



MARCO

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Recommendations

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Summary

The MARCO project aims to characterise the market for climate services in the EU and define a framework for further observation and facilitation. Reflecting on the outcomes and conclusions from the previous MARCO deliverables as well as stakeholder discussions held during the project, this report presents: - The support functions that would be useful to an integrated market support platform, - The key outputs that MARCO produced and that would contribute to the foundations of such potential platform, - Some recommendations to strengthen the primary market support functions, reflecting on the lessons learnt from the market characterisation, - Some recommendations tailored to different types of stakeholders: climate service providers, climate service purveyors, end-users and policy-makers. Finally, the report calls for continuous monitoring of the related market intelligence as well as the promotion of climate services, in order to accelerate the transition to a climate-resilient economy in the EU. It offers some tangible perspectives on the envisaged modalities of a market support platform for climate services in the EU : MARCO recommends the set-up of an instrument that would combine functions of a market observatory and of a community platform, with dimensions of market place and "collaboratory". The business model for such a hybrid scheme shall need to be more precisely defined in the upcoming few months. Indeed, a combination of several factors: (a) the need for such an instrument, confirmed through stakeholder engagement and multiple conversations (bilateral, within conferences, workshops, festivals), (b) the necessity to effectively start operations of the instrument to attract a community of providers, purveyors and users and to progressively refine and enrich its functionalities, (c) the desire to use outcomes from the MARCO project before they must be updated, pleads for a targeted launch in 2019.

Approval

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1 Introduction

The MARCO project aims to characterise the market for climate services in the EU and define a framework for further observation and facilitation of the market's development. This notably includes the definition of a taxonomy (see Deliverable D2.3), the identification of gaps between the identified supply and demand (see Deliverable D2.5), and the development of potential innovation models to address those gaps (see Deliverable D2.6).

Following this market analysis, as well as considering the outcomes from the sectoral case studies (see WP5), this report presents:

- The support functions that would be useful to an integrated market observatory / support platform,
- The key outputs that MARCO produced and that would contribute to the foundations of such a potential observatory / platform,
- Some recommendations to strengthen the primary market support functions, reflecting on the lessons learnt from the market characterisation,
- Some recommendations tailored to different types of stakeholders: climate service providers, climate service purveyors, end-users and policy-makers.

Finally, the report offers some tangible perspectives on the envisaged modalities of a market observatory / support platform for climate services in the EU, and thereby calls for continuous monitoring of the related market intelligence as well as the promotion of climate services, in order to accelerate the transition to a climate-resilient economy in the EU.

2 Market Support Needs for Climate Services in the EU

Market observation for climate services and engagement or matchmaking platforms already exist in several European locations and for various sectors. Such instruments have already gone some way in facilitating the connection between service providers, purveyors and users. However, as described below in more details and in indicated deliverables of the MARCO project, full identification and widely shared understanding of the gaps between supply and demand, quantitative evaluation of the potential for growth are still uneven and incomplete. The necessity of 'translators' across the successive layers of the market between data and final use remains, a transparent and coherent view of the current and potential market based on market intelligence and foresight on future needs and demand, including new value chains and relevant combinations of existing and future services, would benefit all actors and enable a broader and more systematic dissemination of climate service use, together with higher awareness of their economic benefits and positive climate impact. A comprehensive recension of existing mechanisms should allow the 'observatory' to avoid duplication with current effective tools, to address the biggest gaps and to enhance integration of the market and its development.

As presented in D2.3, the market for climate services in the EU has been steadily increasing since 2010 but has not boomed (yet). In that context, some support functions have been identified and discussed during stakeholder consultations that took place during 2 workshops in November 2017 and September 2018 as well as specific sessions with the MARCO project consortium.

2.1 Overview of relevant market support components

Figure 1 summarises the different market support components (14) that could be envisaged to build a robust and long-term market 'platform' for climate services in the EU. This aims at providing an overview of how the market of climate services could be supported. It does not necessarily imply that an instrument called an 'observatory' of the market of climate services (see also paragraph 6.4.2 below) should gather all of these components: it could put together a relevant subset of this set of 14 components and look to work in collaboration with other instruments and initiatives dealing, either currently or in the near future, with the remaining components.

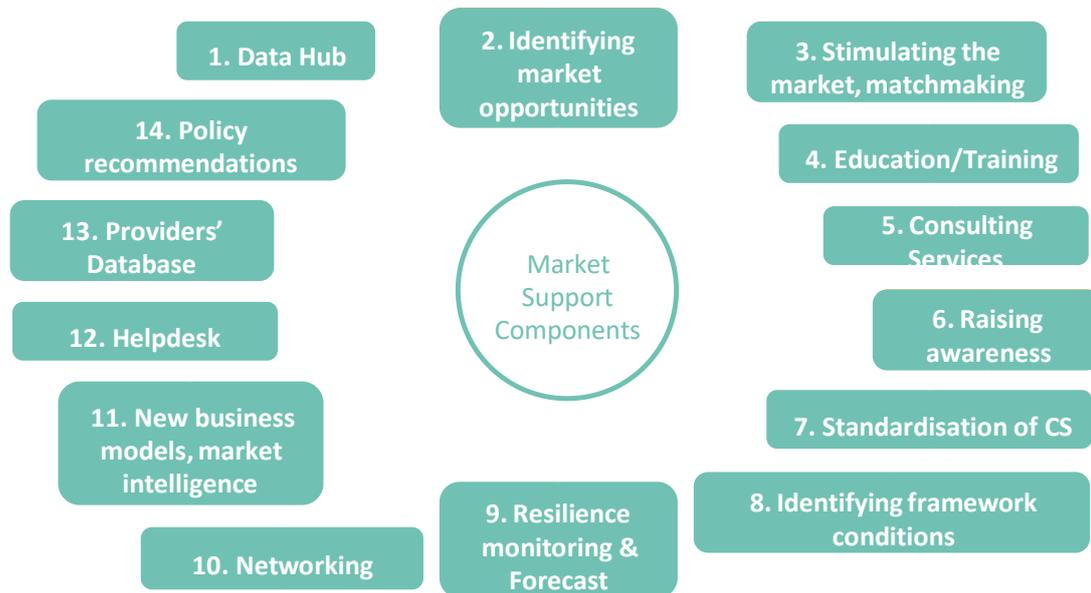


Figure 1 - Market Support Components

(1) Data hub: The ‘platform’ would provide some comprehensive referencing of available climate database and information systems that could support the development of more advanced or better tailored services. It would also indicate some background information on modelling parameters, frameworks and uncertainty.

(2) Identifying market opportunities: The ‘platform’ would highlight the economic sectors where the demand for climate services is not met and where climate services purveyors could therefore be interested in developing tailored response systems.

(3) Stimulating the market, matchmaking: The ‘platform’ would facilitate the collaboration between climate services providers, purveyors and end-users, with the provision of a matchmaking service that would enable a potential end-user to effectively find the appropriate provider of one, or a combination of climate-driven solutions. It could also be considered as a trusted, neutral brokering platform, potentially drawing on the experience of organisations with a strong record and profile under this respect.

(4) Education/Training: The ‘platform’ would also provide some education and training materials, to better inform on range, relevance and use of existing climate services and their large scope of implementation, and therefore to build up the capacity of end-users to further appropriate the services. In particular, sector-specific training modules could be developed to ensure the mainstreaming of standardised climate services in specific promising sectors, targeting providers as well as non-specialist users.

(5) Consulting Services: The ‘platform’ would directly link interested end-users with a pool of climate service experts that could offer a tailored consultation on the end-user’s specific demand and then contribute to developing a package solution based on existing or to-be-adjusted climate services.

(6) Awareness Raising: The ‘platform’ would showcase communication products to inform on the large scope of implementation of climate services and highlight successful case studies that can provide incentives to end-users to better assess their needs in terms of climate services.

(7) Standardisation of climate services: The ‘platform’ would enable to gather climate service providers, purveyors and end-users, in order to further mainstream the use of climate services in specific sectors. It would therefore facilitate greater standardisation of climate services, which could further boost their market uptake, and in turn allow for the design of more deliberate combinations of climate services that could transform whole systems towards stronger positive climate impact.



- (8) Identifying framework conditions: The 'platform' would provide the relevant background information in terms of infrastructural, technical, human and institutional capacities to develop, provide and promote high-quality climate services. It would then support greater integration and coordination across stakeholders and sectors in the climate action agenda.
- (9) Resilience monitoring and forecasting: The 'platform' would offer some forecasting features on the market for climate services, taking into account the evolution of climate-related vulnerabilities, the development and implementation of forthcoming policies and informing guidelines to boost the transition to climate-resilient models.
- (10) Networking: The 'platform' would create networking opportunities for climate service providers, purveyors and end-users to directly interact and potentially initiate co-designed projects to respond to specific market needs.
- (11) New business models and provision of market intelligence: The 'platform' would inform stakeholders on sectoral and, later on, cross-sectoral market intelligence, with regular updates to highlight evolutions and trends. Innovative business models would be showcased to inspire suppliers and to attract potential investors.
- (12) Helpdesk: The 'platform' would provide some secretariat assistance to guide any stakeholder through the support functions of the 'platform' and link them with the most appropriate experts that would help address their request.
- (13) Providers' database: The 'platform' would set up an inventory of available climate service providers in the EU, with clear information on the provider, the scope of implementation, and any feedback/review from end-users.
- (14) Policy recommendations: The 'platform' would provide some analytical reports and notes, advocating for some policy measures to be implemented to support climate-proof economies supported by wider use of climate services, at EU, national or subnational levels.

