CLImate services MArket research for effective climate FUTURE

°CliMaFuture

Technical Annex

Work programme objective addressed: call H2020-SC5-2016, Greening the Economy, SC5-03-2016: Climate services market research Part b)

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Table of Contents

1. Excellence

1.1 Objectives

Climate variability and change are posing significant challenges to societies worldwide. In Europe extreme climate events have increased and they will continue in the future. According to a study performed by JRC Institute for Environment and Sustainability, by the end of the 21st century[1] rain intensity will increase even in the driest areas and a general increase in the mean annual temperature between 3 to 6ºC for almost all areas in Europe is anticipated mostly affecting the regions bordering the Mediterranean basin, the Alps and the Baltic States including Norway. Climate variability affect territories, businesses and local communities and improved tools and methodologies are required in order to adapt to and mitigate climate changes.
The Directorate-General of Research and Innovation has highly prioritised the Climate Services (CS) "to become the intelligence behind the transition to a climate-resilient and low-carbon society". The Roadmap of Climate Services[2]specifies that"Climate services have the potential of becoming a supportive and flourishing market, where public and private operators provide a range of services and products that can better inform decision makers at all levels, from public administrationto business operators, when taking decisions for which the implications of a changingclimate are an issue".

Motivation: The Challenge

The necessity for enabling the Climate Services (CS) market to expand, growand flourish is recognised at the EU level and in itsMember States. However, as climate adaptation and climate mitigation move into practice, it is important to identify and understand the demand of the decision-makers at all levels and disciplines, consider the gaps in the pathway from supply to demand, pinpoint the enablers and barriersfor providing CS that will fulfil this demand, and provide insights for developingthem into business opportunities that can be used in Europe as well as globally. However, CSsstillremain in their infancy with respect to be utilised by non-scientists in an easy and intuitiveway. Furthermore, as the decision-makers and end-usertarget groups are diverse and multidisciplinary, to identify the demand is a very challenging endeavourandbridgethe gaps in the pathway from supply to demandrequiresmarket research approaches.

According to the Roadmap of Climate Services[2],a climate service (CS) is, in a broad sense, a decision aide derived from climate information that assists individuals and organizations in society to make improved ex-ante decision-making. However, in the current situation there is a mismatch between supply and demand of climate services. In fact, efficient application of climate services requires that climate information become integrated into various sectors' policies because they are used differently by different sectors to allow society to build resilience to future change and take advantage of opportunities provided by favourable conditions.

For matching suppliers and users there is the need, as in other field, to overcome the lack of an integrated climate services market and the fragmentation (sectorial, methodological, etc.) of the current situation. Moreover, many gaps still exist in the knowledge of the climate system not only in the underlying science, but especially in tailoring the available and newly produced information to the users' needs and bridging demand and supply.

Finally, considering the dis-uniformity in the different member states, a lot remains to be done. The current fragmentation and the insufficient coordination between the multiple levels and stakeholders requires to follow a multi-level approach. **Therefore, in the CliMaFuture we will follow a multi-level and multi-stakeholder approach.**
Furthermore, in this case it is insufficient to adopt the "classical" science-policy interfacing that has been adapted and used in many other disciplines such as in European water management. In order to succeed to provide a strong business value proposition, Climate Services must use a communication interface among science-policy-business-citizens. However, it is acknowledged also in the Roadmap[2]that Climate Services, which are scientific developments, must now be put in the context of the co-design and co-development with

[1]Extreme Temperatures and Precipitation in Europe: Analysis of a High-Resolution Climate Change Scenario, Rutger Dankers& Roland Hiederer, Joint Research Centre Institute for Environment and Sustainability, ISSN 1018-5593
[2]A European Research and Innovation Roadmap for Climate Services, Directorate-General for Research and Innovation, 2015, ISBN 978-92-79-44341-1

purveyors and end-users. In fact today Climate Services providers are mainly research centres and academia, therefore pathways of a mutual terminology and understanding must be created to enhance CS's quality, relevance and use by diverse stakeholders beyond the scientific circles. Climate services need to be provided to users in a seamless manner and, most of all, need to respond to user requirements.[3]Climate services cover the transformation of climate-related data into customised products such as projections, forecasts, information, trends, economic analysis, assessments (including technology assessment), counselling on best practices, development and evaluation of solutions and any other service in relation to climate that may be of use for the society at large. In this respect climate information provided by Climate Services (CS) has a vital role in national development planning for managing climate change and for mitigation and adaptation.
Therefore, for the listed characteristics, Climate Services implicate a complex pathway involving the production, translation, transfer, and use of climate knowledge in climate-informed decision-making and climate-smart policy and planning. They involve strong partnerships among providers and stakeholders, including government agencies, private interests, and academia, for the purpose of interpreting and applying climate information for decision making, sustainable development, and improving climate information products, predictions, and outlooks for developing and evaluating adaptation strategies.

CliMaFuture starts the study from five cities with surroundings but involving the different policy levels and considering different priorities.

Proposal Aims
The main aim of the CliMaFuture is to perform a profound market research through dialogue among science-policy-business-citizens Focus Groups and through a wider market research at EU-level and EU-28 member states for providing a clear assessment of market possibilities and necessary policy strategies for creating supportive frameworks for empowering the market expansion of climate services:

1. Assess enablers, conditions and constraints for climate services among different constellations public/ private and EU/ national/ local levels for wider market uptake and growth in Europe and abroad;
2. Develop market recommendations aiming climate services providers, policy makers, climate services purveyors and end-users for enabling Europe to expand its climate services market and to become climate services provider leader.

Overarching Vision: CliMaFuture Proposal Specific Objectives:

A market research normally focuses on a particular product or service that may be introduced in an existing market. In this proposal, we need to do a market research to develop a whole new market. In order to capture the demand of multi-disciplinary stakeholders (public, business, citizens) at different levels (EU, national, regional and local), CliMaFuture aims to perform an EU-wide market survey (EU/national) and five market surveys at city/ local level in five different cities. For the market survey in the cities, we will set-up (or use where existing), a multi-stakeholder platform approach, which will bring together different multi-disciplinary sectors and users from local and regional level and where possible national.
The specific objectives of CliMaFuture to reach its main aim are:

O1. To engage public, business and private sector including citizens, who are the climate-services end-users, to express their needs for adopting climate services and to provide input to climate service providers for improving their climate services' value propositions.

The "end-users" are a heterogeneous mix of stakeholders from the national, regional and local community levels. Each user can derive a benefit – potential or actual – in using climate services. We must take into consideration that different types of climate services have been developed in recent years for different users: on one hand, large companies have developed dedicated departments for the

[3]Hellmuth M.E., Mason S.J., Vaughan C., van Aalst M.K. andChoularton R. (eds) 2011. A Better Climate for Disaster Risk Management. International Research Institute for Climate and Society (IRI), Columbia University, New York, USA.

incorporation of climate services and the promotion of climate-smart products in-house, e.g. the re-insurance industry. On the other hand, different models of climate services with public or private funding have been established, providing external services and products. The latter include, among others, physical data and data products like maps and charts, synthesis reports, guidance documents and consultancies for business strategies.

This objective corresponds to the Roadmap[2]'s page 6 Challenge 1 "Enabling Market Growth, activity 1.1 "assessing the nature of climate services market" and specific action b "Translating users' needs into services and access required."

O2. <u>To perform thorough market research, to identify enablers and barriers and recommend climate services improvements applicable to policy, business and private sectors.</u>

The market research will:

- O2.1. Consider gaps between users' needs and perceived market potential and services supplied, including recommendations to address those;
- O2.2. Diagnose existing bottlenecks and barriers (economic, technical, sociological) for the uptake of climate services and means to overcome them;
- O2.3. Assess the implications of competition and synergies among different provision modes (public/private, EU/national/local level), in view of growing the market and enhancing users' access to appropriate quality services;
- O2.4. Evaluate policy environments and supportive frameworks/guidance (e.g. policy, regulations, standards, and voluntary schemes) in supporting the growth of the climate services market validated through the city market studies;
- O2.5. Prioritise modelling needs, emphasising on interactions and feedback and how to improve these.
- O2.6. Identify cost/benefit drivers for integrating climate information with multiple data sources and with user organisation logics, practices, existing processes and tools.

In Europe the growth of the Copernicus Climate Change service (C3S) and of national climate service centres offer the conditions for realising such potential. Through the provision (in a free and open access mode) of a consistent layer of data, data products, and model outputs, they can support the development of a market, in which public and private climate services operators develop a variety of customised high added-value services with and for users. Reliable and actionable CS, integrated with socioeconomic assessments, will scale-up the cost-effectiveness of climate change mitigation and adaptation solutions. CS will increase the quality and effectiveness of decision-making (e.g. on mitigation policies, resilient infrastructures, novel business opportunities, future investments). The research will help to identify enablers to follow and barriersto remove:

- *Enablers*: enable informed decisions where the goal is to increase resilience and adaptation capacity by addressing existing or emerging risks, and enhance the capabilities of seizing the opportunities of the transition to a low-carbon economy.
- *Barriers*: Without a single interpretation of what climate services are, the national climate services centres, which grew in Europe and worldwide in the recent years follow different models and have different strength and weaknesses.

This objective corresponds to the Roadmap[2] 's page 6 Challenge 1 "Enabling Market Growth, activity 1.1 "assessing the nature of climate services market" and specific action a "Assessing the climate services market (demand and supply)." and c) "Exploring the public and private domains of the market".

O3. <u>To develop a long-term market-growth strategy for Climate Services, and to identify the demand-side measures to be taken forward in other policy fields to facilitate the growth of the Climate Services market in Europe and beyond.</u>

Propose Business models for enabling climate services reach end-users and making end-users aware of the Climate Services existence.

At present there is a disconnect between supply and demand for climate services, where the climate service supplied does not match current and potential demand of end-users.
While developing a long-term market-growth strategy for strengthening and expanding the use of climate services we need to consider that CS needs and objectives are space- and time-scale specific, context and site specific as well as sector specific whereas:
- *Space scale (European, national, regional/local)*: at European scale the most relevant climate services are those being implemented through the Copernicus Climate Change Service (http://climate.copernicus.eu/); at national scale, CS are implemented to support national adaptation and mitigation plans and the users are national public (institutional) and private stakeholders; at regional and local scales, CS are implemented to support local (regions, municipalities) adaptation and mitigation plans and the users are local public (institutional) and private stakeholders.
- *Time scale*: the climate information used to produce CS can consist of climate monitoring data, seasonal forecasts, or medium to long-term climate projections. Different time scales of climate information will thus involve applications and services at different time scales.
- *Context specific*: CS aim to give response to climate change impacts and vulnerabilities, which are strongly dependent on geographical, territorial, environmental and socio-economic conditions.
- *Sector specific*: CS aim to help reducing climate change impacts in different environmental and socio-economic sectors.
Another issue that will be tackled is the assessment of supportive framework including incentives, voluntary schemes, subsidies, etc.

This objective corresponds to the Roadmap[2] 's page 6 Challenge 1 "Enabling Market Growth, activity 1.1 "Assessing the nature of climate services market" and specific action a "Assessing the climate services market (demand and supply)."; and activity 1.2 "Growing the climate services market." And specific actions (b) "Establishing the means of enhancing the awareness of, and promoting, climate services.", and (c) "Developing appropriate business models for the provision of climate services."

O4. <u>Provide a Climate Services Market Place where Climate Service providers can describe their services and where Climate Services end-users can search and find a suitable Climate Service for their needs.</u>
The Climate Services Market Place will be functioning as a "yellow-pages" directory for Climate Services. The Market Place will be freely available to all and it will be sustained after the project ends. It is part of the objective to provide it througha link from the existing Climate platforms Copernicus and ClimateADAPT. At the same time, best practices and examples may be made available through the platform. This objective will help build capacities and 'communities of practice' allowing suppliers, purveyors and users, something which is in line with the Roadmap's priorities.

*This objective corresponds to the Roadmap*2 *'s page 6 Challenge 1 "Enabling Market Growth, activity 1.1 "assessing the nature of climate services market" and specific action a "Translating users' needs into services and access required." As well as Challenge 2 "Building the market framework", activity 2.1 "Communities and infrastructures to support and grow the climate services market.", and action (a) Developing a viable climate services community that engages users, providers, purveyors and researchers."*

Metrics for measuring the Objectives
Different metrics will be applied in CliMaFuture Project measuring the fulfilment of itsobjectives. These measures are shown in the following Table according to the different CliMaFutureobjectives.

OBJECTIVE	**What to MEASURE**	**Performance indicators** The numbers in parentheses specify the annual progression. Specific indicators for the dissemination and communication activity are specified in section 2.2.2.
O1. To engage public and private sectors, who are the climate-services users, to	Level of engagement of societal actors (researchers, citizens, policy makers,	Quantitative indicators for measuring the engagement of people and organizations in Living Labs and Workshops: - workshops(local and EU-Level) = 7 with a total of:

express their needs for adopting climate services and to provide input to climate service providers for improving their climate services' value propositions.	businesses, civil society organizations, etc.) during the Living Labs, workshops and Focus Grpoups.	- researchers engaged>100 (50, 100), - policy makers engaged>100 (60, 100), - citizens engaged>80 (40, 80), - civil society organizations>10 (5, 10), - enterprises>40 (15, 40) - universities and research centres >20 (10, 20) - national and local administration >20 (15, 20) The numbers in parentheses specify the annual progression
	Interest and satisfaction of engaged actors	By using a workshop questionnaire will be measured the average grade of: - interest> 80 - satisfaction>75
	Level of collaboration and know-how exchange of societal actors	By using surveys in Task T7.1.2, will be measured the number of: -new stable collaborations with at least two engaged organization > 20 (10, 20) The numbers in parentheses specify the annual progression
O2. To perform a thorough market research, to identify enablers and barriers and recommend climate services improvements applicable to policy and to private sectors.	Impact of enablers and barrier identified	By using questionnaires(at least 30 suppliers/ demanders CSs) during the Living Labs and workshops the following indicators will be measured: – percentage of suppliers that agree with the identified enablers and barriers>80% - percentage of demanders that agree with the identified enablers and barriers>80%
	Specific improvements faced in recommendations	By using questionnaires(at least 30 suppliers/ demanders CSs) during the Living Labs and workshops the following indicators will be measured: – percentage of suppliers that agree with the recommendations >80% - percentage of demanders that agree with the recommendations >80%
O3. To develop a long-term market-growth strategy for Climate Services, and to identify the demand-side measures to be taken forward in other policy fields that may facilitate the growth of the Climate Services market in Europe and beyond.	Level of agreement on the market-growth strategy for Climate Services	Questionnaires(at least 100 stakeholders) in during the Living Labs and workshops, for verifying the validity and feasibility of the market growth by the following indicators: – percentage of EU actors that agree with the long-term market-growth strategy>75% - percentage of national actors that agree with the long-term market-growth strategy>75% - percentage of local actors that agree with the long-term market-growth strategy>75%
	Effectiveness of the identified demand-side measures for facilitating the growth of the Climate Services market	By using surveys (at least 100 stakeholders) in Task T7.1.2, the following indicators will be measured: – percentage of EU actors that consider the demand-side measures effective > 75% - percentage of national actors that consider the demand-side measures effective > 75% - percentage of local actors that consider the demand-side measures effective > 75%
O4. To create a Climate Services Market Place to support the demand	Level of engagement of climate service providers and climate service users in the	Quantitative indicators for measuring the engagement of people in the Climate Services Market Place: - registered users > 2500 (800, 2500), - showcases of suppliers > 300 (100, 300)

and supply of climate service providers and climate service users and to support the growth of the climate services market in Europe and beyond	Climate Services Market Place	- Demands from Users> 200 (80, 200) The numbers in parentheses specify the annual progression
	Interest and satisfaction of climate service providers and climate service users on the use of the Climate Services Market Place	By using an online-questionnaire and questionnaires during the Living Labs and workshops the following indicators will be measured: - average grade of interest > 80 - average grade of satisfaction >75

Table 1: How to measure the CliMaFuture objectives

1.2 Relation to the work programme

The following Table 2 summarises how the challenges and goals of the call are addressed by the CliMaFuture project

Challenges and goals of the call	How it is addressed by the project
To create climate services market able to scale up the cost-effectiveness of climate change adaptation and mitigation in Europe and beyond.	The CliMaFuture Market Place will be created and validated in T1.2 in order to develop a viable climate services community that engages users, providers, purveyors and researchers in order to facilitate the growing of a variety of customised added-value services with and for climate service users. The CliMaFuture Market Place (T1.2) will store an inventory of CS supply (T1.1, T1.3) and supply channels (T2.2). At the same time, the assessment of policy (T2.1) and the market research (WP3, WP4) will allow to better understand the demand and the offer with the effect to scale up the cost-effectiveness of climate change adaptation and mitigation.
To enable the growth of the climate services market, by better understanding the nature and scope of both the demand and supply sides.	The project enables the growth of the climate services market by different actions: - the CliMaFuture Market Place (T1.2) will allow hosting both the demand and the supply of climate service with the effect to increase the circularity of the information that boosts the growth of the market - WP5 identifies gaps suggesting solutions, assesses enablers and barrier, analyses demand and supply pathways (based in the market research of WP3 and WP4) in order to better understand the nature and scope of both the demand and supply side. The objective is to overcome the mismatch between supply and demand of climate services for enabling the market growth.
Assessing constraints and opportunities of the climate services market, so as to identify the untapped potentials and enabling conditions for market development in Europe.	The project will assess the current offer of CS (T1.1) and adaptation strategies for European cities (T1.3). Furthermore, the market research in WP3 and WP4 will perform qualitative market research analysis by Living Lab (T3.1) and Focus Groups (T3.2) and quantitative market research analysis by EU-level stakeholder consultation (T4.2) and in-depth interviews (T4.3). These activities will support the assessment of market enabler and barriers (T5.1) and of the next generation of CS (T5.2) for enabling conditions for the CS market development in Europe.
Develop a comprehensive analysis including: the assessment of policy environments and supportive frameworks (e.g. incentives, voluntary schemes, and standards); the assessment of the implications of competition	The CliMaFuture project will provide the assessment of both policy environments and supportive frameworks and implications of competition and synergies among different provision modes (public/private, EU/national/local levels) (T2.1) In particular the CliMaFuture project through the involvement of several policy makers and administrations will provide guidelines for defining best policy environments and supportive frameworks the future CS supply channels (T5.2, T5.3).

and synergies among different provision modes (public/private, EU/national/local level);	
Analysis of ethical, legal and intellectual property implications of provision and use of climate services, including the assessment of criteria and protocols for quality assurance and quality control	In task (T5.1) of the CliMaFuture project, the assessment of market factors will be oriented to analyse factors such as ethical, legal and intellectual property implications of provision and use of climate services, and the assessment of criteria and protocols for quality assurance and quality control.

Table 2: How the challenges and goals are addressed by CliMaFuture

1.3 Concept and Approach

1.3.1 Main ideas, scope and models

CliMaFuture project starts the study involving five European cities (with surroundings) in different geographical areas with different groups of priorities. Globally, urban areas account for 3% of the planet's surface and are inhabited by about half the population of Earth; they produce 80% of world GDP and contribute 70% of global carbon emissions. According to the United Nations, the urban population is expected to reach five billion in 2030 and to surpass the six, 20 years later.

For the European Climate Services market, there are several reasons why Cities are important according to the findings of the Climate-adapt[4] project:

1. Evidence show that more than 90% have insufficient capacity to deal with long-lasting climate strategies that affect economic, social and ecological objectives.
2. About 77% of the cities have wide capacity gap to take autonomous climate decisions and they need considerable support.
3. There are a few cities with high climate capacity and they could form a strong nucleus for value proposition the rest.
4. Raising capacity is an important objective for policy-makers at all administrative levels for responding to climate change and adaptation.
5. Cities and their per-urban areas recognise the need for social vulnerability due to climate change and its impacts and are willing to proceed for climate adaptation provided that the understand the climate change trends.
6. There is a deep divide between NW and SE European cities, where the North is leading the way. Cities have realised the need to adopt but need suitable climate services at local level.

Furthermore according to the "Horizon 2020 Societal Challenge 5: Climate Action, Environment, Resource Efficiency and Raw Materials' Advisory Group Report" page 14 discusses that climate services must focus also on sustainable cities.

The analysis results of another EU-funded project "RESPONSES[5]" show that policy mainstreaming is a complex action and it requires several cross-sectoral actions. Broadly defined, mainstreaming involves including climate considerations in policy processes, improving the consistency among policy objectives, and where necessary, giving priority to climate-related goals above others. However, these are easily said than done. That is why climate mitigation actions such as energy and transportation measures to reduce CO_2emissions as well as protecting and extending green infrastructures many times are jeopardised by other policies as well as socio-economic factors. Furthermore, to effectively manage policy mainstreaming it requires a multi-level effort for prioritising objectives and putting policies to work together at EU, national, regional and local levels.

Based on the World Meteorological Congress Extraordinary Session 2012, the Second session of the Intergovernmental Board on Climate Services in 2014 and Resolution 63 (Cg-17) 2015, experts in order to

[5]European Responses to Climate Change: Deep Emissions reductions and mainstreaming of mitigation and adaptation Key Findings of the FP7 RESPONSES project
http://www.responsesproject.eu/pdf/RESPONSES%20Policy%20Brief%20Keyfindings.pdf

enable better knowledge of climate services have defined five priority areas for the Global Framework for Climate Services(GFCS): a) agriculture and food security, b) disaster risk reduction, c) energy, d) health and e) water management[6].

Five priority areas as pillars under the "umbrella" of resilient cities

For the above considerations, CliMaFuture will focus on cities and sub-urban areas by embedding the five priority areas as pillars under the "umbrella" of resilient cities. Even though cities as such do not engage in agriculture, they highly depend on it for food security. Furthermore as already discussed, climate adaptation and mitigation require cross-sectoral and multi-level actions, thus the CliMaFuture project will perform several market research studies at city level (local level), regional, national and EU levels by investigating broadly many Climate Services covering many sectors and the five priority areas. The CliMaFuture project focuses on these priority areas by adopting them as much as possible as pillars for achieving resilient cities and infrastructures. The latter of course depends on the climate adaptation plans of the cities and the priorities that they will adoptand the management plans and priorities of the new integrated covenant of mayors for climate & energy[7]. The following figure illustrates the multi-sectoral and multi-level approach of the CliMaFuture project and the five pillars of climate services.

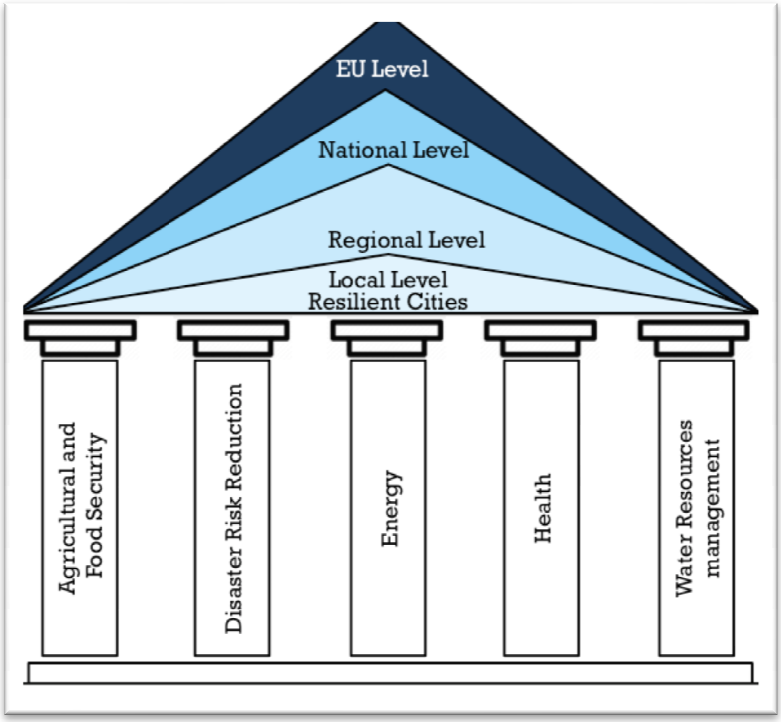


Figure 1: CliMaFuture Scope - The pillars of Resilient Cities

Analysing Value Propositions and Demand-Supply Pathways of Climate Services

According to the Climate Services Roadmap[8], at present there is a disconnect in the pathway between supply and demand for climate services and in other words the climate services supplied does not match what is demanded and potentially demanded by end-users. As in any business sector in order to succeed, business actors must know how to provide a suitable value proposition to their target users and customers.

A value proposition is a promise of value to be delivered and acknowledged and a belief from the customer that value will be delivered. It is a business and marketing statement summarizing why consumers should buy a product or use a service. This statement should convince a potential consumer that one particular product or service would add more value or better solve a problem than other similar offerings. The ideal

[6]http://www.gfcs-climate.org/sites/default/files/events/Second%20Meeting%20of%20the%20IBCS%20%28IBCS-2%29//wmo_1149_en.pdf) and http://library.wmo.int/pmb_ged/wmo_1157_en.pdf, page 553

[7]http://climate-adapt.eea.europa.eu/documents/18/11155975/Adaptation_Strategies_for_European_Cities_Summary_Report.pdf

[8] "A European research and innovation Roadmap for Climate Services", ISBN 978-92-79-44341-1, 2015

value proposition is concise and appeals to the customer's strongest decision-making drivers. CliMaFuture will analyse the value propositions of Climate Services together with the pathways between supply and demand for overcoming gaps and barriers and for exploring possible enablers.

