services

types, given certain market conditions and resourcing options, (2) a broad palette of innovation oriented policies and measures to promote climate services, and (3) three climate services policy packages suited to three different governance approaches (which each can be typically found in the different EU Member States,). Policy mixes tuned to the governance approaches are subsequently assessed on their effectiveness within each governance approach. The three governance approaches, presented as three distinct scenarios, are ‘state-centred’, ‘business-centred’, and ‘network-centred’:

- The ***state-centred-scenario*** is driven by equity and safety concerns, and aims to ensure sufficient resilience across society, in all regions to the extent needed and deemed affordable. In this policy scenario can still be a lot of room for private climate service provision, but there will be a stronger inclination to public intervention.

- The ***business-centred scenario*** is based on a firm belief in the creativity of free markets, implying that this approach best enables a high innovation rate of climate services. Public climate services would largely be limited to basic data, services meant for citizens, and climate change scenarios.

- The ***network-centred scenario*** is driven by the notion adaptation and resilience are often best dealt with at regional and local level and benefiting from bottom-up initiatives, meaning that local actors (citizens, civic groupings, companies, regional collaborations, etc.) have a central role, even though facilitated by public facilities and/or support.

In all three governance approaches policy packages can make a significant difference in uptake. Nevertheless, it seems that the network-centred approach tends to offer the best prospects for uptake, when accounting for the fact that the different governance approaches can slip into promoting **additional**

agendas, alongside climate services promotion.

EU-MACS Scenario Workshop at GERICS, Hamburg (1-2/11/2018)

In order to deepen and verify the outlines of the climate service policy scenarios eventually presented in D5.2, partners met in Hamburg to engage in synthesis discussions in a workshop. This collective effort was held in GERICS premises in and saw the participation of FMI, University of Twente, GERICS, Acclimatise and CMCC, with the online attendance of CNR-IRSA.

Participants worked together to develop storylines about alternative Climate Services policy strategies based on distinct governance views regarding some key issues: open data and private/public roles among others. Inputs were collected and incorporated in Deliverable5.2 (forthcoming). They represent the policy-oriented contribution to 18 months of work on business models and market structure of climate services and key sectors: tourism, urban planning and finance.



Participants brainstormed about three distinct Climate Services policy options. They used a policy acceptability cycle approach, capable of linking process and outcome by exploring some key criteria: effectiveness, efficiency, governance, side-effects, international fitness and acceptability. During the workshop, partners reviewed the existing

policy instruments available or foreseen at European level. These can also be defined as interventions of public authorities within a well-defined context, with the aim of achieving targets and policy goals. They are implemented by measures: more concrete actions that lead to a pre-specified set of achievements.

Policy scenarios worked used a “what if” logic and were based on the perspective of the European legislator. Despite the qualitative nature of the exercise, policy scenarios support the framing of potential futures according to three settings: 1. a fully public regulation that makes climate intelligence as mandatory and constitutive in every policy domain; 2. A free-market framework, where the mechanisms of demand and supply regulate the provision and uptake of climate services; 3. A mixed situation, where the public actor inspires efforts and gives incentives, leaving to the private one the action.

Francesca Larosa, Euro-Mediterranean Center on Climate Change (CMCC)

Mark your calendar

This section highlights opportunities and initiatives in the field of climate services you may want to mark or use.

Science magazine invites signatories to support the youth climate strike

If you are a climate scientist or researcher on climate change, Science Magazine invites you to support to the endorsement of the youth climate strike happening around the world. [A recent article](#) named “Concerns of young protesters are justified” came out last week on the magazine. Thousands of scientists already signed the open letter. Among others, the article highlights the role of existing solutions

and technologies and the urgency in using them to reduce emissions.

European Conference on Climate Change Adaptation (ECCA) – Lisbon, Portugal

The biannual ECCA conference is approaching this May in Lisbon, Portugal. Researchers and practitioners working on climate services are gathering together to engage in discussions around the provision and dissemination of climate information. The interdisciplinary approach ECCA uses will allow fruitful discussions around what has to yet to be done to foster the use and the uptake of climate services. The importance of climate services has been fully acknowledged by ECCA organisers through the setting of multiple sessions across the days. The full program is available at this [link](#). The role of climate services for society in the context of ECCA has been summarized by Dr. Jacob in a [recent blog post](#).