2.2 Existent contributions to market support

Depending on the component, the role of the 'platform' would vary between clarifying the landscape of information, articulating existing mechanisms and facilitating navigation between them in more seamless ways, and more substantially developing by itself parts of the landscape where the current offer is much more fragmentary and incomplete. For instance, component 1 is largely dealt with by Copernicus C3S, which also contributes to components 3, 4, 6, 7, 10, 13. In some EU Member States, national platforms and instruments contribute notably to components 3, 13, Climateurope to components 6 and 10. Components such as 2, 5, 8, 9, 11 are little or less covered at this stage and would most clearly justify new investment. However, while it is critical to not replicate existing or already planned contributions to the other components and create unwanted redundancy but rather create synergies between the various initiatives, instruments and programmes involved, some limited degree of overlap might be unavoidable. There is a margin of progression to increase consistency across the market of climate services and understanding of the market for all categories of providers, purveyors, users and decision-makers.

3 Focus components from MARCO activities

MARCO has already set strong foundations for 5 of the 14 market support components identified in section 2. This section summarizes key outputs from MARCO research activities on these 5 focus components.

3.1 Identifying market opportunities

3.1.1 Sectoral market conditions

It is essential to recognise that future demand for climate services will reflect sectoral and regional specificities, notably production values, social profiles, vulnerabilities, legal obligations, risk appetites, perceived opportunities, experience of loss and damage, and awareness of climate-related risks. MARCO has provided an insightful snapshot of the market conditions for climate



services in 9 different sectors in the EU, as summarised in Table 1, as well a synthetic overview highlighting framework conditions and market growth potential (see D5.1).

Table 1 - List of sectoral case studies

Deliverables	Sector	Geographical Area
D5.2	Real Estate	Copenhagen
D5.3	Mining	EU
D5.4	Legal Services	London
D5.5	Renewable Energy	Denmark
D5.6	Water and Sanitation	Catalonia
D5.7	Critical Energy Infrastructures	Germany
D5.8	Agriculture and Forestry	France
D5.9	Urban Infrastructure	Munich
D5.10	Tourism	Austria

The selection of sectors reflects different market stages, with different volumes of transactions. Figure 2 shows the value of climate services as identified in the MARCO case study sectors at a global scale (see D4.5).

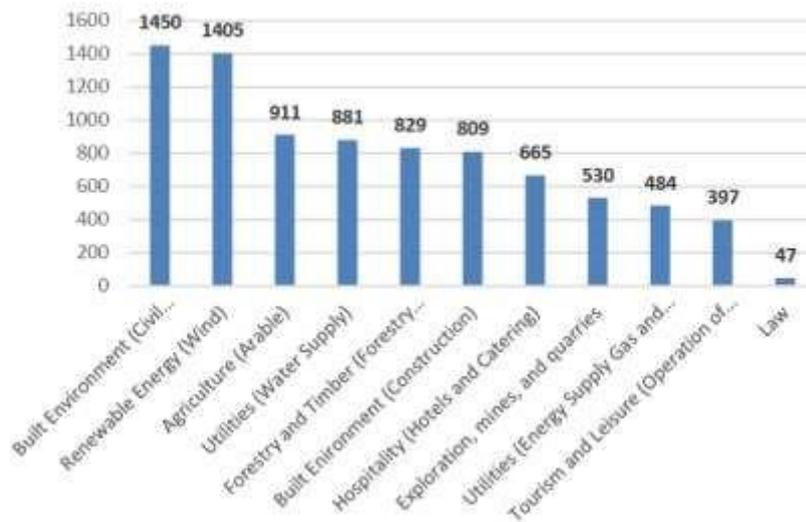


Figure 2 - Value of the global climate services market by sector in 2015/2016 (M€)

Currently, the greatest volume and clearest expression of climate services demand is for the translation of climate-related information into sector-specific knowledge, formats, and language. Monitoring and ensuring climate service quality and relevance would give end-users from the demand side the confidence to procure services, as well as reassure lawmakers that services are capable of helping society to meet tougher climate adaptation protocols / objectives.

3.1.2 EU Market Size

Some quantitative analysis on the EU market for climate services has been performed within WP4. The aggregated value for the 2016/2017 market of climate services for each EU country is presented



in Deliverable D4.5 - see Figure 3, with transactional data adding up to total sales figure of €7,314m for the whole EU.

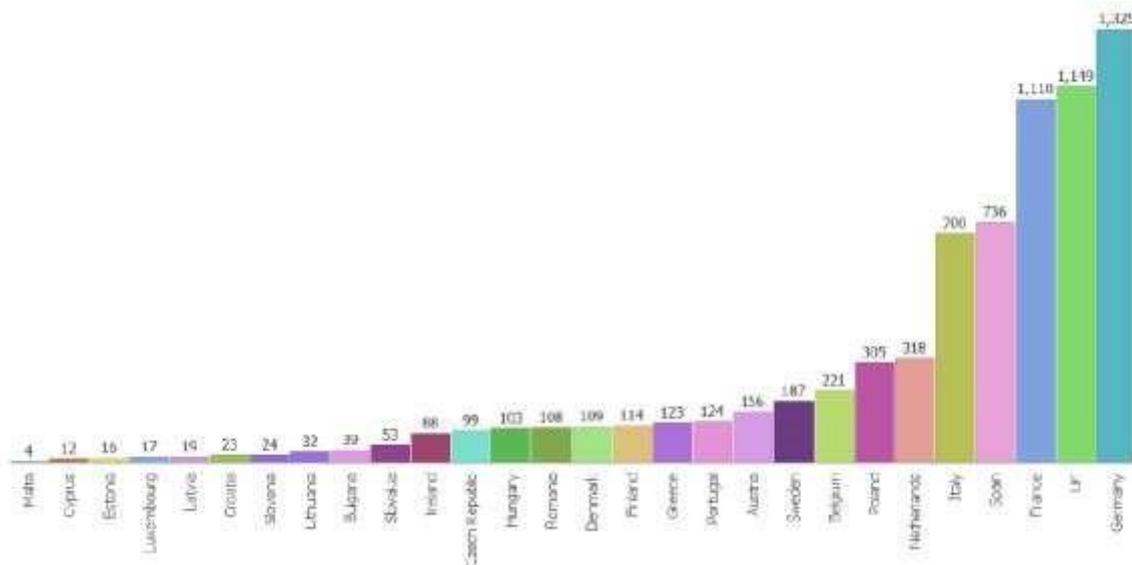


Figure 3 - Sales figures for climate services in the EU countries in 2016/2017

3.2 Providers' Database

MARCO has compiled a providers' database of about 500 entries in order to better characterise the supply. A full analysis of these providers (generally identifying themselves as such) can be found in Deliverable D3.2, including a discussion on the main categories of climate services. Figure 4 shows that the market remains strongly dominated by public climate services providers (i.e. national meteorological services, research performing organisations in the broadest sense and public authorities) but the number of identified providers from the private sector is significantly increasing.

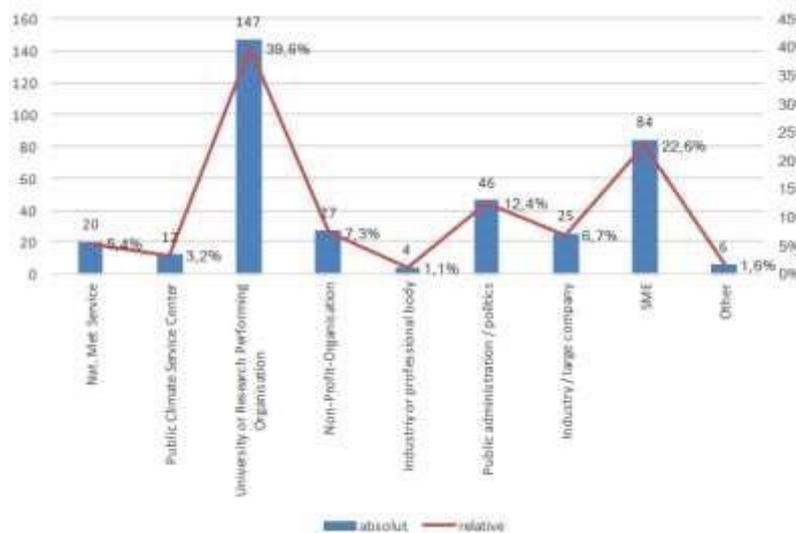


Figure 4 - Absolute numbers of types of CS providers and relative share of total sample

3.3 New business models, market intelligence

As could be easily anticipated, it is not possible to present one perfect business model for the climate services market that would lead a business to guaranteed success. Choosing an agile and flexible business model catering to a specific range of climate service technologies appears as more important. Due to fast changing demands, new trends and competition, it is recommended to choose



a business model with several revenue streams, which allows to remain dynamic and adaptable to a as yet immature, quickly evolving market.