User Driven and Multi-level Market Research and Assessment

The five priority areas for resilient cities will be considered under the perspective of the socio-ecological transition as driver for the climate services market development.

For stressing the necessary socio-ecological transition CliMaFuture project is based on the:

- Quintuple Helix innovation model[9] because it approaches innovation as ecologically and climate sensitive.
- Social Marketing Framework because it approaches sustainability as a social construction in a market context

These models are relevant for identifying how Climate Services suppliers, purveyors and end-users interact (WP3 and WP4)and for modelling multi-stakeholder relationships and interactions including social and environment perspectives in the innovation and marketing processes (WP5). They will also be used for mapping the current state of CS(WP1 and WP2), to identify market enablers and barriers and to suggest new CS business models(WP5).

Likewise with any other product or service availability, the offering must be meeting and fitting the heterogeneous needs of the multi-stakeholders of climate services. In order for climate services to meet the market needs, these must be seamlessly and consistently delivered for real-time decision-making. Therefore, to provide the suitable market research information, the CliMaFuture project will be **user-driven and multi-level** in order to identify the most promising sectors and market opportunities for the early development of climate services and to ensure the CS-providers understand the real needs of end-users. According to the Multi Level Perspective[10] in order to identify enablers for market transitions we must first identify constraints which are multi-level such as technological, legal, economic, political, lacking skills and knowledge; but also social and based on core assumptions that may be right or wrong.

The multi-level perspective argues that market transitions come about through interactions between processes at these three levels: (a) niche-innovations build up internal momentum, through learning processes, price/performance improvements, and support from powerful groups, (b) changes at the landscape level create pressure on the status-quo regime and (c) destabilisation of this regime creates windows of opportunity for niche innovations. The alignment of these processes enables the breakthrough of innovation and enabling market expansion. In this respect, the QuintupleHelix innovation model will be adopted in the project to ensure that it is involving and targeting the right audiences during the market research to ensure that the true demand of the Climate Services providers and end-users are identified and described to allow Climate Services innovation and market-uptake. As the Quadruple Helix is an extension of the Triple Helix, which focuses on research-industry-public/ governmental relations, by adding as a fourth helix the civil society and citizens, the Quintuple Helix innovation model is even broader and more comprehensive by adding the helix (and perspective) of the 'natural environments of society'.

The Quadruple Helix already encourages the perspective of the knowledge society, and of knowledge democracy for knowledge production and innovation. In a Quadruple Helix understanding, the sustainable development of a knowledge economy requires a co-evolution with the knowledge society. The Quintuple Helix stresses the necessary socio-ecological transition of society and economy in the twenty-first century; therefore, the Quintuple Helix is ecologically and climate sensitive.

Within the framework of the Quintuple Helix innovation model, the natural environments of society and the economy also should be seen as drivers for knowledge production and innovation, therefore defining opportunities for the knowledge economy. In 2009 the European Commission identified the socio-ecological transition as a major challenge for the future roadmap of European development.

The Quintuple Helix supports here the formation of a win-win situation between ecology, knowledge and innovation, creating synergies between economy, society, and democracy. Since climate adaptation and climate mitigation represent areas of ecological concern, then the Quintuple Helix innovation model can be applied to ensure that all concerned multi-disciplines and diverse actors coming from public/government, academia/ research, industry/businesses and citizens through their cities and peri-urban areas are involved to provide the right ground for Climate Services innovation and market expansion. Furthermore, the Quintuple

[9]Elias G Carayannis, Thorsten D Barth and David FJ Campbell,"The Quintuple Helix innovation model: global warming as a challenge and driver for innovation", Journal of Innovation and Entrepreneurship, Springer, 2012

[10]Geels, F. W., &Schot, J. "Typology of Sociotechnical Transition Pathways", Research Policy, 36, 2007, p399—417.

Helix can be used to conceptualize different relations and networks of local and regional actors.
Figure 2 illustrates that, in order to have sustainable development, all five actors including the natural environment must be collaborating, working and inventing together. This model will be the basis of the CliMaFuture market research approach at the local level, where public administrations, research institutes, industries and private sector, citizens and CSOs and NGOs and natural environment actors will be involved to identify suitable climate services needs.

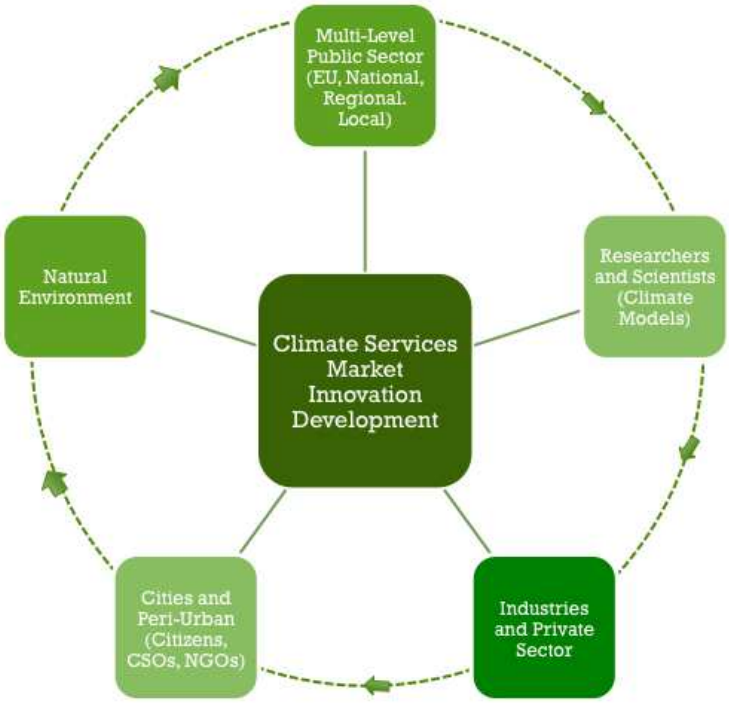


Figure 2: The Quintuple Helix illustrating the collaboration needed among public sector, industry, research, citizens and natural environment. This model will be used for developing the CliMaFuture Market Research methodology

Social marketing and multi-stakeholder marketing methodologies

Using alone a market search survey will not produce the needed guidance to enable the Climate Services growth. Standard market survey investigate one type of product or service targeting usually homogeneous target groups. However, in the case of CS we deal with multiple services provided by multiple and diverse providers targeting diverse and multi-disciplinary end-users. In order to enable this growth and to handle climate adaptation, multi-stakeholders from diverse disciplines, backgrounds, priorities and agendas must be involved. Therefore in order to achieve this, CliMaFuture will adopt not only the classic approach of conducting market research for services, but also it will extend it to *social marketing* and *multi-stakeholder marketing models*. Social marketing extends the use of commercial marketing principles and techniques by including social and environmental perspectives and attempts to measure impacts not only in term of economic values but also in terms of social and environmental estimations[11]. The objective is to promote the adoption of a behaviour that will improve the well-being and quality of life of the target audience or society as a whole[11]. Therefore, Social Marketing's primary focus is on social good, which should be not a secondary outcome.
Likewise, the multi-stakeholder marketing model allows marketing professionals to gain a more comprehensive understanding of marketing relationships within society and the natural environment. Because the model approaches sustainability as a social construction produced, challenged, resisted and transformed through multi-stakeholder relationships and interactions occurring in a market context, it is very suitable for the CliMaFuture Market Survey approach and the methodology described below. For assessing sustainability performance of Climate Services the project takes into account both environmental and social issues giving great value to indicators related to well-being and quality of life of the target audience or of

[11]Social Marketing: Influencing Behaviors for Good, Nancy R. Lee and Philip A. Kotler, Sage, Fourth Edition, 2011, by Nancy R. Lee (Author), Philip A. Kotler

society as a whole. For this reason the measurement of sustainability performance on the business model will take into account the Sustainability Accounting and Sustainability Reporting guidelines[12] (GRI 4.0 with1490 indicators) and IRIS 3.0 metrics[13] (488 IRIS metrics) divided into standardized "economic"(EC), "environmental" (EN) and "social" (SO) indicators.
By using social marketing and multi-stakeholder marketing methodologies, CliMaFuture through the direct involvement of 5 European cities and peri-urban areas, it brings together multi-disciplinary stakeholders in Living Labs to discuss and to investigate the use of CS in their daily operations and how these maybe embedded and in what format the information should be provided. Multi-stakeholder focus group market research interviews will be conducted in all 5 cities including stakeholders from their peri-urban areas. The interviews will focus on economic, environmental and social issues on how can the cities better adapt and mitigate their climate issues.

Analysing Supply and Demand Needs of Climate Services and Promoting New Business Models

In order to evaluate the different Climate Services from a business and market point of view the Business Model Canvas (BMC) will be used extensively. The BMC is a strategic management and entrepreneurial tool that allows describing, challenging and pivoting any business model. We choose to use BMC because it touches upon all the attributes a service needs to have in order to be marketable.

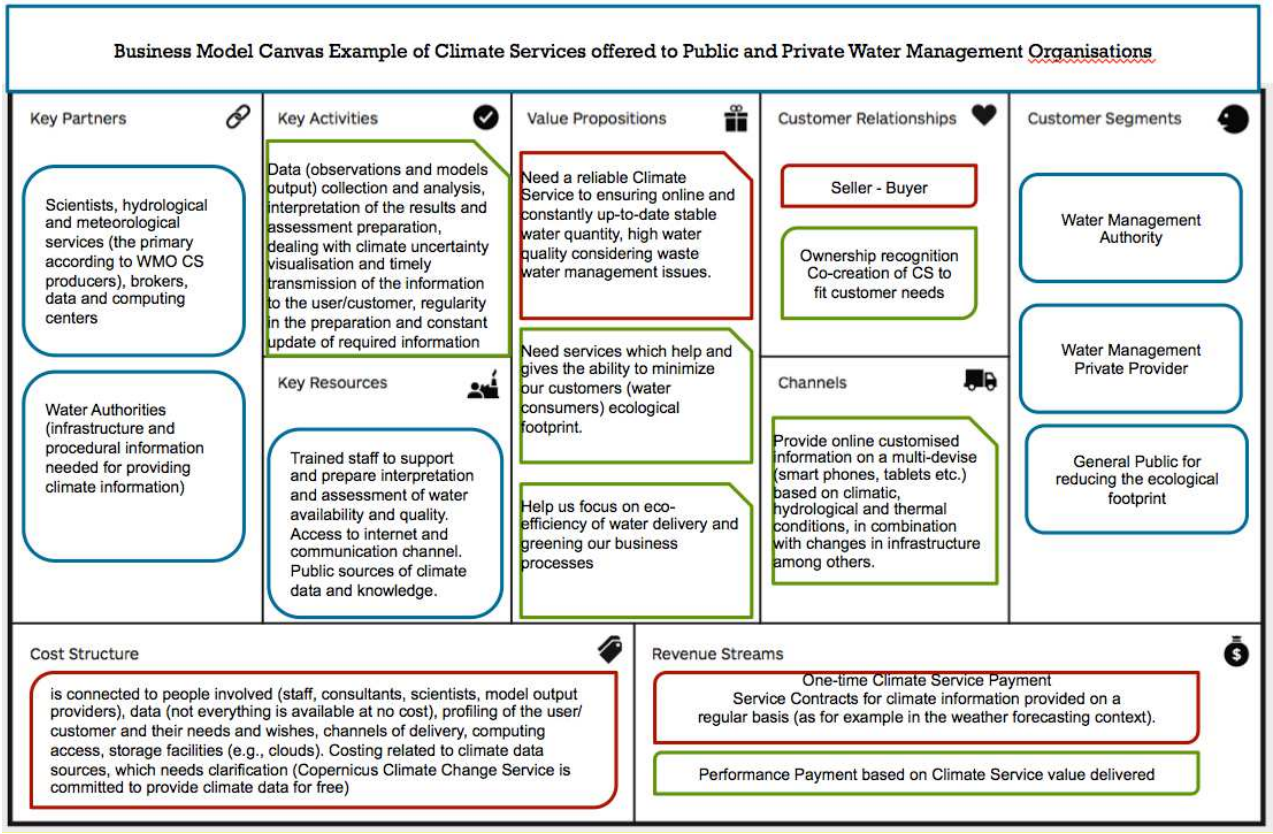


Figure 3: Business Model Canvas for describing current CS and for developing the CS Market Business Models - here it is exampled for public and private water management providers.

The BMC has been used with great success in workshops to bring together multi-disciplinary stakeholders and to help them focus on essential issues. It is easy to understand by diverse stakeholders. BMC also helps understand and clarify customer segments, their needs and how products and services should be provided to meet these needs and generate value. It's a proven business methodology and it creates a shared language among diverse stakeholders and enables practical outcomes. BMC will help us identify and describe the stakeholders (customer segments) together with their demands (1), then to identify the value propositions that the climate service must meet the demand for each customer segment (2), how can the CS be best

[12]https://www.globalreporting.org/Pages/default.aspx
[13]https://iris.thegiin.org/metrics

delivered to the customers (3), what kind of customer relationships need to be developed for the particular service (4), how can the CS provide a revenue to the provider (5), what kind of key resources are needed to provide the CS in order to meet the required value proposition (6), what kind of key activities are needed in order to deliver the CS (7), what kind of key partners do we need in order to deliver a reliable CS to the customers (8), what kind of costs are associated with the CS (9).The BMC is an appropriate tool to use in workshops and to involve multi-disciplinary stakeholders to identify their demand as well as to involve providers for understanding the stakeholders/ customer perspectives. The BMC will be used in WP1 to describe the Climate Services and in WP2 to describe the distribution channels for delivering the Climate Services to the stakeholders. Moreover, it will be used during the Living Labs workshops of WP3 for helping stakeholders point out their demands. Lastly, the BMC will be used in WP5 to exemplify business models for climate services. The expected outcome of using the Business Model Canvas is that on one page it shows the main customer segments of CS and the value they expect from them; how should the CS be delivered and through which channels; what should the price be, how should the CS be generated/ produced and by whom and at what cost.
The Figure 3 illustrates an example of BMC application for offering CS to public and private water management organisations.

Foster Climate Services wide Market Acceptance through the Change Management Approach

According to several studies in the context of climate change, it has been shown that like in many industries there is established a "socio-technical regime" that governs which standards, training, economic incentives, laws, even mind-sets and cognitive shortcuts have been adapted to favour the status quo and to block innovations and new solutions[14].

Figure 4: Change Management Approach by J. Kotter used in CliMaFuture

During the market research workshops that will be held in the different cities we will also use the 8-step Process for Leading Change[15]in order to create awareness and desire to change and embrace the desire to use Climate Services. The Change Management approach is practical and consists of 8 concurrent steps: 1) create a sense of urgency – awareness that actions must be taken; 2) build a guiding coalition; 3) form a

[14]Foxon, T. J. (2003). Inducing Innovation for a Low-Carbon Future: Drivers, barriers and policies. London: Carbon Trust.
[15]http://www.kotterinternational.com/the-8-step-process-for-leading-change/

strategic common vision; 4) enlist a volunteer army; 5) enable action and remove barriers; 6) generate short term wins; 7) sustain acceleration and 8) institute change.
The Change Management Approach will be used in WP3 and in WP4 to guide the scripting of the market survey questions. It will also be used during the WP3 Living Labs and their workshops to help participants realise that a common coalition and vision as well as unified actions are needed in order to be able to accept Climate Services as a necessary tool for handling climate issues, mitigation and adaptation plans. Furthermore, it will be used extensively in WP5 and specifically in Task 5.6:Foster Climate Services wide Market Acceptance. The expected outcome of using the Change Management Approach is to unite diverse stakeholders towards a common vision and to help them initiate the needed change for adapting and to up-take marketable Climate Services. Change Management is necessary to bridge the gap between the Northern and the Southern European SME perspectives.

1.3.2 Technology Readiness Levels

The CliMaFuture project will create the Climate Services Market-Place, which will have a TRL9 meaning that the market place will be fully operational and online for anyone to use it.
Furthermore, in the CliMaFuture project several Climate Services will be evaluated as part of the Climate Services State of the Art and part of this evaluation will be also the TRL of the Climate Service, which will be indicated in the Climate Services Market-Place.

1.3.3 National or international research and innovation activities which will be linked with the project

The following list of Table 3 describes several projects that provide different services and databases relevant for the climate. They are the base for the study in WP1 and WP2 for understanding the demand supply pathways for current and future Climate Services and for the development of the CliMaFuture Market Place.

Project
Copernicus Copernicus is a European system for monitoring the Earth. Copernicus consists of a complex set of systems which collect data from multiple sources: earth observation satellites and in situ sensors such as ground stations, airborne and sea-borne sensors. It processes these data and provides users with reliable and up-to-date information through a set of services related to environmental and security issues.
Global Earth Observation System of Systems (GEOSS) The Global Earth Observation System of Systems will provide decision-support tools to a wide variety of users. As with the Internet, GEOSS will be a global and flexible network of content providers allowing decision makers to access an extraordinary range of information at their desk. This 'system of systems' will proactively link together existing and planned observing systems around the world and support the development of new systems where gaps currently exist. The 'GEOSS Portal' offers a single Internet access point for users seeking data, imagery and analytical software packages relevant to all parts of the globe. It connects users to existing data bases and portals and provides reliable, up-to-date and user friendly information – vital for the work of decision makers, planners and emergency managers.
The Climate Policy Info Hub The Climate Policy Info Hub offers evidence on climate policy options. It explores impacts and implications of international and EU climate policy for decision-makers in policy, business and civil society. The aim is to support informed science-based EU climate policy-making. The knowledge is compiled by a group of independent climate policy researchers.
SPECS. Seasonal-to-decadal climate Prediction for the improvement of European Climate Services SPECS will undertake research and dissemination activities to deliver a new generation of European climate forecast systems, with improved forecast quality and efficient regionalisation tools to produce reliable, local climate information over land at seasonal-to-decadal time scales, and provide an enhanced communication protocol and services to satisfy the climate information needs of a wide range of public and private stakeholders.

Climate-ADAPT

The Climate Adaptation Platform (Climate-ADAPT) aims to support Europe in adapting to climate change. It helps users to access and share information on:

- expected climate change in Europe;
- current and future vulnerability of regions and sectors;
- national and transnational adaptation strategies
- adaptation case studies and potential adaptation options;
- tools that support adaptation planning.

NACLIM

NACLIM has the objectives to:
- quantify the uncertainty of state-of-the-art climate forecasts by evaluating the ability to model the most important oceanic and atmospheric processes in the North Atlantic and Arctic Oceans, and by comparing key quantities with observations
- optimize the present North Atlantic observation system by evaluating the impact of its components on the quality and quality control of model forecasts, and their value in determining the present ocean state and its past variability
- quantify the impact on oceanic ecosystems and on European urban societies of predicted North Atlantic/Arctic Ocean variability
- critically assess the use of climate forecast parameters for use by stakeholders in society, politics and industry.

EUPORIAS

EUPORIAS intends to improve our ability to maximise the societal benefit of these new technologies. Working in close relation with a number of European stakeholders this project want to develop a few fully working prototypes of climate services addressing the need of specific users.

Global Climate Observing System (GCOS)

GCOS is intended to be a long-term, user-driven operational system capable of providing the comprehensive observations required for: Monitoring the climate system, Detecting and attributing climate change, Assessing impacts of, and supporting adaptation to, climate variability and change, Application to national economic development, Research to improve understanding, modelling and prediction of the climate system. GCOS addresses the total climate system including physical, chemical and biological properties, and atmospheric, oceanic, terrestrial, hydrologic, and cryospheric components.

RAMSES

RAMSES is a European research project which aims to deliver much needed quantified evidence of the impacts of climate change and the costs and benefits of a wide range of adaptation measures, focusing on cities. RAMSES will engage with stakeholders to ensure this information is policy relevant and ultimately enables the design and implementation of adaptation strategies in the EU and beyond.

DECUMANUS

Development and consolidation of geospatial sustainability services for adaptation to environmental and climate change urban impacts. The goal of DECUMANUS is the development and consolidation of a set of sustainable services that allows city managers to include geo-spatial products into their climate change strategies. The selected application areas are based on related state-of-the-art Earth Observation techniques, methodologies and products, and user requirements related to urban climate change adaptation and attribution: assessment of urban climate change; land monitoring services providing land consumption information and urban ecosystems assessment and tools; provision of EO products to improve the energy

CHARME

Characterisation of metadata to enable high-quality climate applications and services. A major difficulty faced by users of climate data is how to judge whether the data are fit for purpose. This is a serious barrier to widening the use of climate data by non-expert users. Different users require different information, such as reports on validation campaigns, the robustness of the algorithms used, and the data policy. We term this information 'Commentary' metadata. Much work has been done on producing aspects of Commentary metadata, but there is as yet no robust and consistent mechanism to link it to the datasets themselves. CHARME (“Characterization of metadata to allow high-quality climate applications and services”) will provide these essential links.

Geonetwork - Geospatial Data on Climate

Geonetwork's purpose is to improve access to and integrated use of spatial data and information, to

support decision making**, t**o promote multidisciplinary approaches to sustainable development**, t**o enhance understanding of the benefits of geographic information**.** GeoNetwork open source allows to easily share geographically referenced thematic information between different organizations.

Global Terrestrial Observing System (GTOS)
The Global Terrestrial Observing System (GTOS) is a system that aims at improving the quality and coverage of terrestrial ecosystem data. It then facilitates access to this information so that researchers and policy makers can detect and manage global and regional environmental change.

Atmospheric data access for the geospatial user community (ADAGUC)
ADAGUC is a geographical information system to visualize net CDF files via the web. The software consists of a server side C++ application and a client side JavaScript application. The software provides several features to access and visualize data over the web, it uses OGC standards for data dissemination.

Climate Absolute Radiance and Refractivity Observatory (CLARREO)
The Climate Absolute Radiance and Refractivity Observatory (CLARREO) mission, led and developed by NASA and partner organizations, will monitor the pulse of the Earth to better understand climate change. CLARREO is a climate-focused mission that will become a key element of the climate observing system. The foundation for CLARREO is the ability to produce highly accurate and trusted climate records. The CLARREO mission will provide accurate, credible, and tested climate records that lay the groundwork for informed decisions on mitigation and adaptation policies that address the effects of climate change on society.

ClimateTechWiki
ClimateTechWiki offers a platform for a wide range of stakeholders in developed and developing countries who are involved in technology transfer and the wider context of low emission and low vulnerability development. ClimateTechWiki offers detailed information on a broad set of mitigation and adaptation technologies.

ODYSSEE MURE
This project gathers representatives from the 28 EU Member States plus Norway. It aims at monitoring energy efficiency trends and measures in Europe, using on two complementary internet databases: ODYSSEE on energy efficiency / CO2 indicators, including detailed data on energy consumption, activities and related CO2-emissions (around 1000 data series by country) and MURE on energy efficiency policy measures, including their impact (around 2000 measures).

CLIM-RUN
CLIM-RUN Project (2011-2014) aims at developing a protocol for applying new methodologies and improved modelling and downscaling tools for the provision of adequate climate information at regional to local scale that is relevant to and usable by different sectors of society (policymakers, industry, cities, etc.).

EURO4M
The European Reanalysis and Observations for Monitoring project is a EU funded project that provides timely and reliable information about the state and evolution of the European climate. It combines observations from satellites, ground-based stations and results from comprehensive model-based regional reanalyses. By closely monitoring European climate, climate variability and change can be better understood and predicted.

ECLISE. Enabling CLimate Information Services for Europe
Scope of ECLISE project is to take the first step towards the realisation of a European Climate Service. It does so by providing climate services for several climate-vulnerable regions in Europe, organized at a sectorial level: coastal defence, cities, water resources and energy production.

UrbanEars
The main goal of the UrbanEARS - Urban ecosystem analysis supported by remote sensing – project concerns improving the operational value of urban ecosystem services related to temperature and water regulation by using remote sensing data to characterize city typologies. The project therefore explores the potential of recent and future multi- and hyperspectral sensors on board of airplanes and satellites in combination with structural information derived from LiDAR, for detailed, spatially explicit characterization of morphological and (bio)physical properties of the urban environment.