Copernicus Climate Change Services Call for Tenders

Implemented by the European Centre for Medium-Range Weather Forecasts (ECMWF) on behalf of the European Union, the Copernicus Climate Change Service (C3S) is launching two ongoing Invitation to Tender (ITTs) for '[Use Case](#)' (bids in the range €100,000-250,000) and '[Demo Case](#)' (bids in the range €50,000-150,000) contracts. Both require organisations to develop and demonstrate applications based on C3S products and/or the tools provided by the [Climate Data Store](#). Applications can be proved useful in multiple sectors and will contribute in fostering innovation in Europe. The last deadline is June 2019. Detailed information can be accessed [here](#).

Recent publications and reports

The first article of the special issue of Climate Services based on MARCO and EU-MACS is available – well done Andrea and colleagues!:

A. Damm, J. Köberl, P. Stegmaier, E. Jimenez, A. Harjanne (2019). **The market for climate services in the tourism sector – An analysis of Austrian stakeholders' perceptions**, (on line)

<https://doi.org/10.1016/j.cliser.2019.02.001>

The article highlights user needs in the context of Austrian tourism. These range from usability and applicability of research-led products and correctly point where specific requirements are. Awareness-raising of climate risks remains one of the main drivers for climate services uptake. However, absent long-term risk management still hinders the use of climate services. Due to rather short business decision cycles, many interviewed stakeholders showed, if at all, a higher interest in weather services and seasonal products than climate services. Nevertheless, dealing with weather variability and using weather services may also increase the interest in climate services to some extent and thus could be used as potential leverage for climate services uptake. The use of climate services in the tourism sector, however, may be more of a concern for tourism service providers with high investment needs in infrastructure and high vulnerability.

Alexander, M. and Dessai, S. (2019). **What can climate services learn from the broader services literature?**. Climatic Change [10.1007/s10584-019-02388-8](https://doi.org/10.1007/s10584-019-02388-8)

Climate services seek the timely production and delivery of useful climate information to decision-makers, yet there continues to be a reported 'usability gap'. To address this, many have advocated the coproduction of climate services between knowledge producers, providers and users, with a tendency to focus on tailoring information products to user

needs, with less attention towards the service environment itself. In service management and service marketing fields, this is referred to as the 'servicescape' and is shown to influence behavioural intention, value creation and perceived service quality. In an effort to facilitate cross-disciplinary learning, this research asks whether climate services can learn from other service-based research in public administration/management, service management and service marketing. Performing a semi-deductive literature review, this perspective article examines themes of coproduction and servicescapes, and identifies relevant topics for future climate services research around the added value of service-dominant logic, the subjective experience of users' interaction with servicescapes, and empowerment of users as co-producers of value. This is an important first step in promoting further cross-disciplinary learning to advance both scholarship and operational delivery of climate services.

Mysiak, J., Castellari, S., Kurnik, B., Swart, R., Pringle, P., Schwarze, R., Wolters, H., Jeuken, A., and van der Linden, P.: **Brief communication: Strengthening coherence between climate change adaptation and disaster risk reduction.** *Nat. Hazards Earth Syst. Sci.*, 2018, Vol. 18, pp. 3137-3143, <https://doi.org/10.5194/nhess-18-3137-2018>

Reducing disaster risks and adapting to climate change are ever more important policy goals in Europe and worldwide. The commitment to the 2030 Agenda for Sustainable Development and complementary multilateral frameworks, including the Sendai Framework for Disaster Risk Reduction 2015–2030 and the Paris Agreement on Climate Change, has galvanized pursuits for policy coherence. The report *Climate change adaptation and disaster risk reduction in Europe: enhancing coherence of the knowledge base, policies and practices of the European Environment Agency* identified

several ways for how coherence and resilience can be built through knowledge sharing, collaboration and investments.

Zscheischler, J., Westra, S., Van Den Hurk, B. J. J. M., Seneviratne, S. I., Ward, P. J., Pitman, A., ... Zhang, X. (2018, June 1). **Future climate risk from compound events.** *Nature Climate Change.* Nature Publishing Group. <https://doi.org/10.1038/s41558-018-0156-3>

Floods, wildfires, heatwaves and droughts often result from a combination of interacting physical processes across multiple spatial and temporal scales. The combination of processes (climate drivers and hazards) leading to a significant impact is referred to as a 'compound event'. Traditional risk assessment methods typically only consider one driver and/or hazard at a time, potentially leading to underestimation of risk, as the processes that cause extreme events often interact and are spatially and/or temporally dependent. Here we show how a better understanding of compound events may improve projections of potential high-impact events, and can provide a bridge between climate scientists, engineers, social scientists, impact modellers and decision-makers, who need to work closely together to understand these complex events.