Nonetheless, the analysis of various business models in D3.3 highlights several elements that can optimize or support the success of a climate service business, as presented in Table 2.

Table 2 - Best practice elements to create a successful business model

Elements of success	Definition
Strength of Innovation	How new or disruptive the technology is
Tailor-made solutions	Solutions can be adjusted to the individual need of the customer or user
Portfolio scope	Offering variability of the product and/or services
Scalability	Having possible growth options for the business
Market potential	Using different market sectors to gain revenue and market power
Regional scope	Offer is adaptable not only to one region, but to other regions and countries as well
Network	Creating synergies with a variety of support, trusted advisors, door openers, etc.
Interdisciplinarity	Different skills on the team are available; team strength is important for pivot phases
Revenue Streams	Different revenue streams are possible for the same technology

The market analysis carried out in D4.2 provides market intelligence on the transactions for climate services in recent years within the EU. It notably informs on the volume of purchasing for eight main categories of procurement across the EU for four years, highlighting Corporate Governance as the largest category in all four years. All categories show their highest level of growth in the latest period (2015-2016) (See Figure 5).

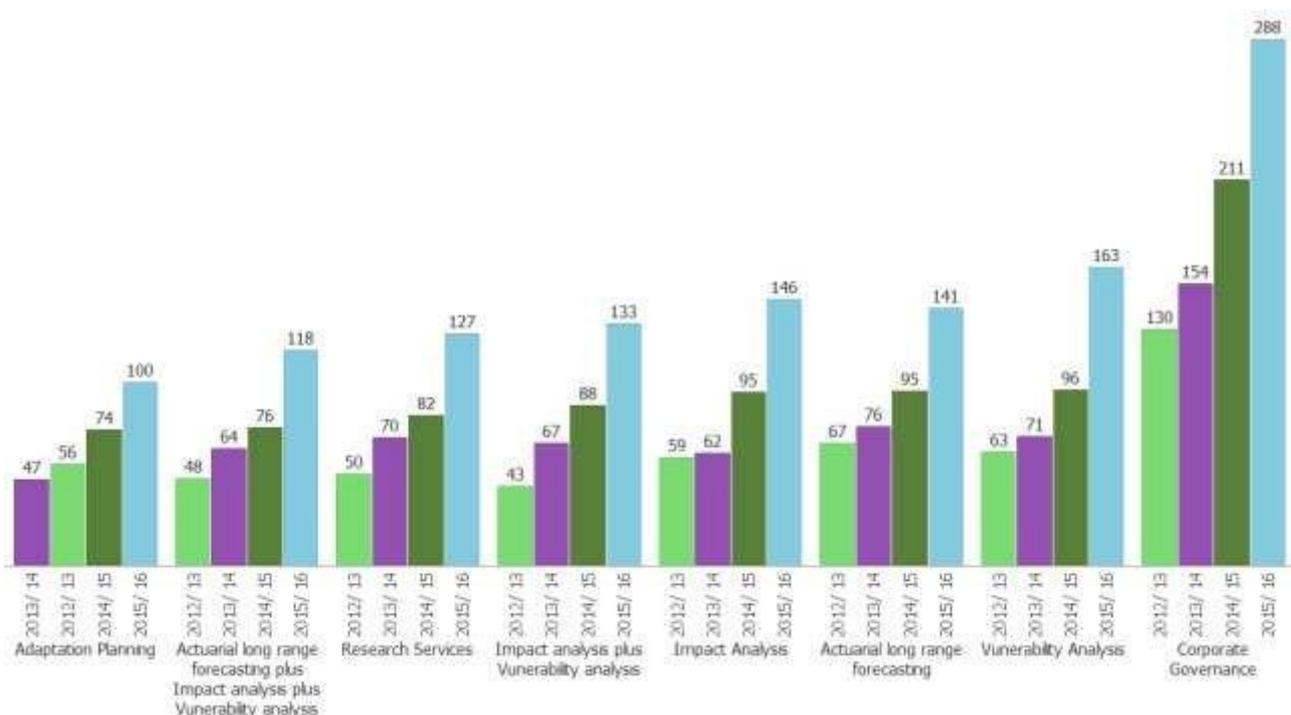


Figure 5 - Purchasing volumes (M€) for eight Categories of Procurement across the EU 2012/ 13 to 2015/ 16

3.4 Resilience monitoring & Forecast

The MARCO forecast component focuses on energy, finance and investment, and city-related case studies that have identified a large potential demand for climate adaptation services.

Climate change is being increasingly mainstreamed into both public and private investments. Climate change adaptation is today a small share of the activities, but large Multi-lateral Development Banks (MDBs) such as the World Bank group have been emphasizing the increasing role of adaptation in their new climate action finance plans. The development potential of climate service adaptation services is therefore relatively large compared with other climate service areas.

The forecasting of EU local adaptation planning by cities is illustrated in Figure 6, building on the expected scenario conditions described below:

- Signatures to the Covenant of Mayors climate plans progress based on linear interpolation of recent trends, and all cities with mitigation plans currently also have adaptation plans in the future;
- Cities with adaptation plans move up to the most advanced planning stage up to 2030; - Adaptation plans are mandatory in all large and middle size cities in Europe.

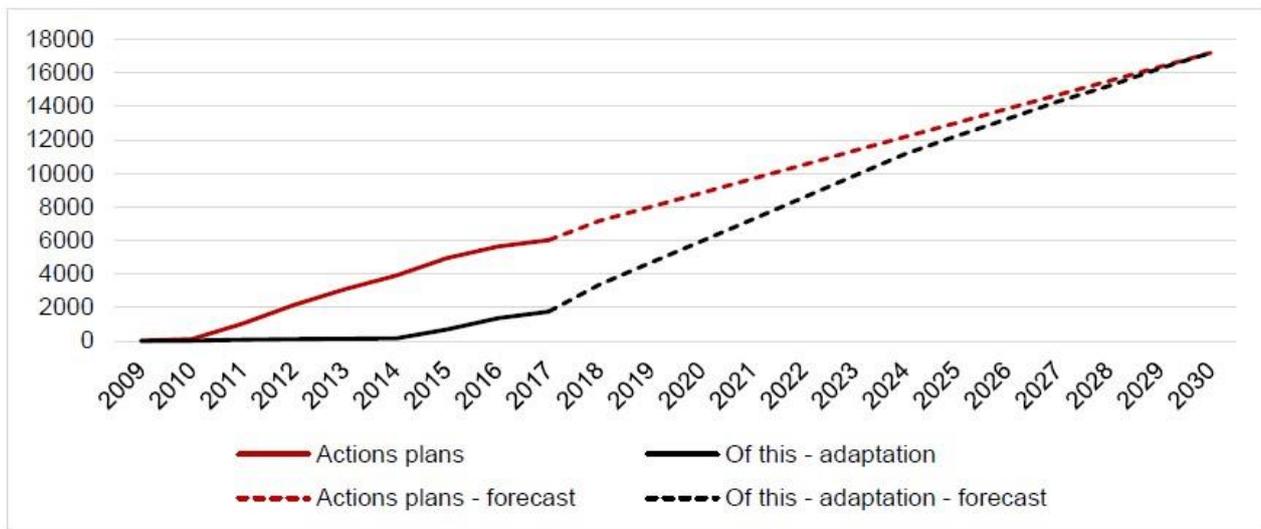


Figure 6 - Forecast for 2018-2030 - number of signatories to the Covenant of Mayors of Energy and Climate.

The figure shows the number of Sustainable Energy and Climate Action Plans (red line) and adaptation plans (black line).

3.5 Raising awareness

Posters for use at events were designed to support the dissemination of the MARCO outputs. A first set of posters on the results concerning the different sectors studied in the project was displayed for the first time at the Climateurope Festival in Valencia, Spain (April 2017). A generic poster which replicates the flyer in a larger format was also made available to raise awareness on the MARCO project during the Stakeholder Workshops in Milan (Oct 2017) and Berlin (Sept 2018).