CORE-CLIMAX - COordinating Earth observation data validation for RE-analysis for CLIMAteServiceS
CORE-CLIMAX will coordinate the identification of available physical measurements, which can be

reconciled with previously existing data records, to form long time series. It will help to substantiate how GMES observations and products can contribute to climate change analyses, by establishing the extent to which GMES observations complement existing Climate Data Records (CDR).
ECLAIRE ÉCLAIRE investigates the ways in which climate change alters the threat of air pollution on European land ecosystems including soils. Based on field observations, experimental data and models, it establishes new flux, concentration and dose-response relationships, as a basis to inform future European policies.
Agriculture Stress Index System (ASIS) FAO's Global Information and Early Warning System (GIEWS) and the Climate, Energy and Tenure Division developed a system for detecting agricultural areas with a high likelihood of water stress - drought at global, regional and country level.
WCC 3 - World Climate Conference 3 - «Better Climate Information for a Better Future» The World Climate Conference-3 (WCC-3) is aimed at initiating a global action to address the management of climate related risks and opportunities in the interest of supporting sustainable socio-economic development, especially in developing and least developed countries, in the face of current climate variability and predicted climate change. The theme of WCC-3 is "Climate prediction and information for decision-making", focusing on the application of climate information and predictions to societal problems enabling adaptation to the current climate conditions and predicted future changes in areas such as agriculture, forestry, water, health, infrastructure, urban cities and sustainable development.
Future Earth Future Earth is a major international research platform providing the knowledge and support to accelerate our transformations to a sustainable world. Bringing together and in partnership with existing programmes on global environmental change, Future Earth is an international hub to coordinate new, interdisciplinary approaches to research on three themes: Dynamic Planet, Global Sustainable Development and Transformations towards Sustainability. It also aims to be a platform for international engagement to ensure that knowledge is generated in partnership with society and users of science. It is open to scientists of all disciplines, natural and social, as well as engineering, the humanities and law.

Table 3: Past projects that can be relevant for CliMaFuture

1.3.4 Overall approach and methodology

Following the Social Marketing Approach

In the CliMaFuture project we follow the Global Framework for Climate Services and the European Roadmap for Climate Services (CS) concept where CS are based on climate information (in situ and earth observations, current climate variability and trends, seasonal forecasts, climate projections, downscaled products, etc.) together with sectoral information.

For conducting the market research from the social marketing[16] context, the following approach will be carried out for developing the social marketing programme. It involves research at every stage, with constant re-evaluation to assess whether the program is on track. This process consists of five integrated stages: 1) Market Research Planning, Message and Material development; 2) Execute Market Research 3) Execute Case Studies; 4) Result Analysis; and 5) Evaluation, Best Practice and Recommendations. The figure belowvisually depicts the process as a pyramid of sequential steps; in practice, social marketing is not

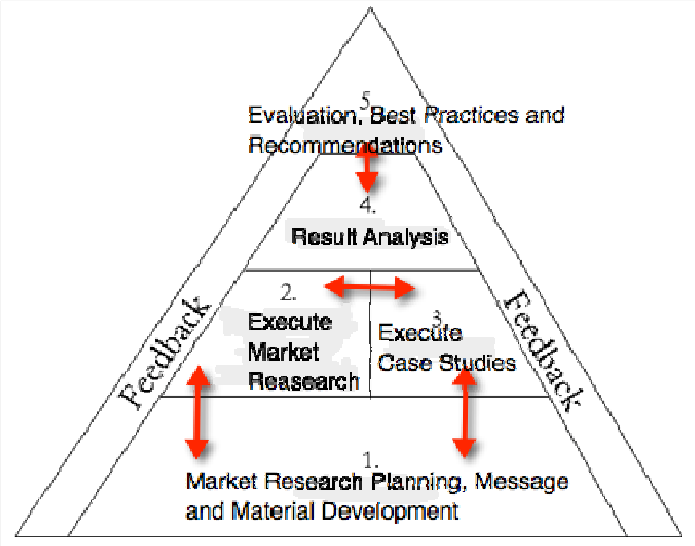


Figure 5: Social Marketing Research Methodology followed by the CliMaFuture Work-plan

[16] Nedra Kline Weinreich, "Research in the Social Marketing Process", www.social-marketing.com

necessarily a clear series of linear steps but rather a process of feedback and adjustment that might require revisiting past stages to make changes based on new information. The planning phase 1 forms the foundation on which the rest of the process is built. To create an effective social marketing program, we must understand the problem we are addressing, the audiences we are targeting, and the environment in which the program will operate. Research is used to analyse these factors and to develop a workable strategy for effecting behaviour change and for developing the CliMaFuture Best Practices and Recommendations based on the case studies, which are performed in Phase 3. The structure of the Work-plan of CliMaFuture is following this structure as illustrated in the figure below.

Figure 6: Cities and peri-urban areas involved in CliMaFuture

Following a Multi-level and Multi-Stakeholder Approach

In order to fulfil the call's requirements to conduct the market research at different provision modes (public/ private, EU/ national/local level) and having different types of survey and case studies, the CliMaFuture project will conduct its market research at two levels: Level 1 at city and peri-urban level, which is the local level and Level 2 at EU/ Member State Levels. Level 1 will also serve the case study requirement through its Living Labs run by the five city consortium partners.

Level 1: Cities and Peri-Urban areas

According to the Special Eurobarometer[17] on Climate Change, Europeans think that tackling climate change: 42% it is the responsibility of national governments and 19% that regional and local governments are responsible. 35% think that business and industry are responsible and 35% the EU. One out of 5 (19%) think that they are personally responsible. Therefore, in the CliMaFuture we carefully considered which cities and their peri-urban areas to choose for performing the local level market research in order to investigate this gap between north and south. With the help of the project partner ICLEI Europe, a leading network of local governments, which represents them to all relevant policy processes concerning sustainability, including EU policy formulation, we have chosen five representative European cities.

These cities are involved in the project as partners as they are climate conscious, they will actively participate in the local market surveys and they will mobilise local policy makers, businesses, first responder in crisis organisations, civil societies and local NGOs and citizens.The cities and their sub-urban have been chosen based on their geographic location, size, morphology, economic structure, main climate hazards and current mitigation actions. The table below shows the five case study cities and their peri-urban and their characteristics. Each city and peri-urban will be responsible for mobilising and deeply involved in the market research survey, results, best practice identification as well as communication and dissemination activities.All these cities depend on their peri-urban areas, including agricultural areas, for their food supply and security, which is also an area for which climate information is highly relevant. For this reason, representatives from sub-urban areas and farmers will also be involved in the local market surveys.

[17]Special Eurobarometer 435 "Climate Change" Summary, Nov 2015, EN, 978-92-79-53033-3, http://ec.europa.eu/COMMFrontOffice/PublicOpinion/index.cfm/Survey/getSurveyDetail/search/Climate/surveyKy/2060

City	Country	Region	Size	Morphology	Economic structure	Main climate hazards	Mitigation actions
Bologna	Italy	Southern Europe	386,298	Land-locked city, 2 water beds in the city. Plain city at the foot of the Apennine mountains	Strong industrial economy + tertiary	Heat waves, pluvial and fluvial flooding	Transport Energy efficiency in buildings (residential/ cultural heritage) Community engagement
Almada	Portugal	Southern Europe	174,030	Coastal	Tertiary, especially tourism	Coastal erosion, storm surge, heat-waves, droughts	Transport and mobility Lighting Water and waste water treatment
Lahti	Finland	Northern Europe		Landlocked, located near the Vesijärvi lake	Services and industry	Pluvial flooding, Heat waves	Low carbon development and planning Energy efficiency Transport District energy
Bratislava	Slovakia	Eastern Europe	583,600	Landlocked, major river crossing the city	Trade, banking, IT, telecommunications, and tourism	Pluvial and fluvial flooding, heat-waves	Transport Heating
Newcastle upon Tyne	UK	Western Europe	289,835	Situated in a low-lying area of River Tyne and in the rain shadow of the North Pennines, it is one of the drier cities in England. North Sea provides a moderate cooling effect, resulting in higher temperatures in the west of the City.	Strong services industry, four areas of economic specialization: Advanced passenger vehicle manufacturing, digital and creative industries, subsea and offshore, and life sciences	Pluvial and fluvial flooding	Energy Efficiency Low carbon and renewable heat (heat networks) Energy master-planning Sustainable transport

During Level 1 market research activities we will also engage the national and regional administration levels.

Project and Study Site partners at national and regional levels will identify stakeholders, who will be invited to events at the Case Study Site level and be targeted with relevant project outputs and information. These will include amongst others the following:

- Policy makers, authorities, environment agencies and regulatory bodies
- National level relevant institutions and networks concerned with Climate Services
- Professionals and practitioners and their respective representative bodies (e.g. farmers unions / agricultural chambers, home builders federations, professional bodies for spatial planners, engineers)
- City Municipalities and Councils
- Businesses and Industries
- Agricultural associations and food-related industry
- Universities
- Intermediary, advisory, brokerage organizations, and NGOs

Level 2: EU and EU-28 Member States

Moving higher up to Level 2, which is national and EU level, the CliMaFuture project will conduct several market research surveys.

European level policy makers: European policy makers concerned with Climate adaptation, urbanisation, agriculture and food security, energy, disaster risk reduction, health, water resources management and ecosystems services will be involved in a workshop and a needs identification survey. Moreover they will be kept informed and invited to take part in selected meetings and workshops, specifically: DG for Agriculture and Rural Development, DG Research, DG Environment, DG Climate Action DG.

European level institutions, networks and representative bodies – Key European farming networks, such as the European Initiative for Sustainable Development in Agriculture (EISA), European Conservation Agriculture Federation (ECAF), European Arable Farmers (EAF), European Forum for Agricultural and Rural Advisory Services (EUFRAS), EIP Water, EIP SmartCities, EIP-AGRI, European Council of Young Farmers (CEJA), the European Network on Soil Awareness (ENSA), as well as the Eionet (member state representatives), members of Europe-wide representative bodies for farming (Copa-Cogeca, IFOAM), water management (European Water Association, and the European Water Resources Association), WssTP. The European Environment Agency will also be invited to take active part in the project for linking the ClimaMarket Platform to the European Climate Adaptation Platform and to the COPERNICUS Climate Change Service. Furthermore, CliMaFuture will conduct a Climate Services Market Survey through the Covenant of Mayors for Climate and Energy body and office to reach the majority of local and regional public authorities. At Global level, the scientific community, international bodies such as WMO, WHO, FAO, UNCCD, UNFCCC, UNEP, OECD and global networks will be kept informed of developments.

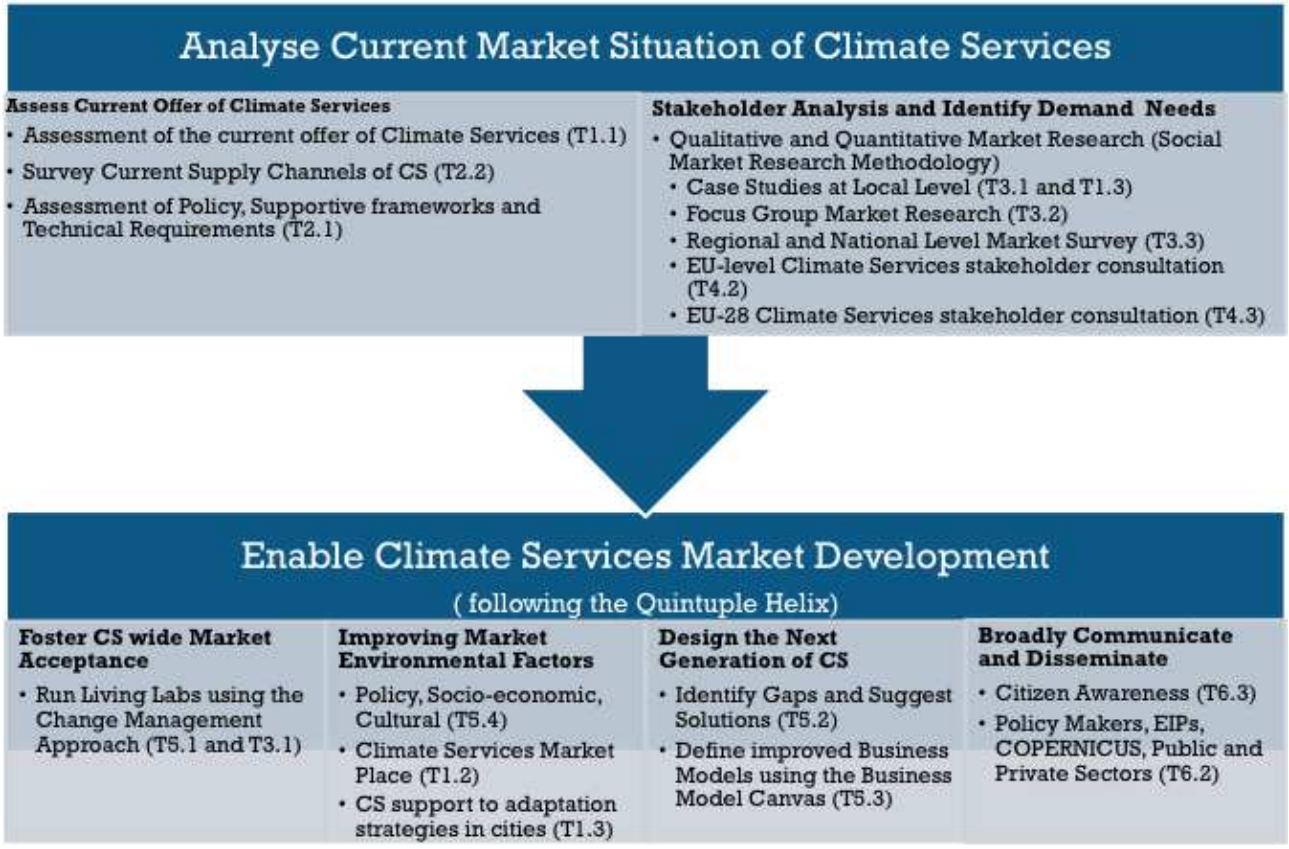


Figure 7: CliMaFuture Market Research Methodology

CliMaFuture Market Research Methodology

In order to develop a business strategy for enabling the market growth of Climate Services (CS), it is necessary first to establish the current state of the market situation, identify the needs of the end-users/ stakeholders and then define how these can be met and how to expand the market. Thus, the following figure illustrates how the project is structured into two interlinked parts: The Analysis part, which investigates the current market situation of CS assessing the current supplies of CS and identifying the demand needs; and the Enabling part fostering CS market acceptance, improving market environmental factors (political,

economic, social, legal and environmental), providing input for designing the next generation of CS to meet the stakeholder/ end-user needs and finally making the results of the project known.
The topics covered in the CliMaFuture project approach are:

1. Identify and classify current-state of the art of climate services and CS supply channels (WP1 and WP2)
2. Identify the demand for climate services by investigating scientific, legal, technical, socio-economic, ethical questions (WP3 and WP4):
    a. Profile different types of actors and demand
    b. Investigate public, business and private end-users
    c. Identify if there is geographic or cultural shifts in demand
3. Pinpoint the needs for providing CS information, interpreting information and presenting information in an easy and intuitive approach for the users (WP3 and WP4).
4. Increase the understanding of cities, businesses, citizens and public institutions that the environmental impact and climate issues are concern for all for tackling and raise the awareness both for suppliers and demanders towards Climate Services and their benefits (WP3 and WP4).
5. Perform a soft analysis of actors (e.g. feelings of mistrust etc.) (WP3 and WP4).
6. Investigate how to add value by enhancing Climate Services, climate exchange information and capacity building that considers societal behaviour and human decision-making (WP1, WP2 and WP5).
7. Recognise changes in demand (WP1, WP2 and WP5).
8. Identify opportunities for growth (WP5)
9. Monitor market competition and access to information (proprietary/ open access) (WP5)
10. Assess policy frameworks and other supportive or non-supportive regulations. The policy frameworks that CliMaFuture will investigate will not be limited to the classic policy frameworks directly related to climate but also to other policy frameworks that directly or indirectly affect the climate or the consequences that climate change brings to the local environment because of these policies. (WP2, WP3, WP4 and WP5)
11. Investigate standardisation of data and protocols, the development of a certification system and of Quality Assurance methodologies addressing potential legal issues in relation to the liability of the operators providing climate services. Options around self-regulatory governance models will be also examined (WP1 and WP2)WP1 is looking into all aspects of CS and in WP5 they will come up with suggestions as to how to improve them this is the new value proposition that new CS must follow.

Market Survey Design

The CliMaFuture market surveys will be quantitative and qualitative. Furthermore, the surveys will be covering Business-to-Business (B2B) and Business-to-Consumer (B2C) since we the end-users might be public/ business organisations and private individuals respectively. A protocol will be developed for consistent and comparable data analysis at local, member state and at EU-level.

Market Study Sector Coverage

The approach will be top-down and bottom-up in order to be able to identify and capture the needs of multiple stakeholders at different levels: EU-level, national, local as described in section 1.3.1 Main ideas, scope and models. Moreover the market study will be sectoral, multi-sectoral and cross-sectoral:

- Sectoral adaptation measures aim at actions for individual sectors that could be affected by climate change. For example, in agriculture, reduced rainfall and higher evaporation rates would call for new means of irrigation practices. Such a change would require a national policy framework which integrates traditional coping mechanisms along with new practices, and emphasizes on the importance of including climate change as a long term consideration while formulating policies.
- Multi-sectoral: This approach aims at actions that draw from various sectors. It is like looking at a particular problem through different lenses. It cuts across various sectors, for example, integrated management of water, river basins or coastal zones. Linking adaptation to climate change, with management options identified in various conventions, could serve as a multi-sectoral approach.
- Cross-sectoral: This is an integrated measure which looks at the objective in a very holistic manner. For example, science, research and development, and technological innovations such as the development of drought-resistant crop varieties, or new technologies to combat saltwater intrusion.

In order to conduct the Market Research, the CliMaFuture project will use Focus Groups, Interviews and an Online Survey.

Focus Groupsare effective in exploring the topic of climate services, in more detail as respondents can build on the input and ideas of others within the group. Focus Groups will be used extensively in WP3 for investigating the Climate Services market conditions at the local level through our chosen five cities. Topics can be discussed in an in-depth fashion during a Focus Group in order to gain deep insights into the demand of the climate services market in the five cities the research focuses on. FocusGroups are particularly suited to

developing and testing new ideas, which is the purpose of the Focus Groups in WP3. Participants are more stimulated by others and often more open in a group, which is particularly effective for exploring the specific topic of Climate Services.

Within the focus group a mix of multi-disciplinary respondents will be included, representing the views of various stakeholdersand from the five Climate Services priority areas/ pillars(agriculture and food security, risk and disaster, energy, water management and health) as well as Climate Services Topics. Figure 8 illustrates the Focus Groups setup.A standard discussion guide for each focus group across the five cities will be developed, including the core topics to be covered. There is a briefing document and a telephone conference briefing for all focus group moderators. Each focus group session runs for 120 minutes and given our experience in this area and the risk of respondent fatigue of timings beyond this length. Given that a standard discussion guide is used, information is collected both per focus group session, but the analysis also

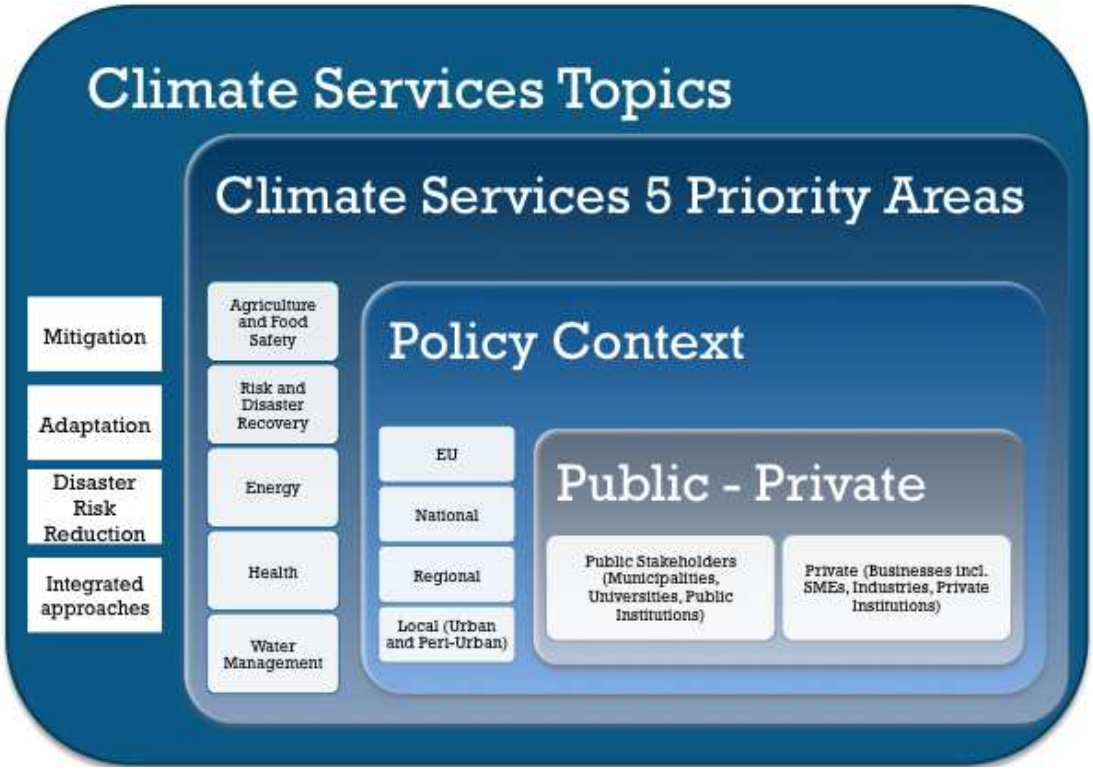


Figure 8: Climate Services Market Research Perspectives Framework

compares the results across Focus Groups (in different cities) as the same topics are addressed in each city (from various perspectives).

Market Research Priority Areas

The market research will investigate the priority areas as defined by GFCS to be disaster risk reduction, water management, agriculture, food security and health. On these the project is adding a sixth priority area, which is resilient cities. Market Research will investigate:

- Possibility to Upgrade National and Hydrological Services, with basic service capabilities
- Capacity to develop national capacities by improving the user interface among providers and users.
- How to develop regional capacities to assist national capacities in providing climate services.
- Investigate the degree and strength of across institutes and disciplines
- What is the anticipated value (economic, social, environmental) and impact of the climate service and how cost/effective is it?
- How easily is a CS accessible and easily understood by the users?

- Willingness to collaborate and cooperate among suppliers and users.
- Links and their strengths related to operational, policy and technical support of priorities.
- What is the CS's direct relevance and easy access to information and knowledge?
- What is capacity building required by the CS to be useful and adopted by the uses?

Semi-Structured Questionnaires
Semi-Structured questionnaire will be used to survey EU-level institutions, business associations and non-governmental organizations that may have an impact on the use of climate services by city stakeholders. Moreover it consists of a descriptive part, and a solutions-based part. The main focus of the EU-level stakeholder consultation is to identify what constraints and opportunities exist that would impact the uptake of climate services at the different CS Perspectives (Figure8) including local (City) level. A detailed list of the stakeholders is show in the following table:

Table of Climate Services stakeholders to be interviewed at EU level

	EU-level stakeholders		
Sectors	**Institutions**	**Business associations**	Civil society
Agricultural and food security	• DG AGRI and Member State working groups	• COPA-COGECA • European Landowners	• European Landowners organization (ELO) • Health and Environment Alliance (HEAL) • IUCN • European Environmental Bureau (EEB) • WWF • Client Earth • The European Consumers Association
Disaster Risk Reduction	• DG ECHO and Member State working groups • UNISDR • European Voluntary Civil Protection Forum	• Federation for European Risk Management Associations (FERMA) • Association for Insurance and Risk Management in Industry and Commerce (AIRMIC)	
Energy	• DG ENERGY	• EURELECTRIC • European Wind Energy Association (EWEA)	
Health	• DG SANTE • European Centre for Disease Prevention and Control (ECDC), • European Public Health Association (EUPHA)		
Water Resources Management	• DG ENV and Member State working groups	• European Association on water services (EurEAU), • Inland Waterways Europe (INE)	
Cross-cutting stakeholders	• DG GROW • DG REGIO • DG CLIMA • JRC • EEA	• Business Europe • European Climate Foundation • European Association of Craft, Small and Medium-sized Enterprises (UEAPME)	
City focused networks and initiatives	• Committee of the Regions • ICLEI • Covenant of Mayors • Eurocities		

On-Line Surveys

Online surveys offer multiple advantages, especially in the context of this study. Firstly, they are fast in terms of being able to gather information in a relatively quick time frame. Secondly, and very important for this study, is the convenience these surveys offer. The online survey will be a questionnaire survey targeting national level stakeholders across the EU-28, which will run in WP4. Given the time demands that these types of stakeholders suffer from, online surveys enable them to respond at a time that is convenient for the respondent rather than a time that is suitable for the interview. Furthermore, the advantage of an online survey in this study is the ability to capture information from relevant stakeholders across the EU28 rather than in a smaller selection of countries. The sample will be based on a database compiled by the project partners of national contacts across the EU-28 Member States. Categories of stakeholders for inclusion in the database are policy-makers, public administrations such as ministry of environment, ministry of transportation, etc; business associations and chambers of commerce, first-responder organisations, agricultural associations, SME clusters. All potential respondents will be contacted by email and invited to participate. In certain cases, special target groups (or priority targets) will be contacted by phone to participate and encourage other relevant stakeholders to participate. The email invitation includes a link where they can participate in the survey. Access to the questionnaire is only possible by clicking on the personal link. Only those who receive the personal email invite will have access to the questionnaire. It is possible to interrupt answering the questionnaire and to return to it later. All answers entered are saved. The respondent can re-enter the questionnaire by clicking on the personal link and will immediately be directed to the screen where he/she interrupted the answering of the questionnaire. If the questionnaire is not completed in a certain period, a reminder email to participate is sent out to them.