Ernst, K.M., Swartling, A.G., André, K., Preston, B.L., Klein, R.J.T. (2019). **Identifying climate service production constraints to adaptation decisionmaking in Sweden,** *Environmental Science and Policy* Vol.93 pp.83–91 <https://doi.org/10.1016/j.envsci.2018.11.023>

This paper tackles the production side of climate services and points out different needs for the Swedish context. Semi-structured interviews and participants observations during learning events were performed in two different moments between September 2016 and February 2018. Authors classified and categorised constraints of 38 informants finding that technical complexities,

mismatched considerations and stakeholder engagement constraints can significantly harm the uptake of these services for adaptation decision-making.

R.B. Street, C. Buontempo, J. Mysiak, E. Karali, M. Pulquério, V. Murray, R. Swart (2019). **How could climate services support disaster risk reduction in the 21st century**, *International Journal of Disaster Risk Reduction*, Vol.34, pp.28-33. <https://doi.org/10.1016/j.ijdrr.2018.12.001>

Despite the obvious links, climate change adaptation and disaster risk reduction have been developed largely as separate policy domains. This has resulted from a range of reasons, including the different temporal and spatial scales considered by the two domains, the diversity of actors involved in them and the policies and [institutional frameworks](#) of relevance, as well as the differences in the terminology and methodological approaches used in research activities related to the two domains. As a result, the climate change adaptation and disaster risk reduction communities are not always well connected and both generally regard the other community as covering only a subset of their work. This paper summarises key challenges as identified by a set of experts in the field. These include the poor communication between the two communities, the accessibility of relevant and quality-controlled information, the understanding of information needs.

Report: **Finance for a Climate Resilient Future**

<https://www.citigroup.com/citi/sustainability/data/finance-for-a-climate-resilient-future.pdf?ieNocache=214>

Citigroup's decision to implement the TCFD Recommendations recognizes that climate change is one of today's most critical issues and presents risks that must be carefully managed. Chronic changes to temperature and precipitation, rising sea levels, and more intense and frequent extreme weather events are among the climate shifts scientists anticipate as our world continues to warm.

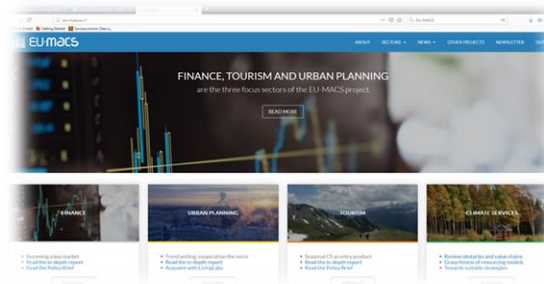
These changes will disrupt supply chains, damage infrastructure, reduce crop yields, and lead to a decline in biodiversity, among other wide-ranging impacts, and they will have catastrophic effects on people and species worldwide.

These climate risks underpin the crucial need for our society to successfully transition to a low-carbon economy and invest in climate adaptation and mitigation solutions. While this transition poses risks to certain sectors, it also creates opportunities for Citi to support our clients in making investments in clean energy, infrastructure and technology.

Goodbye - thanks - we'll meet again

Adriaan Perrels (FMI; coordinator EU-MACS)

The EU-MACS project has drawn to a close by the time you receive and read this Newsletter. For us as research team it was (and still is 😊) an interesting research project in which we learned a lot of useful insights for follow-up work. Probably or hopefully rather, for several partners the obtained insights will be used to further enhance development and provision of climate services. Similarly, I hope that third parties, be it researchers, consultants, policy makers, or current and prospective climate service users, can continue to benefit from the output and findings of EU-MACS. To help you with that we updated the [web-site](#), making it more straightforward to find the output (per sector or overall) and e.g. explore the '[protocols](#)' giving you further guidance on how to proceed with climate services



We also added a [new page](#) with thematically organised links to ongoing projects regarding climate services. We are willing to add links, if you think your project belongs in that list as well.

I also would like to thank the colleagues, and notably the coordinator, of the twin project MARCO for the highly constructive cooperation. When you visit the web-site of either project you will notice a lot of outreach was happily carried out together, while the common synthesis report ([EU-MACS D5.3 / MARCO D7.5](#)) was the result of extensive cooperation, which started with a work(sweat)shop in Munich.



On behalf of the whole team of EU-MACS I conclude with saying goodbye, thanking for your interest, hoping for your continued interest, and that we'll meet again for new interesting endeavours.



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