In addition, a series of five infographics was designed – derived from the case studies carried out under WP5, these infographics make findings of the MARCO project more visually attractive for end-users and the general audience. Some of them have also been provided during events as tools for dissemination. These infographics have been shared via the MARCO Twitter account. Links to the available infographics can be found below:

- Water and Sanitation: <http://marco-h2020.eu/wp-content/uploads/2018/05/MARCOcase-study-on-water-and-sanitation-in-Catalonia.pdf>
- Tourism: <http://marco-h2020.eu/wp-content/uploads/2018/09/MARCO-case-studyinfographic-on-winter-tourism-in-Austria.pdf>
- Real Estate: <http://marco-h2020.eu/wp-content/uploads/2018/09/MARCO-case-studyinfographic-on-real-estate-in-Copenhagen.pdf>

- Critical Energy Infrastructures: <http://marco-h2020.eu/wpcontent/uploads/2018/05/MARCO-climate-services-case-study-on-critical-energyinfrastructures-in-Germany.pdf>
- Agriculture and Forestry: <http://marco-h2020.eu/wp-content/uploads/2018/05/MARCOcase-study-on-forestry-and-agriculture-in-France.pdf>



Figure 7 - Example of MARCO infographics

A short video animation (<http://marco-h2020.eu/climate-water/>) was created to show how climate services can be used in the water sector.



HOW CLIMATE SERVICES CAN BE USED IN THE WATER SECTOR

Figure 8 - MARCO video on climate services in the water sector



4 Recommendations for further market support

In order to strengthen the 5 focus support components, some recommendations are offered in this section.

4.1 Identifying market opportunities

For reasons described in the gap analysis, no clear and final conclusions based on statistically robust statements can yet be derived from the collected information so far. Nevertheless, informed trends and sound interpretation can be derived and justified - notably from the combination of the various perspectives including quantitative information based on market transactions, qualitative analysis and cross-checking, and stakeholder consultations. In the following section, the gaps that present the strongest trends with regard to countries or regions, types of climate services and sectors are highlighted. In addition, this is presented for the current situation and for the future.

4.1.1 Recommendation 1: Strengthen market development in Central and Eastern EU Member States

Analyses for today's situation show that only a few providers of climate services could be identified in the Central and Eastern Member States of the European Union; the same applies to users. Consequently – and this is also reflected in the results of the transactional analysis –, these countries only show a small number of market transactions and market volume.

While it could still be argued for the current situation that this finding is not yet very problematic, e.g. because the impacts of climate change are not yet too serious, a look into the future shows a different picture. Results from other projects (e.g. IMPACT2C) or reports (e.g. EEA, 2015) show that the Central and Eastern Member States of the European Union will be affected with particular severity by climate change and its impacts, with several socio-economic sectors simultaneously impacted in some cases. This is also the case in Southern Europe, but with an already active market for climate services, although it would need to be boosted there as well.

The market for climate services in Central and Eastern Europe is thus already lagging significantly behind developments in other regions of the European Union. This is likely to worsen significantly against the background of the expected impacts of climate change in the future. Discussions with local stakeholders, for instance during the recent Climateurope conference in Belgrade, suggest that the development of climate services in these countries is still massively conditioned by planification at the level of national (meteorological, hydrological) public agencies, with limited consideration of potential demand and growth through private users and competitive markets. The first recommendation is therefore to put particular emphasis on supporting the market for climate services in the Central and Eastern European member states of the European Union in its development, in a combination of public and private business models. This effort should be led jointly with relevant organisations such as Climateurope, EIT Climate-KIC and JPI Climate.

4.1.2 Recommendation 2: Support market development in new priority sectors

Taken from the key messages in the gap analysis, Table 3 below shows which sectors are most frequently addressed by current providers, from which sectors the users come, and which sectors have the highest market volume. Even though the sectoral demarcations in the various underlying studies and approaches are certainly not completely congruent, there are tendencies that point in the same direction. It can clearly be seen that, among all sectors, energy, built environment (and by extension urban planning), and agriculture could be considered priority sectors today.

Table 3 - Priority sectors today

Sectors most addressed by providers	Sectors from which users come	Sectors with the highest volume of transactions
Water, Energy, Agriculture, Urban & Spatial Planning	Renewable Energy, Agriculture, Built Environment	Built Environment, Renewable Energy, Public & Charitable Bodies



Priority sectors according to the assessment of future impacts, risks and vulnerabilities as well as future market growth rates are shown in *Table 4*.

Table 4 - Priority sectors in the future

According to impacts, risks and vulnerabilities assessment	According to market growth rates
Water, Agriculture, Forestry, Biodiversity but also Energy, Transportation, Mining, Tourism, Health, Critical Energy Infrastructures	Agriculture, Forestry, Health Care, Tourism, Energy, Critical Energy Infrastructures, Mining

Based on these two tables, we can see that some of the sectors that are already important today will continue to be important in the future (especially agriculture and energy). However, they are likely to be joined by a number of other important markets with high growth potential, which include forestry, health care, tourism and energy infrastructures. The market development in such major sectors of the future should be supported by appropriate measures.

4.1.3 Recommendation 3: Link public and private providers to develop more advanced climate services

Based on the gap analysis, no recommendations can be derived for the various types of climate services. This applies both to the current and future situations. For the current situation, it can only be stated that among the eight different types of climate services, advisory services are the most frequently offered, the most frequently requested and those with the highest share of the financial market volume.

The analysis of "types of climate services" also includes categories that arguably do not pertain to the proper space of climate services. Although these are part of the analyses in work package 3, they are to be regarded more as 'preliminary products' required to develop climate services than as climate services themselves. These include, in particular, measurement, operation, modelling and data management. Without the availability of these basic services, however, the development of tailored and advanced climate services would hardly be possible. Thus, it is very important that these two parts (i.e. the necessary preliminary services mainly provided by public bodies, and the derived advisory services with a larger share of private businesses) remain well linked and integrated.

4.1.4 Recommendation 4: Develop more advanced / sophisticated climate services on seasonal to decadal time scales

In several case studies in WP5, predictions on shorter time scales (seasonal to decadal) are highly relevant for many operational decisions to be taken by private businesses. This is independent of basically long-term investment decisions, which exist in all sectors.

However, this result cannot be mirrored by the analyses on the providers' side, since information on the time scales of the services could neither be recorded in the transactional analysis nor in the database of climate service providers. It is thus not possible to assess, on this basis, whether or not there is a clear gap regarding the provision of seasonal to decadal predictions. However, considering the basic difficulties from a purely scientific point of view to generate sound seasonal to decadal predictions, it can be assumed that not many services available on this timescale, and strong demand should justify specific attention to that large segment of the market of climate services. Activities currently developed or planned within Copernicus's C3S in particular are firmly engaging in this direction.

4.2 Database of providers

4.2.1 Recommendation 1: Increase visibility of climate service providers on a "market place"

There is a current lack of visibility in terms of what types of climate services are available, what benefits they can provide in the long-term, how efficient they are, and how potential end-users can access them. Climate information and data management have long been discussed within the



research and academic communities with limited interaction with businesses or transformative action through innovation. While a lot of emphasis was put on the quality of climate data and the derived models, it has however been challenging to engage with potential end-users and provide them with clear and easy-to-use tools to address climate risks in their business operational and development activities.

In that context, it is essential to provide an updated and active repository where interested end-users can easily access information on the climate services that are available on the market. This database would detail the information on the provider, the applicability of the climate service (sectors, geographical scope, etc.), the expected benefits, the modalities of implementation, and some concrete examples. It would provide the possibility for climate service providers to interact with potential end-users and further adjust their offer, based on the actual requirements. It would indeed be interesting to upgrade such repository to an actual market place, where CS providers can directly get a feedback from the actual market and potentially initiate co-designing activities with some end-users to ensure proper adequacy of the climate service(s).

Such a market place would help centralise information and characterise condition frameworks on the different listed climate services and, in the long run, it would gain the trust from the potential end-users, that would be enabled to directly compare, choose and provide feedback on the evolving platform.

4.2.2 Recommendation 2: Improve and mainstream the taxonomy and/or the classification of climate services

While trying to incorporate the perspective of end-user markets, the current taxonomy on the climate services has been organised in line with the EU NACE classification (See D2.1, D2.2 and D2.3). This is important as it enables full flexibility in the data, being accessible to governments and other users who work with NACE codes, but also to individual companies who may categorise themselves differently.

Within the scope of the project, MARCO has carried out a mapping of the climate services into 17 top line NACE codes. In future market characterisation, the goal should be to improve the granularity of the mapping by refining the taxonomy and allowing for correspondence with lower levels of the NACE classification, which should be possible as the market matures and data becomes more readily available at more in-depth NACE code level. In that context, a coordinated observatory / platform on the market of climate services would enable to promote and mainstream the use of the current taxonomy within the climate services community, but could also organise some market characterisation updates enriched by feedback loops from the end-users in order to better inform the finer granularity of the classification required and thereby achieve a higher, more relevant resolution.