1.3.5 How gender analysis is taken into account in the project's content

Gender issues are very relevant in all participatory activities as aspects of representativeness and in some situation of minority rights. It is standard in good participation practice to ensure a balanced and fair representation in the recruitment of participants. CliMaFuture is sensitive to the European policy of equal opportunities, and will make an effort to ensure gender balance. The partnership will support the European policies that promote gender equality. Gender is one of the criteria for the selection process of people in all CliMaFuture participatory processes and it will apply for all types of actors and stakeholders as far as possible. Furthermore, a set of criteria reflecting the distribution of the general population, e.g. in terms of gender, age, education etc. will be defined and be used by the CliMaFuture partners.

Regarding the participation of women in project activities all partners, associated partners, advisory board and ethical board are committed to promote gender equality. In particular, in the CliMaFuture project more than 40% of leading position (main contact for partners) will be in charge of women. Moreover all partners will involve in their activities a balanced staff for gender and the project foresee that at least 40% of WPs leaders and task leader will be lead by women. The different participatory activities, as well as delivering actions will be carried out engaging national and European communities and networks (identified at the beginning of the project activities) aiming to highlight and implement gender issues.

1.4 Ambition

The Call requirements do not only request a market research report but also "based on appropriate surveys and analysis of case studies, proposals should develop best practices and recommendations for both climate services providers/purveyors and policy makers, with a view to growing the market and enhancing users' access to quality services".

To meet these requirements and in order to design an effective market research of climate services to meet climate change adaptation and mitigation demands, it is necessary to strengthen the classic market researchto tackle multi-stakeholders with diverse perspectives and priorities of the providers/suppliers and end-users of Climate Services. Thus by adopting a multi-stakeholder perspective on sustainable marketing approach[18] and the social marketing approach[19]we will be able to better study, analyse and focus on 1) climate services market since it is a complex web of stakeholder relationships and interactions and 2) sustainability as a set of meanings and values that are socially constructed through dialogues and practices within the context of climate services market.

Since social marketers have recognised that just "targeting the general public" is insufficient, it is much more effective to identify the different target audiences and to specify customised survey messages in order better reach them and to identify their demand. Using climate services widely by different stakeholders will also require a new perspective to be adopted both by the climate service providers and the end-users. Thus, at the same time of conducting the market research surveys, we will use persuasive messages developed through a Perspective Change Management Approach targeting the diverse multi-stakeholders in order to be more effective. During the CliMaFuture project, several market research activities will take place to study the above mentioned factors for enabling the Climate Services market growth and better acceptance in Europe and beyond.

1.4.1 Overcoming gaps and barriers

Despite the advances in modelling, prediction and earth system sciences, complexities of climate system processes and their interactions are not discovered at all. The terms "climate information" and "climate services" include a very broad set of information and services such as historical data, analyses and assessments based on these data, forecasts, predictions, outlooks, advisories, warnings, model outputs, model data, climate projections and scenarios, climate monitoring products, etc., and can be in the form of text, maps, charts, trend analyses, graphs, tables, GIS overlays, photographs, and satellite imagery, etc.

Current climate models are known to have characteristic limitations and to be subject to a range of biases and errors. There is a need to identify and understand the important processes that control climate systems, and how they interact with broader community issues. Increasing skills in climate prediction, climate modelling, estimating the uncertainties of climate predictions and projections, both at the global and regional levels, requires extensive research in climate models, to reduce the uncertainty. At the same time it is necessary that the broad variety of *useful* climate information/services evolve in *usable* or better in *used* information/services.

Frequently, the effects of lack of information and uncertainty in developing achievable climate services are amplified by gaps and barriers. The **ambition** is to study and overcome gaps and barriers in climate services applications for enhancing the ability of governments, societies and institutions to access and use climate prediction and information for adaptation, mitigation and for assessment of impacts and vulnerability. The CliMaFuture project uses a multidisciplinary bottom-up approach that involves all the actors for studying the gaps and barriers like the insufficient awareness by some societal actors, the lack of relevant and timely products and services and inappropriate format in which the information or the service is provided. The study includes a better understanding of needs of specific sectors as well as mechanisms and channels.

Climate information is needed across a wide range of sectors and it is inherently multidisciplinary; to discover synergies across these sectors and between agents and the relative socio-ecosystem dynamics it is necessary to go back to processes of social co-learning between information providers, decision-makers and the entire society providing more user oriented climate information and services. For overcoming gaps and barriers, a clear assessment and strategic planning for mitigation and adaptation have to be developed in such a way to coordinate the integration of climatic and environmental information with socioeconomic information across different sectors and jurisdictions. To achieve this ambition, the multidisciplinary study in CliMaFuture will involve different territorial levels and areas for capturing specificities, different societal sectors, different stakeholders and different disciplines matching needs with available information and services, coupling users with suppliers and understanding when integration of information and services needs of research development. The ambition achievement is facilitated by including social and environment perspectives in the innovation and marketing processes for enabling the growth of the climate services market. In fact climate services have a social and environmental relevance added to the economic one.

1.4.2 Fostering new business models

Another relevant issue is the inadequacy of business model adopted by the climate services. The provision of adequate and timely climate information and its appropriate use follow basically two targets: first to develop a system for production and delivery of climate information from global to local scales, and second to ensure an effective well understanding of the information by decision makers. In few words these aim can be viewed as the efficiency and the effectiveness related to climate information and services. Great scientific progress has been made, especially by the "World Climate Programme" and its associated activities, which provides already a firm basis for the delivery of a wide range of climate services. New and strengthened research efforts are increasing skills of climate prediction through new research and modelling initiatives with the aim to improve the observational basis for climate prediction and services, and the availability and quality control of climate data. However, an efficient utilization of this effort requires adequate business

models. The CliMaFuture **ambition** is to foster new business models that are user-oriented and demand driven, able to save costs and reduce risks, with clear value propositions, transforming climate-related data in customized products that may be used. The CliMaFuture project works with willing users at different levels for understanding the limits of existing business models for available climate services. Furthermore, the project merges the competencies of scientists (from several domains such as climate, social, economic, etc.) with the business culture of the private sector and the political and administrative level of the public sector to foster innovative business models in a perspective that takes into account the operational constraints of users.

1.4.3 Creating a synergic Climate Services Market at Global Level

The need for scientists and practitioners to co-design and co-produce applied research has been highlighted as the central approach adopted by international programs such as Future Earth (http://www.futureearth.org) to develop a more effective participating process bottom-up approach. The challenge is to evolve from the concept of useful information to the concept of usable information "Lemos et al.", and to provide the intellectual support required to accelerate different society's transformation towards sustainability. For this reason the Climate Services Market Place of must be seen in a synergic perspective based on a co-development of business models for climate services supported by a collaborative platform and an online Market Place where demand and supply sides can.

Co-development of business models for climate services

Collaborative platform

A wide cross-section of climate scientists, expert providers of climate information and the users of climate information and services concluded that available capabilities to provide effective climate services are still far from meeting the present and future needs and benefits, particularly in developing countries; the primary and probably most urgent need is the creation of a closer partnerships between the providers and users of climate services. Another target to be achieved consists of ensure an on-going assessment of the current state of knowledge and adaptive capacity across communities and encourage of principles and mechanisms for sharing new advances in science and information through a cooperative global infrastructure system.

Online Climate Services Market Place

An investigation has shown that today there is no one online place where CS-Providers can advertise and information CS end-users about their supplies. Likewise, CS end-users do not have a directory to look for CS and their providers. Therefore, to strengthen the European CS market uptake and to enable the CS market to develop, we will establish an on-line free of charge CS-directory called the "Climate Services Market Place".Figure 8: Climate Services Market Place

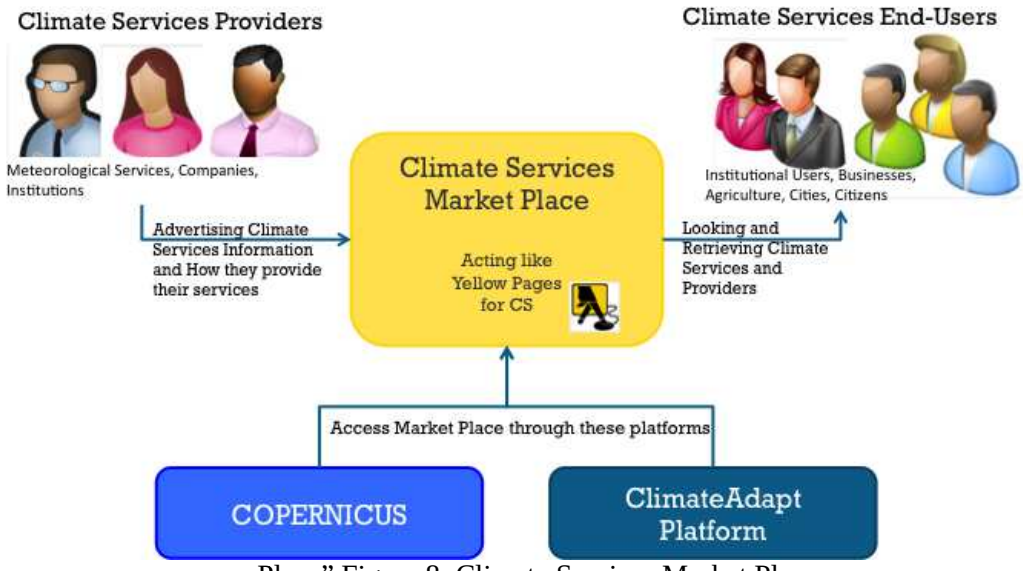


Figure 9: Climate Services Market Place - User Interface Mock-Up

The market place will function like an online yellow pages directory of CS, where CS-providers can enter information / advertise about the CS they provide and how the end-users may contact them. In a similar manner, CS end-users may search for CS and get a list of CS and their providers. The Climate Services Market Place will be accessible through COPERNICUS and ClimateAdapt platforms as an integral tool of these platforms, well as directly through the CliMaFuture project website as well as directly on Internet. The following figure illustrates the overall functionality. The Climate Services Market Place will be deployed using the already existing technology of the knowledge management platform PLAKSS that the partner CNR has developed and used with success in other EU-funded projects. CNR will sustain and offer the Climate Services Market Place after the project as well. The interface of the Climate Services Market Place will look as Figure 9.

2. Impact

2.1 Expected impacts

The CliMaFuture project has focused on the Call requirements as well as on the recommendations of the Roadmap[2]. Therefore the CliMaFuture's activities are having:

- a strong market focus on supply and demand pathways for Climate Services;
- on actively engaging end-users and purveyors to identify the needs and wants of CS, so that CS have the needed value propositions and become easily accessible on the market;
- on identifying limitations and possibilities of current Climate Services state-of-the art;
- through its Living Labs (case studies) in 5 diverse European cities and their peri-urban areas to engaging users, purveyors and providers in climate services for co-defining and co-designing new innovative Climate Services;
- Bringing together the Living Labs in workshops with stakeholders at national and EU-levels for knowledge and experience exchange and for pointing out the needs at operational level (city and peri-urban) for fit-for-purpose Climate Services.
- Through the Living Labs workshops improving regional modelling capabilities, and the capacity to provide regional and sectoral assessments of changes, risks and impacts at timescales (seasonal to inter-annual to decadal) relevant for decisions to businesses, industry and local authorities.
- Living Labs will enable CS suppliers, purveyors and end-users to build capacities and create a pan-European Community of Practice.
- Concretely, strengthening the CS market expansion through the Climate Services Market Place for CS suppliers to advertise their services and for end-users to find what they need; for end-users to enter their experiences and best-practices; for CS provides to identify market needs for new services.

2.1.1 Contribution to the expected impacts set out in the work programme

Expected Impact	Project contribution

Enhanced access to climate services	The Climate Services Market Place, one of the main outcomes of this project, is an online platform/directory that will enable faster and better access to existing climate services, their suppliers and end-users, while it will also specifically provide information on good practices in the use of climate services throughout the EU. The market place will be developed in WP1 and will be populated by the market itself, from the supply to the end-users, and as such aspires to become a comprehensive, user-friendly directory on climate services. Further, the access to climate services for various stakeholder groups (public as well as private) at the EU, national and city level will be investigated as a potential constraint to the use of climate services. WP2 will research the supply channels for climate services; while WP3 and WP4 will research the demand for climate services and use it during the Living Labs and the workshops. The Climate Services Market Place will be accessible from COPERNICUS and ClimateAdapt.
Greater reliability of climate services;	A holistic approach to improve reliability of the Climate Services will be applied. The approach combines the assessment of scientific accuracy and uncertainty of the input data and model outputs, interpretation, for the supply side, together with the users' reliability perception and thus suitability/fit-for-purpose, comprehensibility, scale requirements, transparency, the potential for conveying messages to decision-makers and trust, for the end-users side. The specific criteria to evaluate the reliability of climate services and thus of their use, will be co-developed together with the end-users (stakeholder) groups, engaged in WP3 and WP4. The criteria will be tested and scored by stakeholders in collaboration with the project team. Insufficient understanding of the potential and limitations of climate services inhibits their use, but also leads to mismatches of supply and demand. Climate services that are for example not suited for the purpose in mind (e.g. cost-effectiveness assessment) will not result in reliable results and trust in the outcomes. A better matching of supply and demand, as done in the proposed Climate Services Market Place will improve the reliability of the services. Before being uploaded on the Climate Services Market Place, a quality assurance procedure is additionally put in place to ensure that the uploaded information on a particular climate service is accurate and agreed by the selected stakeholders engaged in the development and testing.
Better relevance and use of climate services for and by user organisations, through a supportive environment for business and the development of existing and creation of new markets, building market share;	A better use and relevance of climate services is the core of this project. The pathway from supply to demand of climate services is research in-depth for a list of climate services. The pathway includes an assessment of the scientific, technical, legal and socioeconomic aspects of matching the supply and demand of climate services. The market research at EU and national level (WP4) and city level (WP3) in the public and private sector will deliver these results. Following a participatory analysis of the barriers, also the enablers for using climate services are developed (WP5). WP5 also estimates the macro-economic potential climate services market and the investment and promising business models that are needed to develop a climate market.
The development of a new generation of highly-customised climate services, tailored for users' needs	While gaps exist in the supply of climate services, this project will aim to improve the missing links between the supply and demand of climate services. Substantial climate services are available which are not (yet) used. The baseline of this project is not only to improve the use of what exists, but also indicate what is the needed for the innovative, next generation climate services to meet the users demands through high customisation of climate services to users' needs, assessment of input information and customisation of the pathway from supply to demand, thereby solving the barriers and ensure enabling conditions. The barriers and enabling conditions will partly be generic (and valid for a whole Member State or the EU, e.g. the legal framework) and partly specified for each match between supply and demand. The customisation is related to the interpretation and further analysis of the output data of the service but also to the communication of the outcomes to

	users and decision-makers.
Strengthening and broadening the use of climate services to new sectors/users.	It is expected that a main barrier in the use of climate services are the missing links in the pathway from supply to demand. The cases where a climate service is directly used by a user in the public and private sector are rare. For example, climate projections are first analysed, converted and filtered to numbers and messages understood by the users. Also climate projections may not be published on a website of a user, not only because of the complexity and inaccessibility of the data but also because intellectual property on the data and/or models inhibits the publishing to a wider audience. CliMaFuture will first identify the missing links and consequently propose solutions to improve the use of climate services. In concrete terms, the Living Labs in the partner cities are the main tool to facilitate the broadening and strengthening of the use of climate services across sectors. The Living Labs will identify the demands for climate services and barriers to the use and will consequently co-develop solutions in the fields of 1) climate change adaptation, 2) climate change mitigation, 3) disaster risk reduction and 4) integrated approaches. Considering that higher-level stakeholders (policy-makers and businesses) also influence the use of climate services in cities, the barriers and enables for the use of climate services at other levels is addressed as well.

Table 4: Expected impacts

2.1.2 Improving innovation capacity and the integration of new knowledge

CliMaFuture will contribute to the new knowledge by means of the planned publications stemming and interaction during conferences and meetings. By investigating current constraints of CS, assessing their value proposition and skills and their limitations, CliMaFuture will identify new innovative strategies that will lead to the definition of the next generation of CS.

The fact that the project partners have very different profiles will have the consequence of exploring and integrating the developments in fields other than just climate information production, promoting the required interdisciplinarity, dialogue among disciplines and environments and thus a holistic approach that will take into consideration the potential, needs and demands of the complete range of sectors and actors relevant to climate services.

The CliMaFuture project will improve the innovation capacity and the integration of new knowledge by:

- Assessing the CS market constraints and enablers (scientific, technical, legal and socioeconomic nature, industry and sector-related) through thorough market research surveys such as Focus Group Interviews, Questionnaires at national and EU-level; multi-stakeholder workshops at local and national level as well as workshops with local, national and EU-level stakeholders.
- Specific and interlinked tasks will provide a comprehensive analysis including: implications of provision and use of climate services, including uncertainty and protocols for quality assurance and quality control; the policy environments and supportive frameworks; the assessment of the implications of competition and synergies among different provision modes (public/private, EU/national/local level); the analysis of ethical, legal and intellectual property;
- The market assessment results will synthesized into a comprehensive market development strategy and recommendations for the uptake of climate services and the growth of the market.
- The Living Labs in 5 geographical and climatically diverse cities and their urba-areas will create knowledge platforms for knowledge exchange, best practice identification and recommendations for both climate services providers/purveyors and policy makers for enhancing users' access to needed Climate Services at the right quality level, accessibility and price.

2.1.3 Barriers, obstacles and conditions affecting impacts

Quite a number of the consortium partners (ISPRA[20], MIL, XPRO[20,21], JLU) have extensively worked with the issues and gaps between policy, science and industry. In fact all these partners are either active

[20]Water Frame Directive CIS-SPI Working Group lead by EC and ONEMA, WDF-CIS work programme 2013-2015
[21]"Roadmap for Uptake of EU Water Research in Policy and Industry"

participants of EC Science-Policy Interface groups or have conducted research in the matter. Climate Services is not an exception and it also falls in the gap of lack of communication between policy, science and industry. Therefore, the most significant problems that could be considered as critical barriers to achieve expected impacts in particular in contributing to public policies are the following:

- ***Lack of stakeholders' participation***

Participation of stakeholders should take place throughout the strategy process in defining objectives, analysing problems, implementing programmes and learning from experiences. In some cases the definition of most national strategies remains top-down or emerge problems of participation. Despite these obstacles, there are signs of progress in many countries, e.g. multi-stakeholder partnerships.

- ***Difficulties to collect and generalize data in all European countries***

It is very difficult to collect the necessary data due to the extent of the sample and fragmentation of the sources. Moreover, it is complex to make effective comparison among different countries and geographical areas due to the heterogeneity of data, considering also the differences. The challenge is to understand the common issues and how to manage the inhomogeneities on the basis of available data giving specificity to each single reality.

- ***Conflict of interests of the actors involved in the process (among central governments and regional/local authorities)***

In cases in which policy process involves several actors, it is necessary to establish forums for proper dialogue among all relevant actors involved. Steering groups or networks representing relevant actors can create an arena for discussing and analysing the development in a coherent view. This can bridge barriers connected to fragmented integration of responsibilities, difference in perspectives and policy integration.

- ***Decision-making process barriers and lack of timeliness***

The decision-making process can be long and result in a loss of coherence of the original proposal. The time from proposal to adoption of a policy can be very long. This can improve the understanding and acceptability of new policies but the lack of certainty can reduce the expectations and the ability to adapt quickly to the perspectives. On the contrary, decisions on proposals can also be made at very short time with insufficient time for effective involvement by all interested parties. This can be reinforced by a participative engagement of stakeholders, policy makers and stakeholders.

- ***Domestic Barriers***

Embedded cultural perceptions make difficult to take new and innovative approaches within government and regulatory bodies, and to tackle the difficulties. Traditional structures and entrenched behaviours can be difficult to change when new approaches could be used. Creativity and imagination are necessary for a better regulation but these skills are not always present.

2.2 Measures to maximise impact

The project is highly committed in defining specific actions in order to maximize its impact, not only in terms of dissemination performance, but also in what the processes of delivering innovations according to the socio-cultural and economic, technological, spatial and political dimensions is concerned. Instead of adopting generic dissemination and exploitation plans, the project will focus on the sustainability of the underlying outcomes beyond the end of the project lifetime, in order to guarantee that all the efforts and financing resources will be optimised, taking into account to the nature and details of targeted audiences. As such, the project specifies concrete set steps to ensure a successful and wide dissemination of outcomes, along with communication goal. These measures are addressed in Section 3, within WP6 (Communication, Dissemination and Citizen Awareness), under dedicated tasks.

In order to successfully fulfil the underlying communication and dissemination objectives, CliMaFuture will devise and implement a set of strategic activities and measures, which are expected to be materialised since the early stages of the project. On the other hand, the consortium will be targeting stakeholders, mainly coming from Business, Government (at different levels), Academy and Civil Society. It should be mentioned that over the project progress the benefits of opening to new target groups will be raised and assessed.

Finally, communication channels towards all involved stakeholders will be established and a detailed plan of dissemination activities will be set up in WP6 (Communication, Dissemination and Citizen Awareness).

Target groups relevant to project activities include: Policy Makers, Stakeholders, Researchers, No Profit Organizations, Private Profit Organizations and their Associations. The project will follow a phased approach in defining, planning, organizing and exploiting communication channels and dissemination events, as shown in the following table.

Phase	Goal	Actions
Phase 1: Initial awareness phase (M01 - M09)	Agree upon dissemination strategy and future activities. Create an initial awareness in the researchers and stakeholders related to the CliMaFuture project objectives and scope.	Logo validation; CliMaFuture project website; event, literature, research source identification; press release; project leaflet; mailing campaign; select events for attendance and sharing knowledge.
Phase 2: Strategic phase (M09 - M24)	Create a more "targeted awareness" regarding CliMaFuture project outcomes technologies with key players in organizations that can be potential actors of the change, as well as with end beneficiaries.	Inform key stakeholders regarding the benefits of the CliMaFuture project to the definition of national and local policies, the environment, the quality of life, the accessibility, etc.., and CliMaFuture results by an electronic newsletter, press release, social media, workshops, annual conferences.

Table 5: Communication and dissemination

The tangible benefits of CliMaFuture outcomes will be championed to local, regional and national governments In order to ensure a wider dissemination of the CliMaFuture activities, to reach the greatest possible audience, and to efficiently organize the internal communication among the beneficiaries, a structured Dissemination and Communication Strategy (Task 6.1) will be designed by **ISPRA** with constant contributions from all the beneficiaries involved in this project.
The Dissemination and Communication Strategy will be a strategic document aimed at a better use of resources. It will define the communication goals, the target audiences, the main messages to be conveyed and the strategy to be adopted to overcome the barriers that could negatively affect the communication of the CliMaFuture project. In order to effectively reach the targets for dissemination and to maximize the visibility of the project results, a broad spectrum of dissemination channels will be used and listed in the Dissemination and Communication Strategy, available right at the beginning of the project (M5).

2.2.1 Dissemination Plan

A calendar of possible target events will be maintained, along with events organized within the project. Electronic and non-electronic material will be provided, as well as publications and presentations in specific international conferences. The Consortium Agreement, signed at the beginning of the project, will define the publishable material, along with an intuitive IPR plan. This information will be circulated within all involved partners before publishing/announcing results through the communication channels.
The above premises are materialized making used of the following channels:

- **Project website** (Del.6.1):a fully functional website (M3) will represent the primary connection to all interested stakeholders. It will contain comprehensive information concerning the project goals, the partnership, the project progress and final outcomes. It will also display information on planned events and it will be characterised by a friendly user interface that will allow the users access to all relevant information. The webpage will be an important tool for information, participation, brokerage, follow-up, management and evaluation-related activities throughout all the stages of the initiatives. It will provide access to reports established in the partner's premises and will include both a public (lay-person orientated with access to all Public Deliverables) and a private restricted area (all consortium activities). Core feature of the website will be its organization into areas carrying targeted messages for different stakeholders interested in the project activities.
- **Electronic newsletters**(Task 6.2) they will allow a timely communication among the partners and all stakeholders involved in the project that will be periodically informed about the status of the project itself. They will be also used by the partners of the project to communicate/involve stakeholders.
- **Social Media**(Task 6.2)**:**the project will make use of social media, such as Facebook, LinkedIn, Twitter and YouTube for establishing channels of communication between the consortium and selected audience. These will be linked by the website and will link to it, as well.
- **Miscellaneous dissemination material**(Task 6.2)consists of: brochures, posters and any other material promoting dissemination and visibility of the project by presenting its main features and results. Brochures will be produced in electronic format (printable when needed) and updated once every year.

- **Building up of the Community** is a central goal of the dissemination operation. The project community comprises of relevant stakeholders already identified in the 5 partner cities. This community will be expanded during the project with CS providers, purveyors and end-users. The cross-domain community will represent a powerful tool aiming at attracting specific valuable beneficiaries of the tools and methodologies. The community members will be engaged from the beginning of the project, and will be the basis for the market research Focus Groups, networking and dissemination activities. This network of organisations and experts is expected to provide the project with sounding input to the market research and knowledge arising through the project. Target groups will be systematically recruited and invited to join the Community. Members are encouraged to interactively contribute to the project by communicating with the consortium through the community channels (websites and social networks), attending and advertising relevant events, and generally keeping up to date with project initiatives and developments. It is one of the goals of the project that the Living Labs will continue after the project ends.

Journal publications (Task 6.2): Partners are interested in publicising research results and the project will target a number of high ranking scientific journals, also for proposing special issues on the topics of the project such as Climate — Open Access Climate Science Journal, Climatic Change, Journal of Business Strategy and Journal of Environmental Economics and Management

Regarding the events related to the project, the following activities could be regarded as Key Performance Indicators:

- **Participation in International Conferences/Workshops/Events**: In such events, apart from networking and project liaison activities, the representatives of the consortium will be giving a presentation of the work in progress and final results of project related work and outcomes and distribute dissemination material. Whenever possible, ad-hoc workshops/plenary presentations will be negotiated with each particular event's organisers.
- **Outreach Events**: : Two outreach workshops at EU-Level (Task 6.4) will be held for presenting the project's objectives, results and methods to interested decision makers, practitioners, experts and general public. Furthermore City Actors and Citizen Awareness (Task 6.3) workshops in 5 European cities will take place during their Living Labs aiming at increasing on Climate Services as a product for Climate Adaptation and Climate Mitigation awareness among the general public with the participation of public institutions, industry actors, farmer associations, CSOs, educational and research organizations, insurances and re-insurances, crisis first responders, water boards and water providers and public institutions such as ministries of transportation).

2.2.2 Exploitation plan

The consortium has been carefully set up in order to include all the relevant stakeholders that can and will bring the project market research results to have an impact on expanding the Climate Services market. The Consortium is truly multi-disciplinary and it has in-depth experience on all the topics (climate cervices, marketing research, business development, policy-science-research interfacing, local level involvement, EU-consultations).The partners are well aware that through CliMaFuture, their own knowledge in the CS field will expand and can be used for further enabling their organisational capabilities. Nevertheless, the main aim is to deliver the project results and to widely disseminate them for early adoption of policies, best practices and behaviours. The overall methodology based on case studies (Living Labs), supply and demand issues, and policies impact analysis have been identified as the main assets, which are suitable for joint exploitation. To foster the circulation of the project results, cooperation among the consortium, policy makers and stakeholders must be pursued. The project has already defined the steps of a joint plan, which will be implemented and followed closely during the project's lifetime under WP7:

Step 1 - mission: the mission of the project is to perform a thorough market research analysis and define a business development strategy for enabling the European Climate Services market.

Step 2 - consortium background: Multidisciplinary background covering all the necessary fields for a successful market development of CS (climate services, market research, statistics, business development social, environmental, policy, economic, technological, re-insurance, information technology, knowledge management, ethics. Moreover, the partners will operate as one experienced unit necessary to carry out the market research, related scientific work and its validation in the different case studies, by engaging stakeholders at local, national and EU-level stakeholders and actors.

Step 3 - research description/competitive advantages:

The market research activities of the project not only will collect data and will engage stakeholders during the project period with surveys and interview at local, member state and EU-level but also perform case studies by the stakeholders themselves in the 5 selected cities and their peri-urban areas .Moreover the use of participatory approaches can reinforce the network, that from local to European This approach is effective as it allows the different stakeholder groups to play social influence on each other, accelerating the process of strengthening and broadening the use of climate services to new sectors and users.

Step 4 - analysis of potential adopters: the analysis of the potential adopters engagement is presented considering a SWOT analysis taking into consideration the consortium and the project objectives.

SWOT analysis.

Strengths	**Weaknesses**
• Multidisciplinary and transdisciplinary of the consortium and of the involved stakeholders • Strong presence of the partnership in international networks and national and international projects • Diversity of academic, climate services research, re-insurance, ethical and business experiences of the consortium • Reputable market research organisation as a partner • Strong theoretical and methodological framework (linking R & D activities, policy making, decision making, knowledge dissemination& public awareness • Management flexibility and speed in decision-making • Good organizational skills of multi-disciplinary stakeholder events and tailoring information/knowledge to different addressees.	• Difficulty to verify in the short term (during the project activities) the impact of the actions of the project on concrete policies. It will be possible to verify the engagement of the stakeholders and policy makers, and their interest in receiving suggestions arising from the project and their intention with respect to the policies. In addition, to overcome existing barriers and to understand needs of specific sectors as well as mechanisms and channels, the ClimaFuture project will use a multidisciplinary bottom-up approach that involves all the actors for studying the gaps and barriers. • Difficulty to produce **pervasive** behavioural changes. In fact, the project will provide the knowledge, the approach and the policies that can be at the base of the broadening the use of climate services, and will produce significant impacts at any level, but pervasiveness requires time over the duration of the project
Opportunities	**Threats**
• Several partners across Europe – ensuring a good coverage of market research activities in all 28 Member States and dissemination at national and local levels • Networks and ensure a wide dissemination within municipalities, the level that implements policies directly affecting people through the partner ICLEI and the partnering cities.	• Barriers and resistance to uptake the new paradigm, whereas the Project is adopting Change Management Approach and Living Labs at city levels; • Insufficient empirical validation for capturing specificities, different societal sectors, different stakeholders and different disciplines for the purpose to match needs with available information and services, and users with suppliers; • Complex bureaucratic procedures in the adoption of the proposed Business Development Strategy, best practices and recommendations for Climate Services in some contexts;

Step 5 - "Marketing" activities: The first "marketing" activities to promote the CliMaFuture Marketplace as well as the project results will take place as part of the Living Labs and workshops in parallel to other dissemination activities; moreover, during the project a "marketing" strategy will be defined, based on context analysis, on the estimation of the available data, information and knowledge available on the use of climate services and the CliMaFuture Marketplace. Note that the marketing strategy will contain as a tool the climate services market place as tangible result of the project, which will allow to empower the action of companies and local authorities.

Step 6 - Operations/operational plan: the project operational plan will be defined considering the vocational attitudes of each partner. Some partners will be mainly devoted to addressing the strategies of the project, like Living Labs and focus groups and consultations, for a strong engagement of stakeholders (mainly institutional stakeholders), overcoming resistances and barriers in the adoption of the project results.

Other partners (Academic and research partners) will be mainly involved for spreading and explaining the project results to other stakeholders and for fostering a community of early adopters. It is worth stressing that, on one hand, all the project partners have already successfully participated or even cooperated, in the past, in the framework of research projects and, on the other hand, academic partners have, as a core aim, to work on research topics related the specific objectives of the CliMaFuture project.

Step 7 - financial planning: A significant part of the design and development will be accomplished through EU funding of the project. Nevertheless, additional funding for the policies adoption at local and national levels will be necessary. The Academic, research and other partners will seek (internal and external) funding for spreading the project results through lobbying with the partner municipalities, ICLEI network as well as KIC Climate initiatives.

Step 7 - financial planning: A significant part of the design and development will be accomplished through EU funding of the project. Nevertheless, additional funding for the policies adoption at local and national levels will be necessary. The Academic, research and other partners will seek (internal and external) funding for spreading the project results through lobbying with the partner municipalities, ICLEI network as well as KIC Climate initiatives.

2.2.3 Intellectual Property Rights Management

IPR management during the project - For the success of the project it is essential that all project partners agree on explicit rules concerning IP ownership, access rights to any Background and Results for the execution of the project and the protection of intellectual property rights (IPRs) and confidential information before the project starts. Therefore, such issues will be addressed in detail within the Consortium Agreement between all project partners. The main purpose of the Consortium Agreement is to establish a legal framework for the project in order to provide clear regulations for issues within the consortium related to the work, IP-Ownership, Access Rights to Background and Results for the duration of the project and any other matters of the consortium's interest.

Access rights for use to background and results - In order to ensure a smooth execution of the project, the project partners agree to grant each other royalty-free Access Rights to their Background and Results that are necessary for the execution of the project. The Consortium Agreement will define further details concerning the Access Rights in the consortium agreement related with the project activities period and after the duration of the project.

IP ownership - Results shall be owned by the project partner carrying out the work leading to such Results. If any Results are created jointly by at least two project partners and it is not possible to distinguish between the contributions of each of the project partners, such work will be jointly owned by the contributing project partners. The same shall apply if, in the course of carrying out work on the project, an invention is made having two or more contributing parties contributing to it, and it is not possible to separate the individual contributions. Such joint inventions and all related patent applications and patents shall be jointly owned by the contributing parties. Details concerning jointly owned Results, joint inventions and joint patent applications will be addressed in the Consortium Agreement.

Open source and standards - A central aim of this consortium is to provide benefit to the European community. Some of the project partners may be either using Open Source code in their deliverables or contributing their deliverables to the Open Source communities. Alternatively, some of the partners may be contributing to Standards, be they open standards or other. Details concerning open source code use and standard contributions will be addressed in the Consortium Agreement.

Consortium agreement - The purpose of the Consortium Agreement is to establish a legal framework for the project in order to provide clear regulations for issues within the consortium related to IP Ownership, Confidential Information, Open Source issues, Standard contributions, and Access Rights to Background and Results for the duration of the project and any other matters of the consortium's interest.

2.2.4 Data Management Plan

All collected data (in WP1, WP2, WP3 and WP4) will strictly comply with the Council of Europe - Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data, of January 28th 1981. Additionally, in what the processing of personal data and on the free movement of such data is concerned the project will follow the European Parliament legislative resolution of March 12th 2014 on "General Data Protection Regulation" [COM(2012)0011-C7-0025/2012-2012/0011(COD), along with national specific legislations on the subject, such as the Italian Personal Data Protection Code (Legislative Decree no. 196/2003).Furthermore, details will be defined in the Project's Data Management Plan that will comply with the EC Data Management Plan template and will specify how the generated data will be easily

discovered and accessed, ensuring open access by adopting the adequate licensing scheme (e.g. Creative Commons License). Moreover, the Data Management Plan will describe quality-evaluating tools/procedures, which will prove the data intelligibility. It will also define the type of accompanying information in the form of metadata or short description to allow potential users to gain awareness on the data concepts and evaluate their suitability for future use. Accompanying information will also include acknowledgement to the EC funding of the project innovation and evaluation activities, along with any information required to maximize the dissemination of the EU support. Finally, the Data Management Plan will specify that standard formats will be used to facilitate the adoption and successful operation of open research data, whenever this is applicable. For preserving privacy, no individual data concerning people will be collected.
The Data Management plan will include:

- Modality for accessing data provided by the Climate Services Market Place
- Modality for accessing data provided by the ClimaFuture partners
- Modalities for accessing data and information collected during the Living Labs and the consultations
- Modality for accessing data produced during meeting, conferences and workshops.

2.2.5How the measures will help to achieve the expected impact

The dissemination and communication measures will allow communicating the project outcomes to different targets at different levels of the social, economic, cultural, technological and environmental system, involving local, national and European dimension.More in detail the measures are here listed specifying the contribution for the expected impacts:

- **Project website:** it will represent a communication channel used by the consortium to disseminate the project results to a community of interest. It will fulfil a community-building role by attracting people interested in the project topics, so they link to the site and relying on it as a good source of information. It will be easily accessible through various search engines; this will allow an easy access and a fast communication of the project results.
- **Electronic newsletters:** they will allow a timely communication among the partners of the project that will be periodically informed about the status of the project itself. They will be also used by the partners of the project to communicate/involve stakeholders.
- **Social Media:** they represent good means of outreach to the public. They will help the consortium to publicise project effort and results thanks to their particularly effective in reaching particular, younger audiences. As part of its media engagement, the consortium will target relevant Social Media to disseminate the project results.
- **Miscellaneous dissemination material:** it will allow promoting the visibility of the project by presenting its main features and results to a community of interest.
- **Building up of the Community:** this network aggregating organisations,experts, institutions, schools, universities, citizens, and already existing networks of stakeholders opportunely involved in the project will provide the consortium the sounding feedback regarding test results and knowledge arising through the project.
- **Scientific Journal publications:** they will allow the dissemination of the project outcomes at scientific national/international level.

Regarding the events related to the project, the participation in International conferences/workshops/events and the outreach public workshops will deal a view to securing the sustainability of the project's outcomes also to other contexts.

2.2.6 Communication activities

The project will follow a strategy using innovative means of communication.

- Public response emerging from surveys and from participatory initiatives carried out during the project may act as useful material for updating user requirements;
- Presence in social media and blogs with light content, not only scientific, in order to allow an effective internalization of the underlying messages according to the different dimensions of the ecosystem;
- Organize and host events for the stakeholders and policy makers. These can be organized in parallel with other dissemination/training events, and will be based on activities aiming at maintaining interest by resorting to creative activities;
- Pursue appearance in local/national/international press and TV;
- The project will build its identity through a logo, a unique format for sharing template (publications, leaflets, technical reports, etc.) and characteristic slogans. The partners will involve the general public in

becoming part of this procedure by inviting them to give their opinion in a reserved space on the project's website. This initiative will serve a twofold scope. Firstly, visibility of the project will be increased, through its very early stages. Secondly, by employing crowd sourcing techniques, the choices in slogans and logos is guaranteed to be a popular key for driving attention to the project's activities;

- An interactive area on the website of the project will allow visitors leaving their own comments and make recommendations on the outcomes;
- The project will adopt a multi-language approach for receiving the desired recognition.

The following table shows a quantitative overview of the dissemination and communication KPIs that the project will set.

	Key performance indicators for Dissemination and Communication	Phase 1 M1-M12	Phase 2 M13-M24	Overall
Academic/outreach focus	Community members	300	700	1000
	Number of scientific publications in peer-review journals	0	2	2
	Number of scientific publications in peer-review International Conferences and Workshops	1	3	4
	Number of special sessions/Workshops co-located at International Conferences	0	1	1
	Number of events attended representing the project	2	3	5
	Number of press releases delivered to traditional media	4	10	14
	Number of unique visitors to the Website (based on Google Analytics)	3000	5000	8000
	Number of references of the project in other websites	50	100	150
	Number of multimedia material downloads (website)	300	1000	1300
	Number of subscribers to the newsletter	50	150	200
	Number of followers in social networks	50	130	180
	Number of posts in social networks	80	150	230

3. Implementation

3.1 Work plan — Work packages, deliverables and milestones

In order to ensure that project objectives are fulfilled, CliMaFuture plans to adopt a methodology that organizes all participants with their respective tasks in a coherent manner. A clear project structure will lead participants along a logical line to reach the project objectives, and a continuous communication will guarantee the involvement of all project partners at any time of the project. The workplan is divided into 7 interrelated work-packages. The work-packages follow the social marketing methodology as well as the demand and supply sides of a value chain. The work packages have clear objectives, tasks, deliverables and responsibilities. The Climate Services providers and demanders (stakeholders) will interact throughout the project's 2-year duration. The CliMaFuture work packages are shown in the figure below.

Figure 10: CliMaFuture Interlinked Work Packages based on the Social Makreting Framework

WP1 Climate Services Market Place

The WP1 has thee goals:

1. Assess and provide the input for the future offer of tailored CS in collaboration with the Living Labs and WP2. It will analyse limitations of Earth observations and uncertainties of seasonal forecast and climate projections and how they reflect to CS and their applicability.
2. Create the online and freely available Climate Services Market Place, an online yellow-pages directory of CS, with available Climate Services, contact information of CS-Providers and CS-End-users. To create and deploy an on-line CS Market Place for CS suppliers to exhibit their services and for end-users to find CS products and suppliers.
3. Prepare a survey on the availability and use of CS for adaptation plans at the city level.Using the Business Model Canvas principle, WP1 will evaluate the value proposition of CS for selected sectors and stakeholders to better address their needs. The market demand will be assessed from the point of adaptation plans of the 5 city-partners by means of the Living Labs and their experience on CS use and contribution to Climate Adaptation and Mitigation plans at the local level (city and peri-urban) in Europe as well as their integration in the national adaptation plans. The end result will be an assessment of current CS products that will be introduced into a new scheme of innovative next generation CS (WP5).

WP2 Current and Future Supply Channels of Climate Services

A major part for enabling the market growth of Climate Services (CS) is how CSs are delivered to the end-users. The form the information takes, its level of detail and/or aggregation, the supply channels used, the ability to collect feedback from the users, the marketing efforts and the discovery tools provided are all factors that define the characteristics of the climate services supply channels. Furthermore, market development depends on the PESTEL factors (Political including Policies, Economic, Social, Technological and Environmental), which will be investigated further in this WP and through involvement in the Living Labs (WP3) to collect as much feedback as possible about the most common failures of the current market. A strong connection will be established with WP1 to make an efficient use of the yellow pages created. The Business Model Canvaswill be used extensively to map and project future CS supply channels.

WP2 has two goals:

1. Assess Policy and Supportive Framework as well as Technical Requirements at different levels (public/private, EU/national/local) to better design future supply channels
2. Survey current Supply Channels and Pathways of Climate Services

The end result will be an assessment of current CS supply channels and pathways and PESTEL factors that will be introduced into a new scheme of innovative next generation CS (WP5).

WP3 Living Labs and Local and National Level Market Research

WP3 builds upon the results of the previous WPs. It will roll out a consultation at local level and perform a qualitative market research analysis based on Focus Groups in the partnering cities. The objectives of this WP are:

1. Create 5 Living Labs in 5 European partner cities (Bologna, Newcastle, Almada, Lahti and Bratislava) to inquire into the needs of Climate Services of the Urban and Peri-Urban System. The labs will facilitate multi-stakeholder consultation on needs, existing challenges and barriers for access to and marketing of climate services; they will support in identifying Climate Services market segments through engaging current users and potential users including public, and municipal companies and holdings, utility providers, businesses, agricultural associations and citizens through local Civil Societies; they will provide a platform for exchange and collection of feedback on the current climate services utilized, on the potential for their improvement; they will support selection of priorities and assessment of barriers and needs; they will host 2 multi-level workshops for discussion with national and regional level and provide feedback to the Project.
2. Perform a Qualitative multi-disciplinary and diverse Focus Group based market research in two rounds in the partnering cities
3. Perform a Qualitative market research at Regional and National level in the MS of the partnering cities.

The results of this WP is to initiate a change towards Climate Services at local level, collect market research information including needs and wants of multi-disciplinary stakeholders at local, regional and national level in 5 member states.

WP4 EU-level andEU-28 Market Research and Consultation

WP4 aims at a broad quantitative market research at EU-level and all 28 Member States to identify the needs and demands of Climate Services end users and provide data as to identify the enablers and barriers of marketing Climate Services. WP4 Specific objectives are:

- To identify current practices on the use of climate services by the public sector and businesses
- To identify policy environments, supportive and non-supportive frameworks, in relation to climate services
- To identify constraints of the public sector and businesses
- To identify empowering conditions for the uptake of climate services by the public and private sectors

The **EU-wide market research** will consist of following tasks:

- EU-level stakeholder consultation with EU-institutions, EU business associations and non-governmental organizations relevant to users of climate services (by means of interviews)

Stakeholder consultation in the 28 EU Member States targeting representatives from authorities, businesses and non-governmental organisations (by means of a questionnaire, followed up by interviews)

WP5 Enabling Market Growth

WP5 will synthesize the in-depth analyses of the market research activities performed in WP3 and WP4 and their quantitative and qualitative market research results, the observations done during the Living Labs of WP3, the user-experience of CliMaFuture market-place and the conclusions of WP1onCS current state and the survey performed in WP2 about CS distribution channels and the challenges that CS providers currently have. Based on the findings from the other WPs.

WP5 has the following objectives:

1. Evaluate the Climate Services (CS) conditions (enablers and barriers) at EU, Member State and local (city and peri-urban) levels and identify business models that will enable market growth;
2. Identify best practices and prepare recommendations for CS providers and CS end-users
3. Prepare market growth reports for CS providers and for policy makers

The end results of this WP will be:

1. A thorough Climate Services Market Development report, which will be a compilation of the above tasks and market research reports. The report will cover PESTEL analysis, factors affecting the market (drivers and restraints), SWOT, market size and trends, market segmentation (public, private, citizen), member state market analysis, provide industry overview, market leaders, service mix, pricing strategies, public awareness and acceptance, recommendations for market development in Europe.
2. Climate Services Best practices and recommendations for Climate Services providers/purveyors
3. Climate Services Best Practices and Recommendation for Policy Makers
4. Climate Services Best Practices and Recommendation for Cities and Peri-Urban Areas

WP6 Communication, Dissemination and Citizen Awareness

Multidisciplinary and Transdisciplinary initiatives such as Climate Services will only succeed with the right level of communication and dissemination to create awareness among CS suppliers, purveyors and users. As

this project is not just simply a market survey, but about creating a dialogue among diverse Climate Services actors and users in order to enable and develop the European Climate Services market. Communication and dissemination activities will run throughout the duration of the project. In the first phase they will be mainly devoted to engage CS providers and end-users. In the second phase,WP6will contribute to disseminate and advocate findings to strengthen European leadership in the Climate Services market internationally in both policy-relevant and thematic European and global forums corresponding to the Horizon 2020 Societal Challenges.

WP7 Coordination and Project Management

The aim of WP7 is to provide the internal project management and the overall co-ordination of activities, financial and technical planning and control. This includes the following:

- overall technical and administrative co-ordination of the project;
- control of the project scheduling and achievements;
- conflict and risk assessment, and generation of corrective actions, if and when needed;
- contact point of the project with the Commission, notably for the submission of deliverables and regular reports of progress and resource expenditure;
- ensure that the project market research activities follow the Ethical aspects of the e-Privacy Directive 2002/58/EC and the Data Protection Directive 1995/46/EC.

An overview of the logic of the work plan, describing also the interdependencies, activities headlines and grouping in work packages, is shown in Figure 2.