4.2.3 Recommendation 3: Develop a user-friendly tool to enable the selection of appropriate climate services

The providers database should be the basis for a more user-friendly tool that helps potential end-users to identify and select (combinations of) climate services that are relevant for their operational and prospective activities. If the database could feed a filtering tool that directly guides end-users to the available services that best respond to their needs, it would create a dynamic application that allows climate service providers and end-users to match more easily and effectively.

The development of such a tool would also give the incentive to climate providers to define more accurately their business models in order to attract the most relevant end-users, and possibly showcase positive and constructive reviews to grow trust within the end user community. In more advanced stages of its development, the tool would also allow more comprehensive matchmaking between intermediary purveyors and users of climate services.

4.3 Business models and market intelligence

4.3.1 Recommendation 1: Develop more creative and diversified business models for specific types of providers



MARCO highlights that four different types of innovation can be applied to boost the uptake of climate services (see D2.6):

- Product innovations can be used to directly improve a climate service through the modification of technical specifications or functional characteristics (such as the use of higher temporal and spatial resolutions);
- Process innovations have an impact on the way the information is delivered to users (whether they use PDF reports, web-platforms, high resolution and exhaustive datasets...);
- Marketing innovations modify the way services are presented and advertised to potential users;
- Organisational innovations restructure the whole value chain in which a climate service operates and make its use more effective and efficient.

However, estimating the monetization potential of the related business models is a difficult and uncertain exercise. Given the global nature of the challenges, the increasing impact of climate change and the importance of costs to adapt or rebuild, costs for using climate services should not be a barrier to their uptake. See also the need to foster public-private partnerships (Recommendation 3 below).

In that context, it would be useful to elaborate a reference document to support methodological principles for developing a business model for specific climate service providers (spin-offs, start-ups, etc.) This “How To” guide would highlight the sectoral challenges as well as the compatibility with users’ ways of working, while the benefits brought by climate services shall be demonstrated and acknowledged by users to increase market uptake. Core understanding of methodologies would then gradually be enriched with more specific case studies and tailored advice to climate service providers.

4.3.2 Recommendation 2: Develop specific investment instruments / programmes oriented towards SMEs and early-stage developments

Small and medium-sized enterprises (SMEs) can act as change agents for the uptake of climate services where their business models may be seen as adoption and scaling mechanisms. Such structures are key to developing locally relevant, effective adaptation solutions, which can increase the resilience of society acknowledging the vital role of SMEs within communities.

In that context, it would be useful to have specific instruments / programmes that provide early-stage (investment) support to SMEs, in order to ensure the development of climate-proof strategies. This support can be provided by a combination of public and private actors. With the increasing number of incubators and accelerating innovation schemes in the EU, a systematic climate safeguard framework would enable SMEs to identify and adopt appropriate mitigation and adaptation measures to reduce the vulnerability of their business models to climate change.

4.3.3 Recommendation 3: Foster public-private partnerships

Fostering public-private partnerships (PPPs) would not only facilitate the development of market-fit climate solutions (as discussed in Section 4.1) but also unlock the financial capacities and engagement from diversified parties to catalyse climate action.

With some exceptions (e.g., insurance), private companies are largely dependent on public services for information on climate trends and long-term forecasts. Effective use of scarce public funds must then be ensured to first leverage private financing and then mainstream climate-proof solutions. This would be particularly relevant for the future development of adaptation plans at regional, national, subnational and local levels, where the implementation of standardised or already identified climate services could directly be recommended. Such PPPs would therefore enable more coordinated and integrative action towards climate-resilient societies, where responsibilities are equitably shared between the different stakeholders.



4.4 Resilience monitoring and forecast

4.4.1 Recommendation 1: Engage with the climate services community to challenge the market intelligence

In order to be able to renew and monitor the intelligence outputs on the market of climate services in the EU, that was initially produced by MARCO, it will be important to collect further feedback from the stakeholders and create a space for discussion, clarification and reallocation of the input market data. As mentioned in Section 4.2, the taxonomy would benefit from a better understanding within the climate services community, so as to be able to provide a higher granularity in the outcomes. MARCO was the first initiative to characterise the market of climate services at EU level using a combination of methodologies consistently across sectors and geographies. Some methodological adjustments are expected in future similar exercises, following direct insights from the sectors.

In addition, it would be interesting to identify some specific performance indicators for the climate services, as to be able to monitor the quality of services, and not just the quantitative volumes of transaction. While this is a key component to boost the development of the market of climate services, it is a topic in itself, in which a future market 'observatory' could act both as a catalyser for action and a connector between various initiatives working on quality and standardisation of climate services.

4.4.2 Recommendation 2: Strengthen and harmonise climate resilience legal frameworks;

Forecasting the market evolution for climate services notably relies on the adoption of new climate resilience plans, that would explicitly refer to the use of climate services. In that context, it would be important to ensure that proposed climate mitigation and adaptation plans have harmonised legal frameworks at national and EU levels, in line with the Paris Agreement, the Sendai Framework, the 2030 Agenda, informed by the IPCC 1.5°C Report and other relevant references, in terms of what type of climate services can be considered and what modalities of implementation, monitoring and evaluation would prevail. A more detailed state of the art with some good practices and recommendations is provided in Deliverable D6.5.

4.4.3 Recommendation 3: Track climate finance schemes and investments

With the foreseen increase in funding from (among others) multilateral development banks to climate adaptation planning activities, a boosting effect for the uptake of climate services is expected. However, the complexity of financial flows and the degree to which they incorporate climate factors, and the difficulty of separating the political and technical aspects of measuring the latter, require better tracking of public and private investments for climate-proof developments. This reinforced monitoring would enable to identify potential market niches and compatible frameworks and to further promote the use of relevant climate services.

4.5 Raising awareness

4.5.1 Recommendation 1: Showcase success stories

The quality of the available climate services remains too uncertain for adoption by some potential end-users. In order to build trust and highlight the benefits of climate services in terms of economic, environmental and/or social impacts, it would be important to showcase a range of concrete success stories where climate services were used and where positive results were observed and measured within a sensible timeline. Substantial efforts have already been devoted in this direction, both at EU level and at the level of several member states, but they need to be sustained and diversified to meet the perspective of a broader population and variety of end-users.

A well identified obstacle to growth at scale of the use of climate services is that current users of such services are often not aware that they are using processed climate information. This may not hamper their use of such services for a specific need, but it does limit the dissemination of climate services beyond a collection of such specific, isolated needs. Here again, more success stories with an explicit emphasis on the role of climate information in the services will be needed.



Even when potential end-users may be willing to address climate risks and engage in climate action, they may not be aware of the full range of available services and tools that are ready for implementation within their decision processes. In that context, some illustrative and educative story telling would encourage them to take concrete actions. In addition, it would orient them towards competent entities that can help them better define their needs in terms of climate resilience.

A major challenge is to measure the positive effects of climate services and to communicate on them with full transparency. In particular, the economic valuation of some externalities that may be impacted by climate services, as well as the evaluation of “the cost of inaction” are not easy tasks to carry out. More generally, the effectiveness of adaptation plans in general and of the use of climate services to implement them shall increasingly rely on further development, and a degree of standardisation, of metrics and indicators in the fields of climate adaptation and resilience. Robust evaluations and methodologies are required to ensure consistency and comparability of results.

4.5.2 Recommendation 2: Raise awareness of specific sectoral or regional climate-related risks and opportunities.

As illustrated in the MARCO case studies (WP5), the condition frameworks for the uptake of climate services notably depend on the sector and the regional context. While the promotion of climate services can be coordinated via a EU-level platform and a degree of standardisation and commonality are required for action at scale, sufficient specific sectoral and/or geographical reference materials would also need to be developed in order to ensure a closer understanding of the climate reality and challenges at more local scales.

The set-up of targeted stakeholder dialogues is key to ensure that the scope of implementation of climate services can respond to more local and personalised demands. In particular, the climate-related language and wording would need to better heed and reflect the sector-specific language. This bottom-up approach would foster the engagement of stakeholders that may initially be discouraged by the complexity of climate change and the inability to identify mitigation and/or adaptation measures to be taken at their level.

5 Recommendations for Stakeholders

The different stakeholders of the value chain (as recalled in the familiar Figure 9) would benefit from further guidance on how to best enter the market for climate services and boost the market uptake in the different sectors.