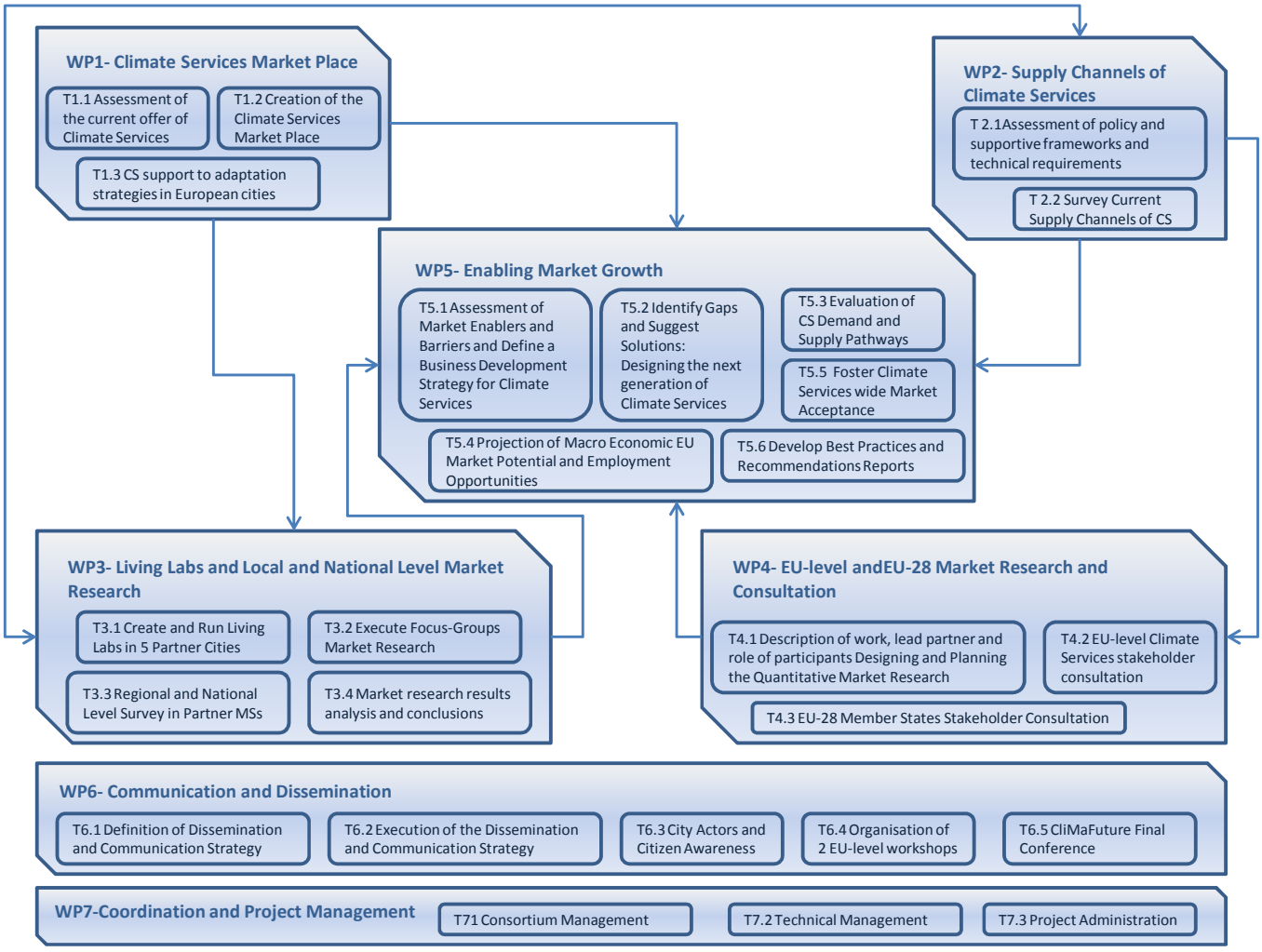
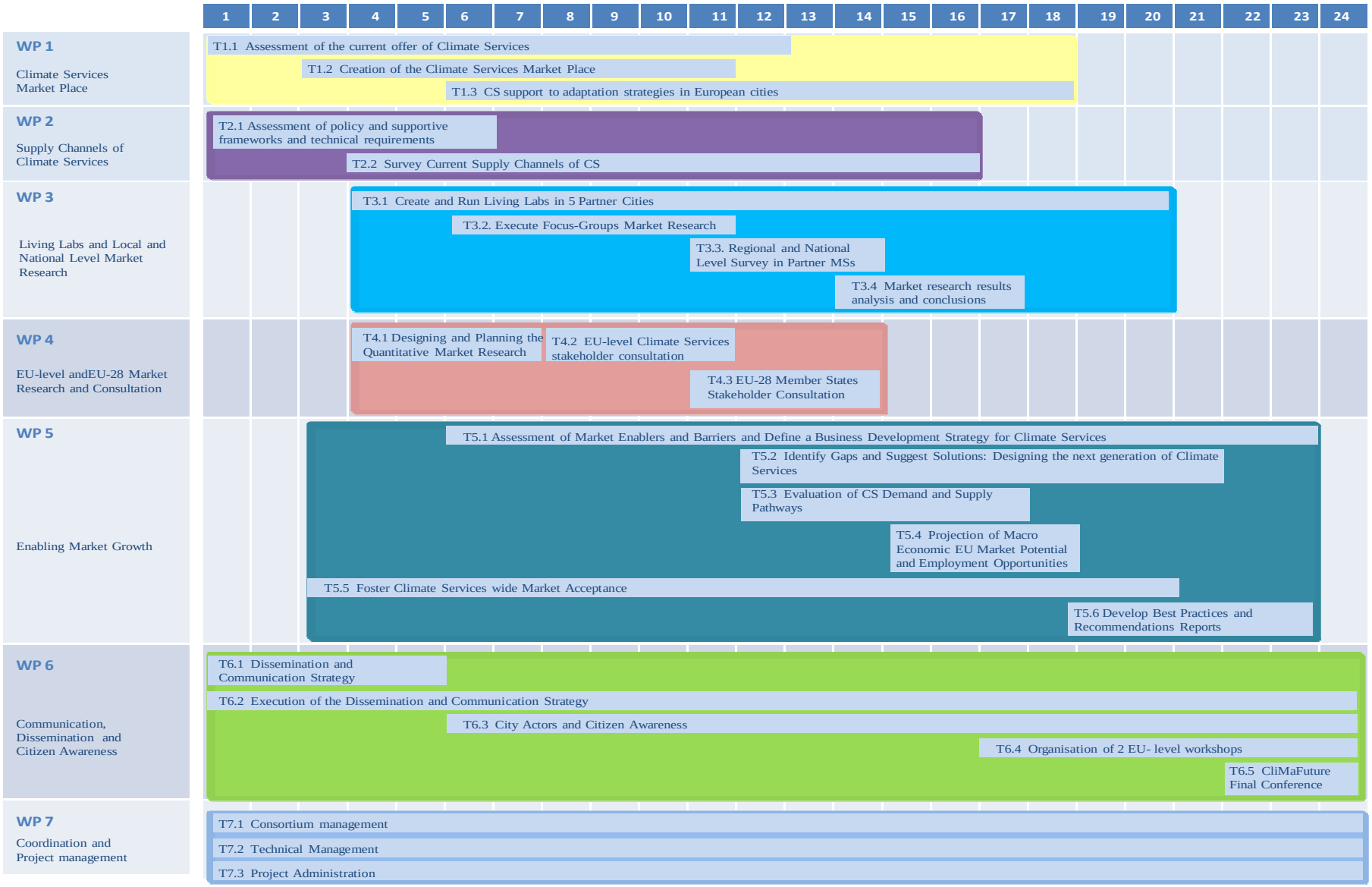
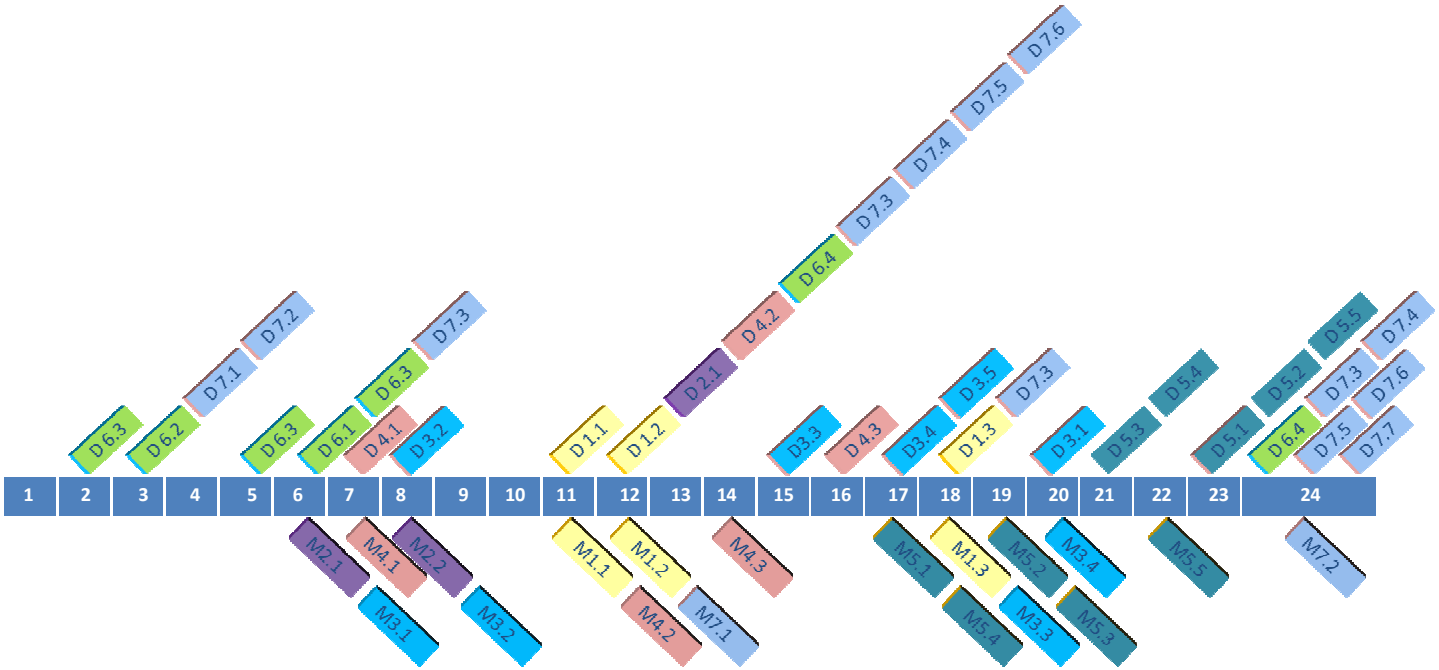


Figure 9: PERT diagram

3.1.1 Timing of work packages and their components



Timing of Deliverables and Milestones



Timing of Project Meetings and Events

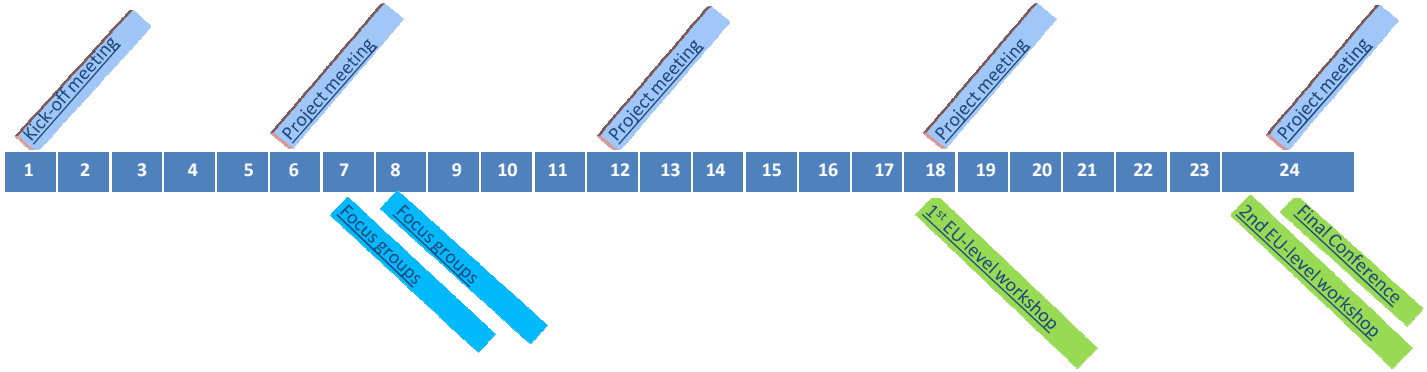


Table 3.1a: Work packages description

Work package number	**1**		**Start Date or Starting Event**				1	
Work package title	**Climate Services Market Place**							
Participant number	1	2	3	4	5	6	7	8
Short name of participant	CNR	ISPRA	XPRO	MIL	ICLEI	IMDEA	BSC	CCR
Person/months per participant:	5	3	1	0	0	0,5	2	0,5
Participant number	9	**10**	11	12	13	14	15	16
Short name of participant	GfK	**JLU**	BOL	NCS	ALM	LAT	BRA	NZ
Person/months per participant:	0	10	0	0	0	0	0	0

Objectives:

WP1 will assess the current state of the art of Climate Services (CS) and will provide the basic input for the definition and design of the future offer of tailored CS. Following the concepts ofGFCS and the European Roadmap for Climate Services, CS are based on climate information (Earth observations, current climate variability and trends, seasonal forecasts, climate projections, downscaled products, etc.) adapted to the needs of socioeconomic sectors. An objective is to analyse limitations of earth observations and uncertainties of seasonal forecast and climate projections and how they reflect to CS and their applicability. Further, a proposition will be made for improved CS products that are tailored to the needs of end-users, make more effective use of Earth observation data (e.g., from Copernicus C3S) and take advantage of progress in climate research and computing facilities.

WP1 will create the online and freely available Climate Services Market Place, an online yellow-pages directory of CS, with available Climate Services, contact information of CS-Providers and CS-End-users. Using the Business Model Canvas principle, WP1 will evaluate the value proposition[1]of CS products for selected sectors and stakeholders to better address their needs. Actual case studies on CS contribution to adaptation strategies and plans at the city level in Europe will be examined. The end result will be an assessment of current CS products that will be introduced into a new scheme of innovative next generation CS (WP5).

Description of work, lead partner and role of participants

Task 1.1 Assessment of the current offer of Climate Services. (Task Leader: JLU, Participants: ISPRA, BSC, IMDEA, XPRO, CNR, CCR) M1- M12

This task has a twofold goal: 1) the preparation of a review of the available Climate Services (CS) and 2) the assessment of the current CS products quality, and constraints for their efficient use. More specifically, a desk review of the current status of CS will be performed. The CS assessment will entail the analysis of limitations inherited in available Earth observations and their products (trends, variability, extremes etc.), uncertainties of seasonal forecast and climate projections, potential and constrains of current downscaling approaches. The output of Task 1.1 will be introduced to the Living Labs of the 5 cities (Task 3.1) and the Focus-Groups (Task 3.2) supporting the preparation of the dedicated workshops and share best practices among European cities. Together with information from the Living Labs and the Focus-Groups (WP3), Task 1.1 will contribute to the design of the next generation CS (Task 5.2).

Task 1.2: Creation of the Climate Services Market Place (Task Leader: CNR, Participants: ISPRA, BSC, JLU, XPRO,)M3- M11

Create an online and freely available Climate Services Market Place where CS-Providers can advertise and provide information to CS-End-users about their offerings. Likewise, CS-End-users will be able to search the Market Place and identify suitable CSs, their providers and contact information. The market place will function like an online yellow-pages directory of CS. The Climate Services Market Place will be accessible through COPERNICUS and ClimateAdapt platforms; through the CliMaFuture project website and directly on Internet. CNR will develop the Market Place through its PLAKKS knowledge technology. The Market Place will be used during the WP3 Living Labs.

Task 1.3: CS support to adaptation strategies and plans in European cities. (Task Leader: ISPRA, Participants: JLU, BSC, XPRO, IMDEA,) M6-M18

This task will prepare a comprehensive survey on the use of CS in the adaptation strategies and plans at the city level. The survey will be based on a desk-based review and on further interviews to adaptation managers at city level and will analyse relevant adaptation sectors for cities as well as those sectors for which adaptation and mitigation shows strong synergies. In collaboration with the 5 cities during the Living Labs

(WP3), adaptation strategies and plans, from the development to the implementation phase, are assessed for the use of CS by seeking answers to the questions: Are CS products used in the city adaptation strategies and plans? In which way are they used? What are the current supply channels? The output of this task will contribute to the design of the next generation of CS (WP5) by preparing the basic information to respond to the questions: What are the needs for the future city adaptation strategies and plans updates? How should the next generation of CS contribute to a better implementation of the adaptation strategies and plans? This task will mutually interact and contribute to the Living Labs and Focus-Groups (WP3) and will support WP4 for the definition of questions for stakeholders at higher level (national adaptation strategies and plans).

Role of participants:

- JLU is the leader of WP1, coordinating the activities of all partners involved in the WP. JLU will lead Task 1.1 and will focus on the quality assessment of Earth observations and their products, the analysis of climate projections and available downscaling approaches. JLU will contribute to Tasks 1.2 and 1.3 in a consultant role for the Climate Services Market Place and the survey on the CS support to adaptation strategies.
- ISPRA will contribute to Task 1.1 and 1.2 in a consultant role for review of the available Climate Services and the Climate Services Market place. Task 1.3 will be led by ISPRA that will coordinate activities of all partners involved in the Task.
- BSC will contribute to mapping the current ecosystem of climate service providers and brokers into the needs identified for urban areas. This effort will contribute to all tasks of WP1 and will build upon the experience gained in the past and current FP7 and H2020 projects (CLIMRUN, EUPORIAS, PRIMAVERA), the role played in the design of the GFCS (in particular the energy exemplar), the on-going C3S contracts to develop the Sectorial Information System (SIS) and the central role played in the ClimateEurope CSA. BSC will collaborate with other partners to extract from all this information a strategy to design the Climate Services Market Place (Task 1.2).
- CNR is the leader of Task 1.2 on the creation of the Climate Services Market Place.CNR will contribute to Task 1.1 in a consultant role for the assessment of the current offer of Climate Services.
- CCR will contribute to Task 1.1.
- IMDEA will contribute to Task 1.1 and Task 1.3.

Deliverables

D1.1: Report on the Climate Services Market Place (Responsible: CNR, Month 11)
D1.2: Assessment of Current Services inherent limitations (Responsible: JLU, Month 12)
D1.3: Report on case studies of CS contribution to adaptation strategies and plans in European cities (Responsible: ISPRA, Month 18)

Milestones

M1.1: Creation of the Climate Services Market Place (Month 11)
M1.2: Assessment of current offer of CS Completed (Month 12)
M1.3: CS contribution to adaptation strategies and plans in European cities Survey Completed (Month 18)

Work package number	2		**Start Date or Starting Event**				1	
Work package title	**Supply Channels of Climate Services**							
Participant number	1	2	3	4	5	6	**7**	8
Short name of participant	CNR	ISPRA	XPRO	MIL	ICLEI	IMDEA	**BSC**	CCR
Person/months per participant:	1	3	2	0	0	0,5	8	0,5
Participant number	9	10	11	12	13	14	15	16
Short name of participant	GfK	JLU	BOL	NCS	ALM	LAH	BRA	NZ
Person/months per participant:	1	2	0	0	0	0	0	0

Objectives: A major part for enabling the market growth of Climate Services (CS) resides in the adequacy of the way CSs are delivered to the end-users. The form the information takes, its level of detail and/or aggregation, the supply channels used, the ability to collect feedback from the users, the marketing efforts and the discovery tools provided are all factors that define the characteristics of the climate services supply channels. Accepting that market development depends on the PESTEL factors (Political including Policies, Economic, Social, Technological and Environmental), they will be investigated in this WP, taking advantage

of the connection with the Living Labs (WP3). The Business Model Canvas(Figure 3)will be used extensively to map current and project future CS supply channels focusing always on the needs of a wide range of urban stakeholders.
In this context, WP2 has two goals:

1. Assess Policy and Supportive Framework as well as Technical Requirements at different levels (public/ private, EU/national/ local) that allow current climate services supply and to better design future supply channels
2. Survey current Supply Channels and Pathways of Climate Services

Description of work, lead partner and role of participants

Task 2.1 Assessment of policy and supportive frameworks and technical requirements (Task Leader: ISPRA, Participants: CNR, BSC, JLU, XPRO, CCR, IMDEA) M1- M6

This task will assess policy environments and supportive frameworks (e.g. incentives, voluntary schemes, and standards) as well as the implications of competition and synergies among currently disconnected provision modes (public/private, EU/national/local levels). This will be a desk-based review based on findings from previous relevant projects and the first stages of the Living Lab. The results will be fed in WP3 and WP4 for the development of the market survey instruments and they will be also used in WP5 to produce a set of guidelines for choosing the best policy environments and supportive frameworks for enabling the marketing of Climate Services.

Task 2.2 Survey Current Supply Channels of CS(Task Leader: BSC, Participants: ISPRA, CNR, XPRO, CCR, GfK**)M4 - M16**

This task will establish a common understanding of the current mechanisms and business models that climate service providers apply to create and deliver value to target users and customers. To this purpose a survey will be carried out involving several CS providers belonging to as many EU countries as possible through online questionnaires to establish an understanding (at both the national and EU levels) on the business models and strategies currently applied. Building on the results of this survey, a diagnosis of existing issues (economic, technical, sociological) of current business models will be prepared (involving the CS providers whenever possible) to deliver guidelines for defining effective business models for CS. The end result will be an assessment of current CS supply channels and pathways and PESTEL factors that will be introduced into a new scheme of innovative next generation CS. The guidelines will provide a key input to the definition of co-developed business models for CS market expansion performed in WP5 (Task 5.3). At the same time, an analysis of the user requirements in terms of uncertainty language, visualization, timeliness and dissemination channels will be performed using the Business Model Canvas methodology. As CSs are based on big and open (whenever possible) data and the production of information, it is very important how climate information is delivered to the stakeholders that need it. Such analysis will identify the most adequate delivery channel for each segment of stakeholders to better respond to their needs. The set of technical requirements will input into the discussions undertaken in the Living Labs (Task 3.1). The end result will be an inventory of current CS supply channels that are relevant to the stakeholders identified in the project and a strategy for new or modified CS needed. This inventory will be saved in the CliMaFuture Website.

Role of participants:

Task 2.1:

ISPRA: Task Leader

BSC, JLU, MIL, XPRO, CNR, CCR, IMDEA: Provide national support as needed.

Task 2.2:

BSC: Task Leader

ISPRA, CNR, XPRO, CCR, GfK: Contribute to the design and execution of the survey to be distributed to the end users. Provide a critical feedback to the implementation of the Business Model Canvas methodology in the analysis of the survey results with a particular focus on features like the communication of the uncertainty or the dissemination channel.

Deliverables

D2.1 Analysis of the survey of current supply channels of climate services in EU (Responsible: BSC, M16)

Milestones

M2.1: Inventory of technical requirements of current Climate Services Supply Channels to meet market

demand and needs. (Responsible: ISPRA, M6)
M2.2: Climate services supply requirements mapped for the design of the survey (Responsible: BSC, M8)

Work package number	**3**		**Start Date or Starting Event**				4	
Work package title	**Living Labs and Local and National Level Market Research**							
Participant number	1	2	3	4	**5**	6	7	8
Short name of participant	CNR	ISPRA	XPRO	MIL	**ICLEI**	IMDEA	BSC	CCR
Person/months per participant:	0,5	1	1	3	**8**	0	2	0
Participant number	9	10	11	12	13	14	15	16
Short name of participant	GfK	JLU	BOL	NCS	ALM	LAH	BRA	NZ
Person/months per participant:	10	1	3,5	3,5	3,5	3,5	3,5	0,5

Objectives

WP3 builds upon the results of WP1 and WP2. It will roll out a consultation at local level and perform a qualitative market research analysis based on Focus Groups in the partnering cities. The objectives of this WP are:

1. Create 5 Living Labs in 5 European partner cities (Bologna, Newcastle, Almada, Lahti and Bratislava) to inquire into the needs of Climate Services of the Urban and Peri-Urban System. The labs will facilitate multi-stakeholder consultation on needs, existing challenges and barriers for access to and marketing of climate services; they will support in identifying Climate Services market segments through engaging current users and potential users including public, and municipal companies and holdings, utility providers, businesses, agricultural associations and citizens through local Civil Societies; they will provide a platform for exchange and collection of feedback on the current climate services utilized, on the potential for their improvement; they will support selection of priorities and assessment of barriers and needs; they will host 2 multi-level workshops for discussion with national and regional level and provide feedback to the Project.
2. Perform a Qualitative multi-disciplinary and diverse Focus Group based market research in two rounds in the partnering cities
3. Perform a Qualitative market research at Regional and National level in the MS of the partnering cities.

The results of this WP is to initiate a change towards Climate Services at local level, collect market research information including needs and wants of multi-disciplinary stakeholders at local, regional and national level in 5 member states.

Description of work, lead partner and role of participants

Task 3.1: Create and Run Living Labs in 5 Partner Cities. (Task Leader: ICLEI Participants: All cities, MIL, XPRO, ISPRA, BSC, JLU, BOL, NCS, ALM, LAH, BRA) M4- M20.

The 5 core cities, coordinated by ICLEI and supported by the project consortium, will facilitate the set up of local Living Labs. Building upon already existing fora and discussion platforms, the Living Labs will gather all stakeholders relevant to climate services, and provide the opportunity for exchange and feedback. Cities will carry out a stakeholder mapping to identify all relevant local and regional stakeholders (minimum 10 stakeholders' types) including local government, first responders, farmers' organizations, business, meteorological services and community and citizens groups, among others, with the objective of identifying Climate Services market segments. The Living Lab will engage both the public and private sectors, and through it stakeholders will be involved in a continuous exchange throughout the project. By month 4 a database of contacts including all relevant stakeholder will be identified in all partners cities.

The Living Lab will create a space for discussion on the topics of Mitigation, Adaptation, Disaster Risk Reduction and Integrated approaches, according to the local needs, interest and context, and it will foster the broad participation of all relevant stakeholders to the ClimaFuture activities. Relevant Climate Services will be assessed in order to identify the true needs of the end-users, remaining barriers for utilization and uptake, and their user-friendliness. The needs will be fed back in WP1 (specifically Task 1.3) and WP2. Methodologies such as Change Management Approach and Quintuple Helix will be used. Stakeholders will be engaged in the Living Labs through a series of informal meetings organized by each city (max 3). The meetings will have the objectives: to present the activities of the Living Lab (e.g. outline the cost/benefits analysis for participants in the activities of the Living Lab); ensure that the stakeholders' involvement will

continue through the project; to support the process of institutionalization of the local climate policies and plans.In addition to the informal sessions, cities, in cooperation with ICLEI, will organize one multi-level workshop in each of the partner cities. These 1-day workshops will gather the relevant stakeholders included in the Living Labs and will invite them to participate in the identification of CS needs and mapping of the offers. Stakeholders will include the local, regional and, where feasible and appropriate, national level (see task 3.3). During the multi-level workshops, activities aimed at reconciling offer and supply of climate services will be carried out. The CliMaFuture Market Place (task 1.2) will be demonstrated.
The Workshops will discuss and provide feedback respectively on existing climate services, and on best practices proposed by CliMaFuture (based on WP5). At least 50 people will participate in each Workshop.
A workshop conclusion report with important observations, participants list, presentations, pictures, feedback questionnaires etc. from 5 cities will be generated.
The Living Labs will contribute with selected participants to the focus group (Task 3.2), which will take place back-to-back with the multi-level workshops.Living Labs will be used for identifying best practices and they will be used as a soundboard for WP5 activities. Moreover, they will be actively involved in the communication and dissemination activities (WP6).
The Living Labs will be a key output of the project, as their continuation after the end of the project will facilitate the exploitation of the results after its lifetime. The cities will use the platform and the Climate Services Market Place provided to further their climate strategy locally, increasing local consensus, and in support of their activities in initiatives such as the Covenant on Climate, of which they are all signatories.