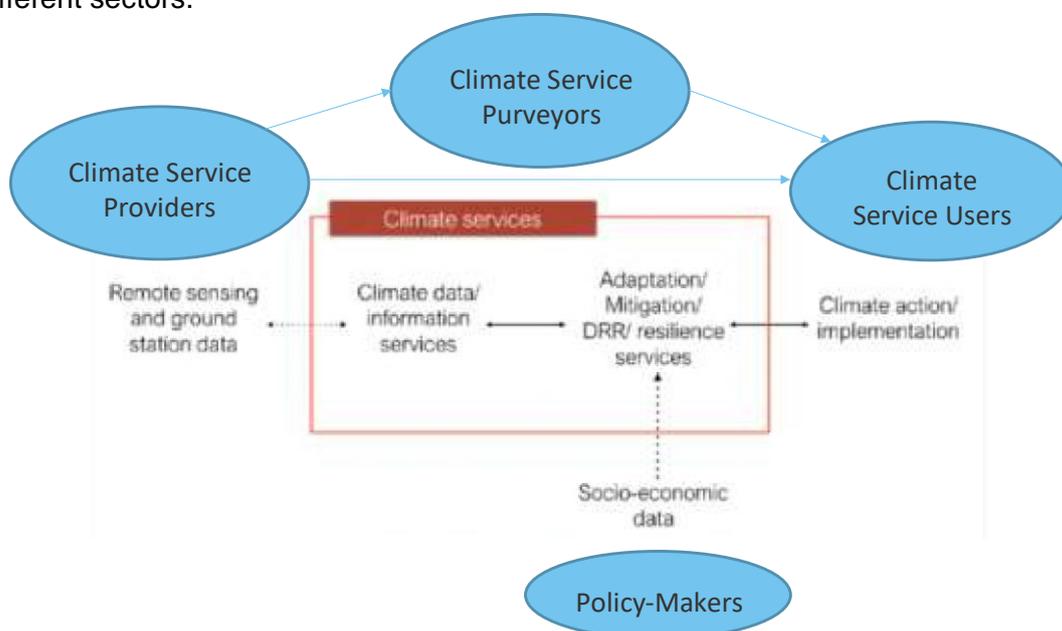


Figure 9 - Value Chain Model (Adapted from D4.3)



This section offers some main recommendations relevant to the various types of stakeholders, largely based on the interactions with stakeholders during the case studies (see D5.1) as well as the 2 stakeholder workshops organised during the MARCO project.

5.1 Climate Service Providers

5.1.1 Recommendation 1: Develop climate services that address the capacities, language, performance indicators, and risk management systems of end-users.

As mentioned in Section 4.5, it is essential to bridge the ‘translation gap’ between climate science and applied use, so as to be more relevant to specific users in different sectors and regions. That would improve the visibility and attractiveness of the climate services as end-users would more easily relate to real benefits to operational action plans and tangible outcomes from increased climate service use, as compared to their usual operations.

5.1.2 Recommendation 2: Practice transparency in use of climate-related data and in assumptions.

As climate research is still a large and complex topic, it would be important to highlight areas of certainty in climate data, explain areas of uncertainty, and account for their implications.

In that context, the conformity with INSPIRE and SEIS principles and/or the development of a quality assurance regime for climate data (e.g. ISO standard) and/or a professional chartership for climate services would ensure transparency to the potential end-users. It will be key to further cooperate with users across sectors to build trust and to raise visibility and credibility.

5.1.3 Recommendation 3: Monitor and communicate the benefits and cost-effectiveness of using climate services to key user groups.

In order to enhance the visibility of climate services and their benefits, it would be important to market them as business opportunities and not just responses to climate risks. Such an approach would initiate positive action rather than rely heavily on damage mitigation. This would catalyse climate innovation and boost the market of climate services.

Economic criteria play a strong role in the uptake of climate services. More detailed and robust quantification of the economic benefits / cost-effectiveness of using climate services would therefore be a powerful argument to strengthen their business case(s) and attract more users and/or investors.

5.2 Climate Service Purveyors

5.2.1 Recommendation 1: Foster the co-design of climate services

Climate service purveyors have the responsibility to link the providers and the users and are therefore critical in ensuring that (specific) demand meets supply. The booming of the market for climate services in the EU will depend on the adaptability of purveyors to comprehend the (sectoral) needs of the end-users and generate services and tools that are well-designed for them. In many cases, the co-design of climate services by climate service purveyors and downstream users would ensure the adequate delivery of climate services, enabled by continuous feedback and/or trial and error approaches.

As the market of climate services is still emerging, it remains key to have a clear communication stream between the different stakeholders of the value chain, making the climate service purveyors pivotal in translating upstream information into downstream applications.

5.2.2 Recommendation 2: Explore new market niches following projections of future demand for products and services based on various climate change scenarios.

Given their ability to foster the matchmaking between climate services supply and demand, climate service purveyors could be pioneers in exploring new market niches. Indeed, they would be the most responsive to the market evolution, when new forecasts would be produced.

If a market observatory / platform is to provide regular updates and projections on which sectors would (need to) invest in and implement climate services, purveyors could rapidly adjust their



business models to fit with new demands and offer preliminary climate-proof solutions to be further improved when the market keeps growing. Climate service purveyors need to stay well-informed on new development in these dynamic market conditions.

5.3 Climate Service Users

5.3.1 Recommendation 1: Engage in an intuitive marketplace that enables users to easily access providers that are capable of meeting their requirements.

As mentioned in Sections 4.2 and 4.4, it is important that potential climate service users have the possibility to directly interact with some providers, in order to better comprehend the scope of implementation of the proposed climate services, the uncertainty that lies behind them as well as the expected benefits.

In engaging in an interactive and intuitive market place, climate service users could find not only responses to their specific needs in terms of climate mitigation or adaptation but also provide constructive feedback to the providers / purveyors, share experiences with other users or find synergies with other sectoral services. In such a dynamic market environment, it is important to learn from past experiences, build on external expertise and co-design solutions that could be adapted to other market conditions.

5.3.2 Recommendation 2: Take part in training modules which demonstrate the added value of applying climate information

It would be useful to develop training modules for potential climate service users in order to help them better comprehend the complex range and potential of climate services in terms of taxonomy, mitigation of the costs of inaction, valuation of externalities, quality of service, policy development, etc. Such training components could be part of the coordinated observatory / platform on climate services that is introduced in Section 2.

Taking part in such training events would foster and help to disseminate a common understanding of the climate services within the user community and mainstream key methodological elements with respect to standardisation, monitoring and evaluation.

5.4 Policy-makers

5.4.1 Recommendation 1: Strengthen cooperation and coordination between EU-initiatives, e.g. between public and private activities, and across different sectors.

The establishment of a community / platform dedicated to climate services should build on existing sectoral networks and structures - including regulators and sector associations at local, national, regional scales - in order to improve coordinated capacity in addressing climate-related risks, disseminate information, update professional standards, and organise sector-specific and crosssectoral climate action.

At EU level, several initiatives / programmes contribute to the promotion of climate services and stakeholder engagement towards climate action, such as the Copernicus Climate Change Service, Climateurope, JPI Climate, or EIT Climate-KIC, which is the largest public-private partnership focusing on climate innovation. Strategic and coordinated actions between the initiatives and with DG CLIMA and other relevant EC units could lead to synergetic effects and boost the visibility and uptake of climate services in the short- and longer-term. Based on finer understanding of the market segments with higher growth potential, but also those with higher vulnerability and critical role in the sustainability of whole value chains, supporting schemes could become better focused and help to unlock the viability and development of climate services where it matters the most.

5.4.2 Recommendation 2: Increase incentives through legislation to take climate change into account

Public authorities at various scales and sectors should provide long-term political and legislative frameworks to create the conditions enabling the mainstreaming of climate adaptation. In that



context, ambitious and comprehensive policy measures that set common but differentiated responsibilities - at sectoral and regional levels - for adapting to climate change would prevail.

International regulations and laws, such as the Climate and Energy Governance Regulation and the Integrated Coastal Zone Management (ICZM) Protocol of the Barcelona Convention, could help to underpin a harmonised approach for the management of climate-related risks and refer to the use of climate services.

Finally, monitoring the impacts of climate policy implementation with respect to the Nationally Determined Contributions (NDCs) within the framework of the Paris Agreement would provide key guidance to support periodic review of sectoral regulations and related enforcement.

6 Prospects for a Market Observatory / Support Platform for Climate Services in the EU

6.1 Value proposition

Following the recommendations at function level (Section 4) and at stakeholder level (Section 5), this section considers the possible modalities of a coordinated platform in charge of enabling and untapping the market for climate services in the EU.

As illustrated in Figure 10, the value proposition for such a platform is articulated around 2 main objectives: 1) the commercial use and development of market intelligence on climate services and 2) the establishment of a climate services community to foster matchmaking between users and providers/purveyors, co-design and knowledge transfer.

Considering the complexity of the market of climate services, the diversity of expectations from stakeholders and the range of expertise represented in the MARCO project consortium, there is yet no single, obvious model for a market observatory / support platform that can readily meet all needs and encompass the variety of challenges and insights associated to that market. There exists web-based platforms with a national or regional scope or a sectorial scope, with which such an instrument could be articulated so as to build on services already delivered by such platforms, to facilitate the navigation between them, and to provide cross-regional and cross-sectorial metrics, a more integrated view of the market, with a better understanding of potential market development across the current silos and along new value chains. However, there is large consensus that such an instrument would be key in informing and helping to structure future development of the market of climate services, and MARCO has produced a number of elements that could form the basis to consider launching such a platform in the course of 2019.

Possible, more detailed patterns for an initial version of a platform should be ready for presentation and discussion with institutional decision-makers and other private and public market stakeholders in the first months of the year, informed by the final conclusions of the project, questions and further recommendations from the EC and the project reviewers, but also by inputs from other relevant projects such as EU MACS, CLARITY and others.

Some prospects are being presented here, based on the benefits and constraints identified so far for both separate business models.

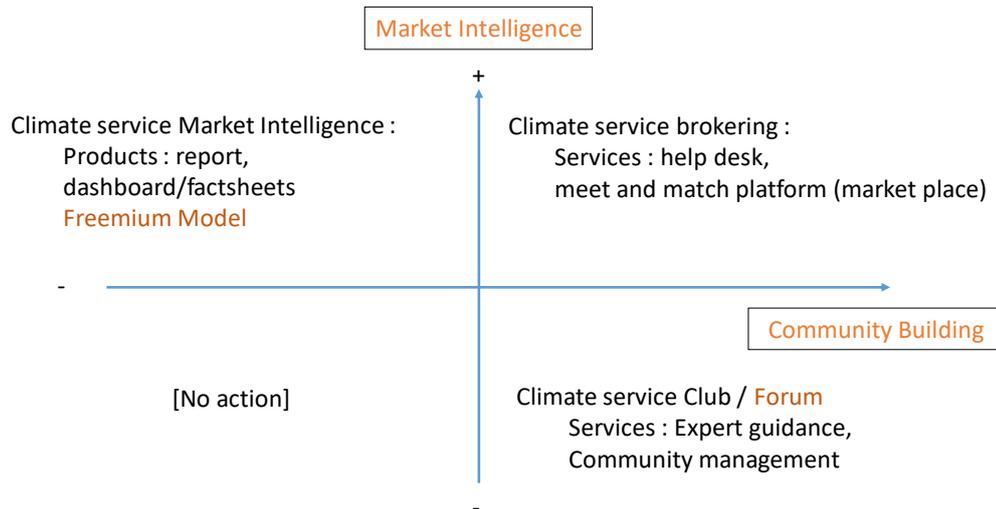


Figure 10 - Value Proposition for a Market Support Platform for Climate Services

6.2 Commercial use and development of market intelligence (Freemium model)

6.2.1 Main Features

This business model mainly focuses on the actual market data on climate services in the EU (including forecasts) that was for the first time collected and analysed within the MARCO project. This represents a key milestone in the understanding of the current market as well as the potential market growth.

It is foreseen that this market data should prove valuable for potential investors and business developers and could therefore be considered as a sales product provided that information has been further refined / detailed, is regularly updated, and packaged as user-friendly support material (thereby going beyond what the MARCO project itself delivered).

A freemium model has been envisaged where some basic market intelligence on climate services would be openly available for all interested parties (mainly building on methodologies developed within MARCO), while access to some more specific market intelligence (e.g. sector- or geography-focused forecasting) would require the payment of a fee (either via membership or via direct payment). This specific intelligence would derive from some additional research and analytical work building upon MARCO transversal methodologies.

As a starting point, more detailed analyses would only address sectors that show most potential with regard to the uptake of climate services, e.g. Water, Energy, Agriculture, Urban & Spatial Planning (Built Environment), targeting larger panels of stakeholders.

Such a platform would address, in particular, components nos. 2, 5, 9 and 11 as outlined in Section 2.

6.2.2 Main Challenges

While MARCO provides a good overview of the transaction volumes of climate services in the EU as well as insightful snapshots of condition frameworks in specific sectors, the quantitative and qualitative results are still not easy to compare in all cases. In this context, the uncertainty level of some of the market intelligence remains significant at this stage. As explained above, to keep improving the relevance of the taxonomy to market needs as well as the granularity of market data, it is important to start popularising current data and collecting feedback. However, expectations from members / customers would need to be carefully managed and transparency on the current adequacy of data clearly explained if some of the analytical results are to be provided on a paying basis.

This model is mainly articulated to ensure some incoming revenue so as to cover the costs for limited operational and maintenance tasks as well as some specific market analytical work. The financial



sustainability of such freemium model remains a challenge in the first couple of years, as it would require a significant number of members to subscribe, even if some public funding could be secured to support the launch of such a platform.

6.3 Community Platform

6.3.1 Main Features

As outlined in Section 4.2, one of the factors hampering the development of the market of climate services at its full potential is the absence of continuous engagement between the research and academic communities designing upstream services, on the one hand, and potential end-users in need of clear and easy-to-use tools to address climate risks in their business operational and development activities, on the other hand.

To enable such engagement, a community platform would require some or all of the following basic features: access to a database of climate services with description of their functions and potentialities, in a language that is readily accessible to non-specialists of climate information, so that matchmaking between services and users is facilitated; range of application and implementation of each service, capacity to be adapted to specific needs; quality criteria both on the climate data and on the way they are processed to provide relevant service performance to the end-users; success stories and elements of comparability and benchmarking; a combination of risk analysis (e.g. climate risk briefs) and opportunity analysis, again formulated in ways that are accessible to non-specialists.

Particular attention should be given to purveyors, as they are essential intermediaries in any chain between providers and users, and they pertain to segments of the market of climate services where visibility is currently limited (both for individual actors, with the chains of climate services to which they could contribute, and for the market at large, in terms of potential for growth). These segments are among the most vulnerable and probably among those which warrant the strongest support, since their development and reinforcing can potentially unlock much greater growth of the overall market of climate services.

Beyond providing the information from service providers to potential users, the platform should be an active meeting place, not only enabling targeted matchmaking but allowing for broader interaction, so that providers (and purveyors) could test their offers with a diverse community of end-users and collect feedback that would allow them to (a) identify more accurately and comprehensively their potential customer segments and (b) clarify and refine their service offering to meet the actual, precise demand. Ideally, this would be the reference place to initiate co-design of efficient climate services, complementing and extending some existing initiatives at national or local levels. The platform could also allow service providers to benchmark themselves in terms of successful business models, company profiling, and to update themselves on trends.

Such a platform would notably address components nos. 3, 6, 10 and 13 as outlined in Section 2.

6.3.2 Main Challenges

One of the immediate challenges to such community platforms is the abundance of existing fora, physical and virtual communities structured by sector, geography or around clearly identified value chains, and the fact that potential users (especially in SMEs, small farms...) have limited time and would be reluctant to multiply the sources of information, particularly new ones which they may not particularly trust beforehand. Adding to this, building an attractive, content-rich but easy-to-use platform with community and matchmaking functions is technically difficult. It could be more pragmatic and efficient to build on existing (e.g. sectoral) online communities; however, coming up with a sustainable business model for such a platform relying on a network of existing forums is by no means easy. There would need to be a strong backbone, both in terms of content and of infrastructure, to make the platform viable and provide clear added value, as opposed to a collection of subcommunities mostly duplicating what may already be available separately. There would also need to be some form of moderation that helps to manage the knowledge shared on the platform and also to facilitate navigation and matchmaking for providers and users alike. Here, experiments



of market places coming from such projects as H2020 CLARITY might be relevant to couple with such a community platform.

6.4 Recommendations for a Hybrid Scheme

6.4.1 Main Features

Combining the previous two models appears to make sense for a number of reasons.

Lessons learnt from the MARCO project suggest many remaining challenges, incorporating the recommendations listed under section 4 above, and including: need to further evolve and refine the taxonomy and data acquisition; full comparability of outcomes between qualitative and quantitative methods; complexity and lack of maturity of the climate services market that make current and potential value chains sometimes difficult to characterise and to monitor; access to complementary market data and proxies beyond the space of transactions and commercial markets; more precise understanding of what segments of the market are likely to develop as viable, independent products versus which ones need to be more directly integrated in economic activities; incomplete metrics and multiplicity or non-existence of recognised standards to measure impact in adaptation and resilience, needs for more ‘translation’ at all levels of the value chains between upstream data and final users, experience as yet insufficient to optimally combine climate (physical) data and socioeconomic data, and more broadly the difficulty to reach the full range of potential users, get them interested in climate services and convince them that the use of such services is both necessary for the future sustainability of their activities and would bring economic benefits, as opposed to the cost of inaction in the face of climate change.

However, several sectors are already quite aware of their need for processed, useable climate information, and they point at the challenge of accessing climate services that are relevant for their specific needs and whose quality can be trusted. Transparency and confidence in the market cannot be achieved purely on a case-by-case basis, and providers and purveyors also need increased visibility on an around their potential market segments. In that context, methodological progress made during the MARCO project, around business models, qualitative analysis, gap analysis, quantitative transactional analysis, stakeholder engagement and differentiation per sector and per geography, on refining principles and further understanding the challenges, limitations and possibilities of short-term and medium-term market forecasting, forms altogether an innovative set of foundations for market observation and support to decision that is, despite its current imperfections and shortcomings, more conceptually robust and consistent across sectors and geographies than any previous attempt, and also has the potential to be applied and replicated to a large range of situations, with increasing granularity, relevance and accuracy with time.