Task 3.2: Execute Focus-Groups Market Research (Task Leader: GfK Participants: ICLEI, BOL, NCS, ALM, LAH, BRA, ISPRA, JLU, XPRO, NZ) M6 - M11
Starting from the different stakeholders included in the Living Lab, one focus group will be created in each city. Focus groups allow exploring a topic more in detail than individual interviews because respondents can build upon the input provided by others. The Focus Groups will provide qualitative market research data. The focus group in each city will meet twice through the lifetime of the project.
The sessions will take place back-to-back, when possible, with the informal meetings and themulti-level workshops (Task 3.1), and will discuss and provide feedback respectively on existing climate services, and on the climate services proposed by CliMaFuture. During these interactive but guided and moderated focus group sessions, the participants will share their experience, expectations, perceptions, beliefs, ideas, points of view and attitudes towards climate services and the performance of climate services as well as future needs for adopting climate services. Each focus group session will comprise of 8-10 participants recruited from the relevant stakeholders participating in the Living Labs. Each session, which is organised and hosted by the City partner, will take 120 minutes with a break. The research objectives will be translated into a well-structured discussion guide using appropriate discussion techniques. Based on WP1 and WP2, the partners will draft a set of specific questions to be answered by the Focus Groups, which they will discuss in an internal brainstorming meeting. The discussion guide will be finalised in English, and then translated. The discussion guide will be made available in the national languages of the cities involved to allow stakeholders to freely express themselves in their mother tongue. A highly experienced moderator will moderate the focus group session in each of the five cities, and they will be briefed by means of videoconferencing, which will be recorded as well (e-briefing). All GfK moderators are professional market researchers and they receive the following materials:
• A briefing document in English detailing the background, the challenges and the research objectives as discussed with the client
• All interview materials/discussion guides in English and national languages
• All stimulus material in English and national languages
• Any specific moderator briefing notes
The analysis is conducted centrally based on reporting templates and moderator debriefing. GfK provides the reporting templates to the local agencies for completion with the necessary market research information provided during the Focus Groups. For analysis purposes, the analysis will be provided in English. GfK is responsible for this task and the implementation of the Focus Groups. The logistic organization of the Focus Groups will be implemented by the cities.
It is also foreseen the inputs from these Focus Groups will feed into the design of the questionnaire to be carried out across cities in the EU (WP4).

Task 3.3: Regional and National Level Survey in Partner MSs (Task Leader: MIL Participants:

ICLEI, BOL, NCS, ALM, LAH, BRA) M11- M14
Considering that cities (public and private stakeholders and citizens) for dealing with Climate issues are partly depending on the regional and national level due to policies, socio-cultural aspects and business practices, it is important to investigate and perform a detailed market research also at the member state (MS) level. Thus, in addition to the survey run in WP4 for all MS, in the 5 partners MS at least 15 (3 per MS) interviews will be carried out to collect in-depth feedback from the stakeholders at the national level and their impact on uptake of climate services. The interviews will follow the quintuple helix methodology and will assess existing issues and barriers in the connection between the different levels of government in relation to climate services. The aim is to investigate the impact that national and regional climate policies, but also, fiscal policies and monetary incentives can have on the uptake of climate services. The socio-economic aspect will also be addressed.
At least 3 different stakeholder groups will be interviewed in each of the partners' MS (e.g. regional government, national government, commerce and industry associations). The results will be presented and discussed during the workshops (Task 3.1)
D3.2: Regional and National Conclusion Report (conclusions, important observations, participants list, presentations, pictures, feedback questionnaires etc.) from 5 MS.

Task 3.4: Market research results analysis and conclusions (Task Leader: GfK Participants: MIL, ICLEI, ISPRA, CBS, JLU, IMDEA, CNR, XPRO) M14-M17
GfK will analyse the research results of the market survey and provide a market research report.
Based on the results of the Focus Groups, interviews and workshops ICLEI together with the partner cities will draft a layman's report on the state of play of climate services in the core cities and will draft recommendations for European cities on further developing the climate service market. This report will contain policy-relevant advice for the local, national and EU level.

Role of participants:
Task 3.1:ICLEI: Task leader
BOL, NCS, ALM, LAH, BRA: Set up Living Lab and organization workshops
MIL, XPRO, ISPRA, IMDEA, BSC, JLU: participation to workshops and feedback their respective WPs
Task 3.2: GfK: Task leader 3.2,
BOL, NCS, ALM, LAH, BRA: organization and participation Focus Groups.
ICLEI: Coordination with cities;
ISPRA, JLU, XPRO, NZ will participate as observers and to bring up the feedback to the other WPs. During the Focus Groups short videos will be recorded for dissemination purposes by ISPRA.
Task 3.3MIL: Task leader**;**
ICLEI, BOL, NCS, ALM, LAH, BRA: conducting interviews and selecting stakeholders
Task 3.4: GfK: Task leader and main writer of the market research analysis report
MIL, IGLEI, ISPRA, CBS, JLU, IMDEA, CNR, XPRO: provide input and comments.

Deliverables (brief description and month of delivery)
D3.1: Workshop Conclusion Report (conclusions, important observations, participants list, presentations, pictures, feedback questionnaires etc.) from 5 cities (Responsible: ICLEI; M20)
D3.2: Focus Groups Status Report (conclusions, observations, participants list, pictures) (Responsible: GfK; M8)
D3.3: Regional and National Conclusion Report (conclusions, important observations, participants list, presentations, pictures, feedback questionnaires etc.) from 5 Member States (Responsible: ICLEI; M15)
D3.4: Layman's report on the state of play of climate services with policy recommendations for local, national and EU level. Max. 12 pages; electronic only, design and layout by ICLEI. (Responsible: ICLEI; M17)
D3.5: Qualitative Market Research Analysis Report (Responsible: GfK; M17)
Milestones
M3.1: Living lab set up in all partner cities (M6)
M3.2: Round of Focus Groups Completed (M8)
M3.4: Regional and National Survey and interviews in Partnering MS completed (M18)
M3.5: Feedback from multi-level workshops acquired (M20)

Work package number	4		Start Date or Starting Event			4	
Work package title	EU-level andEU-28 Market Research and Consultation						
Participant number	1	2	3	**4**	5	6	7	8
Short name of participant	CNR	ISPRA	XPRO	**MIL**	ICLEI	IMDEA	BSC	CCR
Person/months per participant:	0,5	1	3	**9**	4	0	1	0
Participant number	9	10	11	12	13	14	15	16
Short name of participant	GfK	JLU	BOL	NCS	ALM	LAH	BRA	NZ
Person/months per participant:	8	1	0	0	0	0	0	0,5

Objectives: WP4 aims at a broad quantitative market research at EU-level and all 28 Member States to identify the needs and demands of Climate Services end users and provide data as to identify the enablers and barriers of marketing Climate Services. Specific objectives are:

- To identify current practices on the use of climate services by the public sector and businesses
- To identify policy environments, supportive and non-supportive frameworks, in relation to climate services
- To identify constraints of the public sector and businesses
- To identify empowering conditions for the uptake of climate services by the public and private sectors

The **EU-wide market research** will consist of following tasks:

EU-level stakeholder consultation with EU-institutions, EU business associations and non-governmental organizations relevant to users of climate services (by means of interviews)

Stakeholder consultation in the 28 EU Member States targeting representatives from authorities, businesses and non-governmental organisations (by means of a questionnaire, followed up by interviews)

Description of work, lead partner and role of participants

Task 4.1: Designing and Planning the Quantitative Market Research (Task leader: GfK, Participants: MIL, ISPRA, JLU, XPRO, NZ, ICLEI) M4- M7

The stakeholder consultation will be elaborated in detail by defining semi-structured questionnaires, an analysis framework and a database of contacts. A challenge that is experienced in earlier projects is that stakeholders are generally reluctant to participate in surveys and questionnaires, with 10-15% response rates not being uncommon. This task will hence design and plan for an approach to achieve as high a response rate as possible with the resources available, while also gathering the answers to questions that have been prioritized by key stakeholders, which include the partner cities (public and private sector) in WP4, but also businesses and authorities at national and EU level. Therefore, the task foresees a core questionnaire that is followed up not only by reminder emails, but personal contact (primarily by phone) through interviewers who will go through the questionnaire with the respondent.

The following activities will be done as part of this task:

Development of questionnaires:

Questionnaires will be developed with the purpose to use in a ten-minute online survey, but also to guide the interviewers to discuss all the required topics. It is expected that that one questionnaire can be used for the online survey and for the interviews. Also, the same questionnaire is expected to be used for all stakeholder groups. However, the questionnaire can include some filtering which will direct stakeholders who answer yes or no to specific questions specific follow up questions, e.g. for specific stakeholder groups. All scientific, end-user and business partners will be involved in this exercise to ensure that the questionnaires cover all necessary perspectives and issues as illustrated in Figure 8.

The questionnaire will be semi-structured. The majority of questions will be in the form of multiple-choice questions not only to facilitate the consultees' task but also to better ensure that results can be aggregated in a consistent and focused manner. Free text fields can be used to a limited extent. The questions will be phrased in an open, unbiased and easy to understand way in order not to incite people to reply in one way or another. The neutrality of the questions is a key consideration.

A quality assurance exercise performed by NZ and XPRO will take place to ensure that the questionnaire will provide the needed data for the overall market research analysis and reporting.

The language used of the questionnaire will be English. Where possible the follow up interview will also be conducted in English. Where needed, the interview can also be conducted in the interviewees preferred language. At MIL, all EU languages can be covered.

The analysis framework: from supply to end-user

The design of an effective questionnaire requires clarity on the hypothesis to be tested in addition to clarity on the potential outcomes. The main hypothesis is that the uptake of climate services is limited because of gaps in the chain from supply to end-user. The weakest link in the chain may cause a disconnection between supply and demand. Components of the chain that we will be researched include the usability/ understanding of climate services, the supply channels, the regulatory framework, intellectual property, capacity to use the services, clarity on the concrete needs for climate services, etc. In addition to a comprehensive review of the components of the chain from supply to end-user, also a typology will be developed to classify constraints, policy frameworks and empowering conditions. The typologies will be based on based on existing work (see the section on excellence).

Guide for interviewers:

A guide to interviewers will be developed for conducting the interviews and to note down the outcomes in a consistent way. While a team of experienced interviewers is available for this task, it is important to clarify the content that is to be covered, the process used and how to write down the results. The language used of the questionnaire will be English. Where possible the interview will also be conducted in English. Where needed, the interview can also be conducted in the interviewees preferred language. At MIL, all EU languages can be covered. The guide for interviewers will be used for the interviews at EU-level, Member State level and city level.

Database of contacts:

In view of the need for balanced representation, raised above, we have therefore foreseen that our experts will first prepare a long list of potential interviewees, on the basis of which a representative priority short list will be composed. In addition to the respondents who expressed their willingness to participate in interviews, a final list of consultees and interviewees will be developed. The development of the contact of databases will be lead by MIL (leader of WP5) after consultation with the consortium. Due consideration will be given to ethical issues through the CliMaFuture's Ethical Board and NZ (e.g. not to offend personal and corporate data privacy).

The following criteria will be used to select the interviewees such that representative samples across the EU will be collected with respect to coverage of:

- The different stakeholders groups: i.e. authorities, private sector, and the civil society
- (Potential) users of climate services for the different topics: 1) climate adaptation, 2) climate mitigation, 3) disaster risk reduction and 4) integrated approaches
- The different levels: i.e. national, regional and local (urban and rural)
- The different sectors; as identified as the priority sectors in the partner cities

Task 4.2: EU-level Climate Services Stakeholder Consultation (Task Leader: MIL, Participants: GfK, BSC, ICLEI)M8- M11

The EU-level market research is organised for EU-level institutions, business associations and non-governmental organizations that may have an impact on the use of climate services by city stakeholders. Considering the Climate Services Focus Group Perspectives (Figure 8) and that cities and their peri-urban areas are intrinsically cross-sectorial affected by higher-level stakeholders (policy-makers, socio-technical actors, etc.) that may influence the definition and use of climate services in cities, the consultation will also cover the various sectors addressed in the partner cities market research activities (see WP3). A detailed list of the stakeholders has been presented in the Methodology section of the proposal.

The EU stakeholder consultation will use the questionnaire guide developed in T4.1 addressing the following main questions. Moreover, it consists of a descriptive part, and a solutions-based part. The main focus of the EU-level stakeholder consultation is to identify what constraints and opportunities exist that would impact the uptake of climate services at the different CS Perspectives (Figure 8) including local (City) level. The sections are composed of the following main questions, which are further elaborated in this work package.

A descriptive fact-finding part

- In your opinion what is meant by Climate Services?
- Who should offer Climate Services?
- Who should be using Climate Services and for what?
- What current climate services do you know that are used by the public sector and businesses?
- What constraints do you see in using climate services (scientific, technical, governance, legal and socio-economic)?

- What enabling conditions do you see for the uptake of climate services by the public and private sector (scientific, technical, governance, legal and socio-economic)?
- Which stakeholders would you know in the Member States that can provide relevant input and/or good practices?

Solutions-oriented part

- What do you as a (potential) user need from climate services? Examples of aspects are fit-for-purpose, usability and comprehension of information services, user capacity to use services, format, etc.
- How do you as a (potential) user prefer to obtain climate services? This can cover issues like climate service supply models, partnerships, investment needs, type of data sharing (licensed, open access), etc.

The EU-level stakeholder consultation is performed by MIL through interviews. Considering that stakeholder fatigue for questionnaires may exist, stakeholders will be approached personally. This approach is proposed to ensure better response rates, while also facilitating a better engagement of stakeholders. This can be by phone interviews, or physical meetings at their offices, which are mostly in based in Brussels or at networking events. Considering the extensive network and track record of MIL at the EU-level, personal contacts exist with the majority of the above stated institutes and organisations.
It is expected to obtain about 50 interviews at EU-level, which is considered as a representative sample to cover the different perspectives.

Task 4.3: EU-28 Member States Stakeholder Consultation (Task Leader: MIL; Participants: GfK, ICLEI) M11- M14

Stakeholders in all 28 EU Member States will be consulted based on the insights of the EU-level stakeholder consultation (Task 4.2) and the defined priorities (sectors and topics) in the 5 partner cities (Task 3.1). Considering the vast potential number of consultees: 28 Member States, various sectors and levels in the public and private sector, the consultees will be selected carefully under Task 5.1. An online survey will be developed. To facilitate bigger response rates, interviews will be conducted, mostly by phone, but some may happen physically (e.g. at non-project meetings). Between 50-70follow up interviews are expected to be conducted in the Member States. The interviews will be conducted mainly by MIL, Gfk and ICLEI and supported by all national related partners where possible.
The results of the online questionnaire will be collected and statistically analysed by GfK. MIL, ICLEI and NZ will be involved for messages interpretation and quality assurance.

Role of participants:
Task 4.1: GfK: Task leader
ISPRA, JLU, ICLEI: participate to the questionnaires elaboration.
XPRO, NZ: perform a quality assurance exercise.
MIL: provide questionnaire in all EU languages.
Task 4.2: MIL: Task leader
GfK, BSC, ICLEI: contribute to the EU stakeholder consultation.
Task 4.3MIL: Task leader**.**
GfK, ICLEI: will contribute to the conduction of the interviews.

Deliverables (brief description and month of delivery)
D4.1 Questionnaire and Interview Guide (Responsible: MIL, M7)
D4.2 Market Research Analysis on EU-Level Stakeholder Consultation (Responsible: GfK, M12)
D4.3 Market Research Analysis on EU-28 Member States Stakeholder Consultation (Responsible: GfK M16)

Milestones
M4.1 EU and National Level Contacts Database ready (M7)
M4.2 EU-level CS Stakeholder Consultation finalised (M11)
M4.3 EU-28 level CS Stakeholder Consultation finalised (M14)

Work package number	**5**		**Start Date or Starting Event**				3	
Work package title	**Enabling Market Growth**							
Participant number	1	2	**3**	4	5	6	7	8
Short name of participant	CNR	ISPRA	**XPRO**	MIL	ICLEI	IMDEA	BSC	CCR

Person/months per participant:	2	3	**10**	2	1	4	3	2
Participant number	9	10	11	12	13	14	15	16
Short name of participant	GfK	JLU	BOL	NCS	ALM	LAH	BRA	NZ
Person/months per participant:	2	3	0	0	0	0	0	0,5

Objectives:

WP5 will synthesize the in-depth analyses of the market research activities performed in WP3 and WP4 and their quantitative and qualitative market research results, the observations done during the Living Labs of WP3, the user-experience of CliMaFuture Market-Place and the conclusions of WP1onCS current state and the survey performed in WP2 about CS distribution channels and the challenges that CS providers currently have. Based on the findings from the other WPs.

WP5 has the following objectives:

4. Evaluate the Climate Services (CS) conditions (enablers and barriers) at EU, Member State and local (city and peri-urban) levels and identify business models that will enable market growth;
5. Identify best practices and prepare recommendations for CS providers and CS end-users
6. Prepare market growth reports for CS providers and for policy makers

The end results of this WP will be:

- A thorough Climate Services Market Development report, which will be a compilation of the above tasks and market research reports. The report will cover PESTEL analysis, factors affecting the market (drivers and restraints), SWOT, market size and trends, market segmentation (public, private, citizen), member state market analysis, provide industry overview, market leaders, service mix, pricing strategies, public awareness and acceptance, recommendations for market development in Europe.
- Climate Services Best practices and recommendations for Climate Services providers/purveyors
- Climate Services Best Practices and Recommendation for Policy Makers
- Climate Services Best Practices and Recommendation for Cities and Peri-Urban Areas
- An Executive Summary Report for Climate Services Market Research and Strategy (Task Leader: XPRO, Participants: All Partners)

Description of work, lead partner and role of participants

Task 5.1: Assessment of Market Enablers and Barriers and Define a Business Development Strategy for Climate Services(Task Leader: XPRO, Participants: GfK, IMDEA, MIL, CNR, CCR, ISPRA, BSC, MIL, JLU, NZ) M6- M23

Based on the results and findings from the market research activities of WP1, WP2, WP3 and WP4 assess the market enablers and barriers and define a Business Development Strategy for expanding the Climate Services market for public and private stakeholders. The output of this task will be a thorough Climate Services Market Development report, which will be a compilation of the above tasks and market research reports. The report will cover PESTEL analysis, factors affecting the market (drivers and restraints), SWOT, market size and trends, market segmentation (public, private, citizen), member state market analysis, provide industry overview, market leaders, service mix, pricing strategies, public awareness and acceptance, recommendations for market development in Europe.

1) PESTEL (Political, Economic, Social, Technological, Environmental, Legislative) Analysis, where the outputs of the previous WPs will be compiled.
2) Identify the Roles and Responsibilities for enabling market growth (policy, partnerships between public-private, public-public, private-private)
3) Perform an analysis of factors such as ethical, legal and intellectual property implications of provision and use of climate services,
4) Assess criteria and protocols for quality assurance and quality control
5) Map roles and responsibilities among Climate Services suppliers and users and how these partnerships can be fostered in order to ensure CS market opening and expansion.
6) Analyse if the shortage of adaptive capacity is the result of which factors and how these relate to the intrinsic characteristics of organisations themselves and the way they interact with other organisations. Identify themes for capacity development (leadership, collaboration, change agents, understanding the CS information potential impact) by using climate services
7) Define Business Development Strategies for expanding the Climate Services Market in Europe and beyond

Based on Tasks 5.2, 5.3 and 5.4.1 develop directions for business market development such as:

1) Product-Market Growth Strategies by looking at business development options for
   a. Current markets with current services
   b. Current markets with new services
   c. New markets with current services
   d. New services on new markets
2) Business development strategies
   a. Integration business development strategies
   b. Intensive business development strategies
   c. Diversification business development strategies
3) Produce a final Climate Services Market Strategy Roadmap

The results of this WP are:

1. An extended open access Climate Services Business Development Strategy Report that will be communicated and disseminated at the Final Conference of the Project as well through its website. The report will be presented to the EC during the Final Conference special EC session where different DGs and Environmental Services (EC, national, public and private) will be participating.
2. Executive Summary Report for Climate Services Market Research and Strategy

Task 5.2: Identify Gaps and Suggest Solutions: Designing innovative, next generation Climate Services (Task Leader: JLU, Participants: ISPRA, BSC, IMDEA, XPRO, MIL, ICLEI, CNR) M12-21

Based on the feedback received from the market research, Living Labs and Focus-Groups (WP3), the analysis on the CS products, their reliability and uncertainties (WP1), the defined future supply channels (WP2), as well as previous experience from relevant EU projects, this Task will focus on the identification of gaps between the offer of Climate Services and the market requirements on specific service examples/case studies in city and peri-urban areas, and will assess the potential of bridging those gaps towards a value proposition attractive for diverse end-users (customer segments) and the supply channels that the value proposition will be delivered to the end-users. The great asset of the value proposition will be the next generation of CS, designed and assessed in the frame of this Task. The Business Model Canvas will be used as a discussion tool and for providing concrete examples of novel Climate Services meeting diverse customer segments' needs. This work will be carried out in sync with other initiatives or targeting different sectors: C3S, ClimateAdapt, ClimateEurope, GFCS, as well as with the local and regional authorities and the relevant sectors of the industry.

Task 5.3: Evaluation of CS Demand and Supply Pathways(Task Leader: BSC, Participants: ISPRA,MIL, XPRO, IMDEA, CCR)M12- M17

Based on the market research qualitative and quantitative results and due to the complexity of the Climate Services as a product, the multiple suppliers as well as the diversity of the market segments (users of Climate Services) three different methodological approaches[22] (analytical, systems and actors) will be used to identify and evaluate the possible pathways of CS supply and demand in order to define a feasible CS market development strategy.

Task 5.4 Projection of Macro Economic EU Market Potential and Employment Opportunities(Task Leader: IMDEA, Participants: CNR)M15- M18

Perform a macro economic forecast to show the EU Market Potential and Employment Opportunities that Climate Services market expansion will bring. This forecast will then evaluate current market policies to investigate if they hinder or enable CS market opening and expansion in EU and at international levels.

Task 5.5: Foster Climate Services wide Market Acceptance(Task Leader: XPRO, Participants: ICLEI, ISPRA, BSC, MIL, JLU, CCR, NZ, CNR)M3- M20

In order to deal with diverse perceptions of CS and to collect multiple end-user needs for enabling market uptake and acceptance of Climate Services by diverse and multidisciplinary end-users, the Change Management Approach will be applied. It will be used to facilitate the discussions during the Living Labs

[22]Abnor&Bjerke, "Methodology for Creating Business knowledge, Sage Publications, 2009

workshops (T3.1) and to formulate the questions in WP3 and WP4. Running in parallel with Task 3.1, where it will be utilised to create common vision towards marketable Climate Services, to analyse observed socio-cultural enablers and barriers. Issues looked into will be a) perceptions of CS in response to climate change, b) actions for improving climate adaptation and climate mitigation using CS, c) how can CS strengthen green growth and d) how CS can be embedded in the value chain of businesses.
The results of this task will be 1) an Attitude Report towards CS, which will be based on the statements and answers of the multi-disciplinary stakeholders attending the city-workshops in WP3 as well as based on the answers collected from WP4. This will be used in the subsequent WP5 tasks; and 2) a Roadmap of Change Management for introducing and using Climate Services. The Roadmap will be available on the CliMaFuture Website and it will be printed and distributed during the final conference and workshop of the project (Task 6.4).

Task 5.6: Develop Best Practices and Recommendations Reports(Task Leader: ISPRA, Participants: All Partners) M19- M23
Task 5.6.1 Develop best practices and recommendations for Climate Services providers/purveyors (Task Leader: BSC, Participants: All Partners)
Task 5.6.2 Develop Climate Services Best Practices and Recommendation for Policy Makers (Task Leader: ISPRA, Participants: All Partners)
Task 5.6.3 Develop Climate Services Best Practices and Recommendation for Cities and Peri-Urban Areas (Task Leader: ICLEI, Participants: All Partners)

Role of participants:
Task 5.1: XPRO: Task leader
GfK, IMDEA, MIL, CNR, CCR, ISPRA, BSC, MIL, JLU, NZ: participate to the definition of the Business Development Strategy.
Task 5.2: JLU: Task leader
ISPRA, BSC, IMDEA, XPRO, MIL, ICLEI, CNR: contribute to the identification of gaps between the offer of Climate Services and the market requirements and to suggest solutions.
Task 5.3: BSC: Task leader
ISPRA,MIL, XPRO, IMDEA, CCR: contribute to the identification and evaluation of the possible pathways of CS supply and demand.
Task 5.4: IMDEA: Task leader
CNR: contribute to perform a macro economic forecast.
Task 5.5: XPRO: Task leader
ICLEI, ISPRA, BSC, MIL, JLU, CCR, NZ, CNR: contribute to provide the Attitude Report towards CS and a Roadmap of Change Management.
Task 5.6: ISPRA: Task leader
All Partners: contribute the development of the best practices and reccomendations.