Commercial use and development of market intelligence would allow to start sharing and disseminating these achievements, set the initial basis for market observation that is data-based and able to gradually create a trusted reference that informs market actors (providers, purveyors, direct users) but also to provide better understanding to public authorities on the structure and potential growth of the market and of the segments that justify more focused support, as well as to potential investors. Market intelligence could also mitigate the tendency of sectoral or geographic communities to work and inform themselves in silos and foster cross-fertilisation and transfer of knowledge and competence. A combination of public support, particularly during the initial phase, and progressive inclusion of commercial revenue would allow to regularly update already available data but also to refine the market intelligence and address the remaining challenges listed above.

The coupling with a community platform model would allow to strengthen the market intelligence use and development model and contribute to filling some of its gaps. Refining and progressing the concepts and methodologies will be done much more pertinently through direct and continuous interaction with practitioners and users of the market. Collection of a wider and more specific range of relevant data could also be facilitated, including mechanisms of crowd-sourcing, but also time-limited communities of practice and experimentation around specific solutions / services or combinations of services. Raising awareness on the usefulness and benefits of relevant climate services will be more effective with an interactive component, between the observatory / platform team and market actors, but also between actors of the market themselves, fostering quicker



dissemination of information, good practice, and also faster convergence towards standards (quality, metrics, criteria of choice, match between supply and demand) that could be trusted and adopted by practitioners. Such a coupling could also provide the right balance between stability / visibility and flexibility in a fast evolving market, itself addressing climate challenges about which a lot remains to be learnt and better understood.

The 'observatory' would thus address the five components most advanced during the course of the MARCO project (nos. 2, 6, 9, 11 and 13) as well as nos. 3 and 10, complementing existing tools and contributing to a more integrated and comprehensive view of the market. It would need a helpdesk to cover component no. 12. A number of functions and offers, completing and articulating current efforts, could be developed in components nos. 4, 5, 8 and 14, directly informed by the previous components and feeding in turn the 'observatory'; however, whether they should be an integral part of the 'observatory' or operated separately with good connections with the observatory remains to be explored in more detail. This would leave out component no. 7, which is highly important and would meet identified demand from users, but is a wide topic in itself and might be best operated jointly between the 'observatory' and other initiatives; as well as component no. 1 which is most naturally carried by large EU programmes such as Copernicus C3S for physical climate data, and where the added value of an 'observatory' would probably lie mostly in translation layers between the Data Hub and the other components.

6.4.2 Main Challenges

The remaining challenges listed on top of the previous paragraph would of course remain and need to be progressively addressed around and after the launch of the observatory / platform. The name of the instrument itself has been a matter of debate within the MARCO consortium, the term 'observatory' conveying well the role of monitoring data on the size, structure and evolution of the market based on a common methodological framework across sectors and geographies, which should be one of its core functions, but not the role of a community platform and a market place, reason for which some prefer an alternate, portmanteau term such as 'collaboratory'. Another major difficulty, repeatedly emphasised in this report, is the fact that many current or potential users of climate services are not aware that they are using climate information. Without necessarily discarding the terminology of 'climate services' altogether, as is regularly suggested in EU conferences by representatives of some meteorological institutes and others, it will be necessary to reach out to stakeholders with little or no prior interest in climate information and convince them that the observatory / platform can provide them with useful information for their business.

One of the risks of encompassing a wide range of market support components is to lose focus, dilute resources and not make the best of other initiatives, either existent or currently under development, rather than to concentrate on these components (notably around observation) where the additionality of a new instrument would be most obvious. However, there is a need for an overarching view of the market and this requires a higher degree of connection and integration across the various components, both conceptually and operationally, than is currently the case; it is also likely that building such a view will help the community of providers, purveyors, users and decision-makers to surface clearer needs and gaps in most components and in market support at large.

Opting for a hybrid scheme shall in turn open new questions. For instance, a market place function (possibly elaborated in connection with the H2020 CLARITY consortium, and starting from a clear understanding of the existent tools) could strengthen the advisory dimension of the observatory / platform and its capacity to analyse specific needs of users and connect them with combinations of relevant services. However, the observatory / platform team could have a role of identifying those new solutions and services presented on the community platform and analyse which ones are most interesting and relevant in terms of climate impact, but also of successful and innovative business models. Assessment of relevance is not dissociable from quality assessment, which has clearly surfaced through several MARCO case studies as a primary concern for potential users. All these functions of demand analysis, quality assessment and matchmaking imply collaboration with a network of experts, some of whom could belong to the consortium of MARCO project partners, but others come from a much wider community of knowledge, for instance within the EIT Climate-KIC partnership and other relevant ecosystems.



6.4.3 Value assets and lessons learnt from MARCO project for the Hybrid Scheme

The overall picture that emerges from the MARCO project of the current market of climate services and its potential for further development is certainly imperfect and incomplete at this stage. Still, as such, it marks a significant step towards understanding the structure of this complex market in its globality, with coherent approaches in terms of gap analysis, business model identification, vulnerability analysis and forecast. The set of case studies has allowed to test a common pattern and methodology that can be replicated to many other sectors and geographies, and should allow for cross-validation once the granularity of the taxonomy and transactional data enables better comparison between qualitative and quantitative analyses.

It is also the first attempt to provide a taxonomy and homogeneous methods for quantitative transactional analysis across all sectors. The apparent discrepancy between the size of market segments as estimated by transactional analysis and their perceived size by practitioners and market users has led to challenges on the methodology, the use of privately-owned sets of data, but also the characterisation of what pertains or does not pertain to the space of climate services, which has already led to some adjustments and refinements of the taxonomy and of the filters. However, there are also elements to show that many users of climate services are not aware that they are actually using services based on climate information, and increasingly transversal and integrated insight into the market can only help to better identify the factors of divergence between the actual and perceived states of the market and to reveal areas of untapped potential for more widespread use of such services. Some advocate basing analyses solely on transparent and independently verifiable numbers, but those are scarce. For segments of the climate service market that are explicitly not covered by the current transactional analysis, such as service providers only active within the boundaries of their national markets, but also publicly purchased services, available data would need to be complemented by other proxies. This would still leave out, obviously, the hard-to-explore area of in-house services used by companies and organisations without materialising the exchange of climate information by financial transactions: while this exchange arguably does not belong to a market, it does potentially contribute to climate action (especially adaptation) and a question is then to assess how much the development and use of such in-house services might affect the future growth of the commercial market of climate services, without necessarily reflecting limited use of climate or climate-related information itself.

7 Conclusions

Even though many questions require further exploration to understand the emerging market of climate services in its full complexity, findings and outcomes of the MARCO project lead us to recommend the set-up of an instrument that would combine functions of a market observatory and of a community platform, with dimensions of market place and 'collaboratory'. The business model for such a hybrid scheme shall need to be more precisely defined in the upcoming few months. Indeed, a combination of several factors: (a) the need for such an instrument, confirmed through stakeholder engagement and multiple conversations (bilateral, within conferences, workshops, festivals), (b) the necessity to effectively start operations of the instrument to attract a community of providers, purveyors and users and to progressively refine and enrich its functionalities, (c) the desire to use outcomes from the MARCO project before they must be updated, pleads for a targeted launch in 2019.

Realistically, the 'observatory' (observatory / platform) cannot offer all functions from the beginning and shall thus have to focus first on providing consolidated data on the current market globally and more precise, reliable information on some of the priority sectors identified during the project. The initial offer shall also depend on the resources available (human and financial). Realistic business models for the 'observatory' would likely involve a lean core structure to manage and operate basic functions and user interface, articulated with a number of other organisations, instruments and partner ecosystems, both to provide tailored value to users of the 'observatory' and to deliver some of the market support components (see Figure 1) that would not be part of the 'observatory' itself.



In view of maximising the development of relevant climate services and their contribution to climate action, the main recommendations for stakeholders formulated in this report are the following:

For Climate Service Providers:

- Develop climate services that address the capacities, language, performance indicators, and risk management systems of end-users;
- Practice transparency in use of climate-related data and in assumptions;
- Monitor and communicate the benefits and cost-effectiveness of using climate services to key user groups;

For Climate Service Purveyors:

- Foster the co-design of climate services;
- Explore new market niches following projections of future demand for products and services based on various climate change scenarios;

For Climate Service Purveyors:

- Engage in an intuitive marketplace that enables users to easily access providers that are capable of meeting their requirements;
- Take part in training modules which demonstrate the added value of applying climate information;

For Policy Makers:

- Strengthen cooperation and coordination between EU-initiatives, e.g. between public and private activities, and across different sectors;
- Increase incentives through legislation to take climate change into account.