Deliverables (brief description and month of delivery)
D5.1 Extended Climate Services Business Development Strategy Report(Responsible: XPRO, M23)
D5.2 Executive Summary Report for Climate Services Market Research and Strategy (Responsible: XPRO, M23)
D5.3 The next generation of Climate Services – meeting the market demand and needs(Responsible: JLU, M21)
D5.4 Roadmap for Fostering Climate Services wide Market Acceptance (Responsible: XPRO, M21)
D5.5 Best Practices Reports (Responsible: ISPRA, M23)

Milestones
M5.1Analysis of factors such as ethical, legal and intellectual property implications completed (Responsible: NZ, M17)
M5.2 Climate Services criteria and protocols for quality assurance and quality control completed (Responsible: JLU, M19)
M5.3 Analysis Macro Economic EU Market Potential and Employment Opportunities completed (Responsible: IMDEA, M17)

M5.4 Best Practices Analysis Completed (Responsible: ISPRA, M22)

Work package number	**6**		**Start Date or Starting Event**				1	
Work package title	**Communication, Dissemination and Citizen Awareness**							
Participant number	1	**2**	3	4	5	6	7	8
Short name of participant	CNR	**ISPRA**	XPRO	MIL	ICLEI	IMDEA	BSC	CCR
Person/months per participant:	3	**7**	2	3	4	0	1	0,5
Participant number	9	10	11	12	13	14	15	16
Short name of participant	GfK	JLU	BOL	NCS	ALM	LAH	BRA	NZ
Person/months per participant:	0,5	1	0,3	0,3	0,3	0,3	0,3	0

Objectives. Multidisciplinary and transdisciplinary initiatives such as Climate Services can only succeed with the right level of communication and dissemination to create awareness among CS suppliers, purveyors and users. As this project is not just simply a market survey, but about creating a dialogue among diverse Climate Services actors and users in order to enable and develop the European Climate Services market.
Communication and dissemination activities will run throughout the duration of the project. In the first phase they will be mainly devoted to engage CS providers and end-users.
In the second phase,WP6will contribute to disseminate and advocate findings to strengthen European leadership in the Climate Services market internationally in both policy-relevant and thematic European and global forums corresponding to the Horizon 2020 Societal Challenges. A dissemination strategy will mainly be developed to reach EU, national and local levels taking care that right information is delivered at the right time and in the right context so that it is understood by the target audiences.
The outcomes of this and other WPs will be exploited throughout the activities planned in this WP. In particular, events at local level (task 6.3) and EU-level workshops (task 6.4) will be organized in order
to reach citizens, public institutions, industry actors, farmer associations, CSOs, educational and research organizations, insurances and re-insurances, crisis first responders, water boards and water providers and public institutions, authorities, business associations and NGOs from city, regional, national and European level.

Description of work, lead partner and role of participants

Task 6.1: Definition of the Project Dissemination and Communication Strategy (Task Leader: ISPRA, Participants: All Partners, Months 1-5)

Effective dissemination will complement awareness creation and communication, allowing to engage and share the project results and lessons learned with all of stakeholder groups. Define a varied Communication and Dissemination Strategy to meet the various stakeholders; information and knowledge needs based on a Situation Analysis and a Social Network Analysis to map the relationships and flows among target, information and knowledge entities. This analysis results into the Stakeholder Management Matrix to outline and guide: WHAT information to communicate, WHEN to communicate, to WHOM to communicate, WHO is communicating and HOW to communicate. This will result into a communication and dissemination strategy and a communication plan - defining key messages, results and target audiences, and selecting appropriate communication tools and channels (classic and social media) to meet the information needs of target audiences. The Stakeholder Management Matrix will also identify contacts that will be compiled in a Contacts Database to facilitate the external stakeholder communication. The strategy will also outline the roles and responsibilities of partners and the conditions ensuring proper dissemination of the generated knowledge, related to confidentiality publication and use of the knowledge. Communication messages will cover technology, efficiency gains, financial aspects, as well as social and environmental impacts, and make the case for European added value of R&D co-operation.
In addition, an interim report on the results of dissemination activities will be delivered. Each updated version of the Plan will include a report on activities already implemented and give an outlook for the dissemination activities foreseen for the next period. The updated and final version of this report will be delivered at the end of the project.

Task 6.2: Execution of the Communication and Dissemination Strategy (Task Leader: ISPRA, Participants: All Partners) M5 - M24

Create communication materials, i.e. a project visual well recognized identity (website, social media accounts, logo, fonts, material layout, etc.). Prepare and disseminate infographics targeted for CS suppliers and end-users. Use storytelling for wide stakeholder communication for raising interest and awareness to the targeted audiences. Edit and widely disseminate 1 extensive policy brief to the authorities responsible at EU, national and local levels. Active participation in one major international Climate Services event for wide dissemination and feedback. Actively disseminate to COPERNICUS, Climate Adaptation and Mitigation, EIP Smart Cities, EIP Water and EIP Agriculture, WssTP, and in particular to JPI Climate.
Disseminate widely the project's results, experiences, best practices and condensed version of the market research result report to all stakeholders and citizens. To engage cities across Europe social media will be used to establish constant engagement with a large public; social profiles will be created on different social networks such as Facebook, Twitter, YouTube, SlideShare and LinkedIn. A final conference will be organised for wide-dissemination and international Climate Services stakeholders include providers and users such as UN Organisations (WMO, FAO, UNEP). Proceedings will be published.

Task 6.3 City Actors and Citizen Awareness (Task Leader: ICLEI, Participants: BOL, NCL, ALM, LAT, BRA) M6-M24
This task aims at increasing on Climate Services as a product for Climate Adaptation and Climate Mitigation awareness among the general public with the participation of public institutions, industry actors, farmer associations, CSOs, educational and research organizations, insurances and re-insurances, crisis first responders, water boards and water providers and public institutions such as ministries of transportation. Partners, their Living Labs, and will be involved to organize awareness actions, for example including activities such as exhibition posters during Energy Days, or through activities organized within other relevant events at local level (e.g. Energy Weeks, Climate Days…). ICLEI will monitor the results of the engagement through tracking of participants.

Task 6.4: Organisation of 2 EU-Level Workshops (Task Leader: MIL, Participants: ICLEI, XPRO, ISPRA, CNR, JLU, BSC) Months 16-24
Two EU-level workshops will be organised by MIL and ICLEI. Invitees are representative of authorities, business associations and NGOs from city, regional, national and European level. The first workshop is organised by MIL in Brussels. It will introduce the CS Market Research Questionnaire, and present preliminary findings from WP1 (climate services), WP2 (supply channels) and good practices (WP3) and the preliminary results of the first EU-level consultation (WP4). Also a web questionnaire will be developed, which is made accessible in the meeting room. Participants are invited to complete the questionnaire during the workshop. During this workshop, ISPRA will organise a Science-Policy-Industry interfacing meeting to discuss how the interface should be improved. The second EU workshop will be organised during the final conference of the project. This workshop will be organised by ICLEI. This event will present the results of the Living Labs and the effect it had on the participating cities. Best practices will be presented.
This event will be organised back-to-back (or as part) of ICLEI's conference for cities.

Task 6.5 CliMaFuture Final Conference(Task Leader: ISPRA, Participants: All Partners) M24
The final conference will be held in Brussels in order to attract as many participants as possible from EC's different DGs. The final conference will be announced 9 months in advance to ensure the needed attendance.
During the Final Conference special EC session where different DGs and Environmental Services (EC, national, public and private) will be participating. The final conference will be held in Brussels to ensure the maximum participation from EC and organisations that have their offices on location.

Role of participants:
Task 6.1: ISPRA: Task leader
All Partners: participate to the definition of the Project Communication and Dissemination Strategy.
Task 6.2: ISPRA: Task leader
All Partners: participate to the execution of the Project Communication and Dissemination Strategy.
Task 6.3: ICLEI: Task leader
BOL, NCL, ALM, LAT, BRA: contribute to the organization of awareness actions.
Task 6.4: MIL: Task leader
MIL, ICLEI: organization of the two EU-level workshops.
XPRO, ISPRA, CNR, JLU, BSC: contribute to the two EU-level workshops.

Task 6.5: ISPRA: Task leader
All Partners: contribute to the organization of the final conference that will be held in Brussels.

Deliverables (brief description and month of delivery)

D6.1 Communication and Dissemination Strategy (ISPRA) (Public Report) (M3)

D6.2Report on the dissemination and exploitation activities and results(ISPRA) (Public Report) (M12, M24)

Milestones:

M6.1 CliMaFuture Website Online (ISPRA, M5)

M6.2. CliMaFuture EU-level Workshop held (MIL, M12)

Work package number	**7**		**Start Date or Starting Event**				1	
Work package title	**Coordination and Project Management**							
Participant number	**1**	2	3	4	5	6	7	8
Short name of participant	**CNR**	ISPRA	XPRO	MIL	ICLEI	IMDEA	BSC	CCR
Person/months per participant:	**10**	0,5	2	0,5	0,5	0,1	0,5	0,1
Participant number	9	10	11	12	13	14	15	16
Short name of participant	GfK	JLU	BOL	NCS	ALM	LAH	BRA	NZ
Person/months per participant:	0,5	0,5	0,1	0,1	0,1	0,1	0,1	1,5

Objectives
The aim of WP7 is to provide the internal project management and the overall co-ordination of activities, financial and technical planning and control. This includes the following:

- overall technical and administrative co-ordination of the project;
- control of the project scheduling and achievements;
- conflict and risk assessment, and generation of corrective actions, if and when needed;
- contact point of the project with the Commission, notably for the submission of deliverables and regular reports of progress and resource expenditure;
- liaison with other EU projects.

This WP will be coordinated by CNR.

Description of work, lead partner and role of participants
This WP will mainly be the work of the Coordinating Partner, but all partners will share responsibility for the administrative efforts required and for the work that will be carried out in each of the other WPs.
T7.1 Consortium Management (Task Leader: CNR, Participants: All partners) M1 - M24
This activity is intended to ensure proper project management for the achievement of the objectives and the quality of results. The task is divided in three subtasks:

T7.1.1 Management(Task Leader: CNR, Participants: All partners)M1 - M24

The activities to be performed in this sub-task comprise:

- Global project management,
- Maintaining the technical description of the work and the Consortium Agreement,
- S&T progress control,
- Checking schedules and milestones,
- Handling cost claim procedures and maintaining the financial budget status of each partner,
- Approval of deliverables and reports,
- Organisation of the project meetings: the Kick-Off to be held in Rome and hosted by the Coordinator; The other meetings will be held in locations based on the work to be accomplished and the participation required in order to minimise travelling expenses as much as possible.
  1st Meeting – Almada (together with 1st workshop and 1st focus group)
  2nd Meeting – in one of the partner cities to follow the Living Labs

3rd meeting – Brussels (together with 1st EU workshop)
4th meeting - Brussels (together with final conference and the 2nd EU workshop)

T7.1.2 Project Quality Assurance(Task Leader: XPRO, Participants: CNR) M1 - M24

This task ensures that project activities will be carried out professionally, efficiently and effectively. In this respect it has been considered beneficial to adopt well-established standards such as ISO, FMEA, etc. Document templates will be provided for reports, deliverables and presentations. Deliverables will be reviewed by at least two Partners' representatives who will not have been directly involved in the process of creating the respective deliverables (if possible) or specifically appointed for such a duty given their experience. To assure the quality of the project specific metrics and indicators as introduced in section 1.1 will be used for measuring the objectives achievement.

T7.1.3 Project Risk Assessment &Management(Task Leader: XPRO, Participants: CNR) M1- M24

This subtask will ensure that potential risks are properly assessed, evaluated and managed both in terms of communication as well as in terms of contingency management. The main aim of the task is in any case to ensure that possible or potential risks will be identified, analysed and taken into account. Avoidance or mitigation policies will be defined depending on risk occurrence probability and potential impact severity.

T7.2 Technical Management (Task Leader: CNR, Participants: All partners) M1 - M24

T7.2 will ensure that intended scientific and research aspects of the project are properly addressed and related objectives and milestones met. It is the responsibility of this task to keep track of all relevant scientific, research and technical achievements also from the perspective of protecting the generated IPR.

T7.2.1 Technical, Scientific & Research Management (Task Leader: CNR, Participants: All partners) M1 - M24

This subtask will ensure that intended technical, scientific and research aspects of the project are properly addressed and related objectives and milestones met. It is the responsibility of this task to keep track of all relevant scientific, research and technical achievements also from the perspective of protecting the generated IPR.

T7.2.2 Ethical issues (Task Leader: NZ, All partners) M1 - M24

The CliMaFuture Ethics Lead Expert and the Ethics Advisory Board will ensure compliance with the principles relating to the highest standard of the data quality, including:

(i) The collected data will be processed fairly and lawfully

(ii) The collected data will be collected for specified, explicit and legitimate purposes and not further processed in a way incompatible with those purposes

(iii) The collected data will be adequate, relevant, and not excessive in relation to the purposes for which they are collected and/or further processed

(iv)The collected data will be accurate and regularly updated

(v) The collected data will be kept in a user-friendly form, which permits identification of data subjects for no longer than is necessary for the purposes of which: 1) The data was collected and 2) For which the data is further processed.

The Ethic procedures will be regularly scheduled during the funding lifetime of the project from M1 to M24. The "Ethics Checklist" will be employed, which will include the legal information and procedures to be followed by the Consortium partners to ensure compliance. In addition, CliMaFuture will employ the Informed Consent Forms (ICFs) for participants taking place in all the Market Research activities.

During the Dissemination (WP6), CliMaFuture will ensure that all participants' information is anonymized. CliMaFuture will also take all reasonable precaution that no person and/or institution will have an access to any data protected.

T7.2.3 Contribution to Open Research Data (Task Leader: CNR, Participants: All partners) M1 - M24

This subtask will verify possible contribute to the open research data, open EC database and possible contributions to open knowledge repositories (as for example Wikipedia / DBPedia).

T7.3 Project Administration (Task Leader: CNR, Participants: All partners) M1 - M24

T7.3 will ensure that all administrative aspects of the project are properly monitored and handled, including, but not limited to, progress, efforts, costs and financial reporting. This task includes the checking of the project website updating for providing a correct and coordinated material about the project.

Role of participants:

Task 7.1: CNR: Task leader

All Partners: contribute to ensure proper project management.
XPRO: contribute to ensure the quality of the project and to mange possible or potential risks.
Task 7.2: CNR: Task leader
All Partners: contribute to ensure proper scientific and research aspects.
NZ: ensure ethical issues.
Task 7.3: CNR: Task leader
All Partners: contribute to ensure proper administrative aspects.

Deliverables:
D7.1 Quality Assurance Manual (Confidential Report) (XPRO-Consulting) (M3)
D7.2 Periodic Progress Reports & Risk Update (Public Report) (CNR) (M6/M12/M18/M24)
This deliverable will regularly report on the project progress (scientific and technical) and will update the risk register according to any new findings and developments.
D7.4 Ethical Issues Report (Confidential Report) (CNR or Nina?) (M12/M24)
This report will discuss of ethical issues emerging during the project activities and management and, connected with participatory issues and public engagement that will be used during the projects' activities. This report will be produced in accordance with the ethical board of the project.
D7.6 Financial Report (Confidential Report) (CNR) (M12/M24)
This report will set out and justify the financial claims of the project.
D7.7 Final Report (CNR) (M24)
The final report will summarise the achievements of the CliMaFuture project.

Table 3.1b: List of work packages

Work package No	Work Package Title	Lead Participant No	Lead Participant Short Name	Person-Months	Start Month	End month
1	Climate Services Market Place	10	JLU	22	1	18
2	Supply Channels of Climate Services	7	BSC	18	1	16
3	Living Labs and Local and National Level Market Research	5	ICLEI	44,5	4	20
4	EU-level and EU-28 Market Research and Consultation	4	MIL	28	4	14
5	Enabling Market Growth	3	XPRO	32,5	3	23
6	Communication, Dissemination and Citizen Awareness	2	ISPRA	23,5	1	24
7	Coordination and Project Management	1	CNR	117,2	1	24
				185,7		

Table 3.1c: List of Deliverables[23]

Deliverable (number)	Deliverable name	Work package number	Short name of lead participant	Type	Dissemination level	Delivery date
D1.1	Report on the Climate Services Market Place	WP1	CNR	R	PU	11
D1.2	Assessment of the current offer of CS	WP1	JLU	R	CO	12
D1.3	Report on case studies of CS contribution to adaptation plans in European cities	WP1	ISPRA	R	CO	18

[23] If your action taking part in the Pilot on Open Research Data, you must include a data management plan as a distinct deliverable within the first 6 months of the project. This deliverable will evolve during the lifetime of the project in order to present the status of the project's reflections on data management. A template for such a plan is availableon the Participant Portal (Guide on Data Management).

D2.1	Survey of Current Supply Channels of Climate Services in EU	WP2	BSC	R	PU	12
D3.1	Workshop Conclusion Report	WP3	ICLEI	R	PU	20
D3.2	Focus Groups Status Report	WP3	GfK	R	PU	8
D3.3	Regional and National Conclusion Report	WP3	ICLEI	R	PU	15
D3.4	Layman's report on the state of play of climate services with policy recommendations for local, national and EU level	WP3	ICLEI	R	PU	17
D3.5	Qualitative Market Research Analysis Report	WP3	GfK	R	CO	17
D4.1	Questionnaire and Interview Guide	WP4	MIL	R	PU	7
D4.2	Market Research Analysis on EU-Level Stakeholder Consultation	WP4	GfK	R	CO	12
D4.3	Market Research Analysis on EU-28 Member States Stakeholder Consultation	WP4	GfK	R	CO	16
D5.1	Extended Climate Services Business Development Strategy Report	WP5	XPRO	R	CO	23
D5.2	Executive Summary Report for Climate Services Market Research and Strategy	WP5	XPRO	R	CI	23
D5.3	The next generation of Climate Services – meeting the market demand and needs Strategy Report	WP5	JLU	R	CO	21
D5.4	Roadmap for Fostering Climate Services wide Market Acceptance	WP5	XPRO	R	PU	21
D5.5	Best Practices Reports	WP5	ISPRA	R	PU	23
D6.1	Communication and Dissemination Strategy	WP6	ISPRA	R	PU	6
D6.2	Report on the dissemination and exploitation activities and results	WP6	ISPRA	R	PU	12,24
D7.1	Quality Assurance Manual	WP7	XPRO	R	CO	3
D7.2	Risk analysis	WP7	XPRO	R	CO	3
D7.3	Periodic Progress Reports & Risk Update	WP7	CNR	R	PU	6, 12, 18, 24
D7.4	Ethical Issues Report	WP7	CNR	R	CO	12, 24
D7.5	Open Research Data Contribution	WP7	CNR	R	PU	12, 24
D7.6	Financial Report	WP7	CNR	R	CO	12, 24
D7.7	Final Report	WP7	CNR	R	CO	24

KEY

Deliverable numbers in order of delivery dates. Please use the numbering convention <WP number>.<number of deliverable within that WP>.

For example, deliverable 4.2 would be the second deliverable from work package 4.

Type:

Use one of the following codes:

R: Document, report (excluding the periodic and final reports)
DEM: Demonstrator, pilot, prototype, plan designs
DEC: Websites, patents filing, press& media actions, videos, etc.
OTHER: Software, technical diagram, etc.

Dissemination level:

Use one of the following codes:

PU = Public, fully open, e.g. web
CO = Confidential, restricted under conditions set out in Model Grant Agreement
CI = Classified, information as referred to in Commission Decision 2001/844/EC.

Delivery date Measured in months from the project start date (month 1)

Table 3.2a: List of milestones

Milestone number	Milestone name	Related work package(s)	Estimated date	Means of verification
M1.1	Creation of the Climate Services Market Place	WP1	11	Implementation of the Climate Services Market Place
M1.2	Assessment of current offer of CS Completed	WP1	12	Report on the assessment of current offer of CS Completed
M1.3	CS contribution to adaptation plans in European cities Survey Completed	WP1	18	Report on CS contribution to adaptation plans in European cities Survey Completed
M2.1	current Climate Services Supply Channels to meet market demand and needs	WP2	6	Report on current Climate Services Supply Channels to meet market demand and needs
M2.2	Climate Services Supply Requirements mapped	WP2	8	Report on Climate Services Supply Requirements mapped
M3.1	Living lab set up in all partner cities	WP3	6	Report on Living lab set up in all partner cities
M3.2	Round of Focus Groups Completed	WP3	8	Report on 1st Round of Focus Groups
M3.3	Regional and National Survey and interviews in Partnering MS completed	WP3	18	Report on Regional and National Survey and interviews in Partnering MS
M3.4	Feedback from multi-level workshops acquired	WP3	20	Report on feedback from multi-level workshops
M4.1	EU and National Level Contacts Database ready	WP4	7	Repository on EU and National Level Contacts
M4.2	EU-level CS Stakeholder Consultation finalised	WP4	11	Report on EU-level CS Stakeholder Consultation
M4.3	EU-28 level CS Stakeholder Consultation finalised	WP4	14	Report on EU-28 level CS Stakeholder Consultation
M5.1	Analysis of factors such as ethical, legal and intellectual property implications completed	WP5	17	Report onthe analysis of factors such as ethical, legal and intellectual property implications
M5.2	PESTEL Analysis completed	WP5	19	Report on PESTEL Analysis
M5.3	Climate Services criteria and protocols for quality assurance and quality control completed	WP5	19	Report on climate services criteria and protocols for quality assurance and quality control
M5.4	Analysis Macro Economic EU Market Potential and Employment Opportunities completed	WP5	17	Report on the analysis of Macro Economic EU Market Potential and Employment Opportunities
M5.5	Best Practices Analysis Completed	WP5	22	Report on the analysis of best practices
M7.1	Project Annual Review (1st year)	WP7	12	Review report
M7.2	Project Final Review	WP7	24	Review report

KEY **Estimated date**

Measured in months from the project start date (month 1)

Means of verification
Show how you will confirm that the milestone has been attained. Refer to indicators if appropriate. For example: a laboratory prototype that is 'up and running'; software released and validated by a user group; field survey complete and data quality validated.

3.2 Management structure and procedures

3.2.1 Organisational structure

3.2.1.1 Governing bodies and responsibilities

The management structure is drawn from best practices in EU projects. It utilizes the principles of product-based planning, delegation of responsibility and exception-based reporting and is designed to ensure coherent scientific, administrative and financial co-ordination, while providing the participants with the support and tools required for the achievement of the project objectives. The management structure will:

- establish reliable overall co-ordination and efficient and reliable communication between project partners and stakeholders and ensure timely and accurate handling of all the administrative and financial tasks connected with the activities of the consortium;
- monitor, co-ordinate and report on the progress of the various work-packages and support integration of engineering and research activities;
- provide equitable and effective methods for taking decisions and resolving conflicts;
- enable refinement and revision of the project strategy, work plan and resource allocation where necessary;
- ensure compliance with the Consortium Agreement, for example in terms of IPR and the approval and acquisition of new partners;
- co-ordinate and support each partner's own management responsibilities.

The project management will consist of the following entities:

- Project Coordinator (PC)
- General Assembly (GA)
- Project Coordination Committee (PCC)
- Advisory Board (AB)
- Ethical Advisory Board (EAB)
- Work Package Leaders (WPL)
- Task Leaders (TL)
- Exploitation Manager (EM)

Project Coordinator (PC) - The Coordinating Partner institution is the unique point of contact with the Commission for all matters. The Coordinating Partner will nominate a Project Coordinator. The Project Coordinator is responsible for: **1)** the overall technical, administrative and financial co-ordination of the project; **2)** the control of the project scheduling and achievements; **3)** the generation of corrective actions, if needed, in conjunction with the Project Coordination Committee and with the agreement of the General Assembly; **4)** the submission to the Commission of the deliverables and regular reports of progress and resource expenditure; **5)** being the initial point of contact for liaisons with other EU projects; **6)** the organization and chairing of the General Assembly, the Project Coordination Committee and the Scientific Board meetings; **7)** organization of annual meetings of AB end EAB and taking into review and suggestions of AB and EAB; **8)** project-level dissemination.

General Assembly (GA) - The GA comprises one representative from each partner institution. It is the only project body that can make decisions on contractual matters, such as consortium agreement, budget, timeline, deliverables, PM shifts, measures to cope with defaulting partners, or adding/deleting partners. The GA will also appoint the Exploitation Manager. The decisions will be taken by consensus or by a double majority in the case where consensus is not possible. Each member (i.e., partner institution) of the GA will have one vote. The GA will meet at least once every 4 months, and the meetings will be chaired by the Project Coordinator.

Project Coordination Committee (PCC) - A Project Coordination Committee will be established to support Project Coordinator in the management of the different scientific aspects of the project. The PCC

will be chaired by PC and composed by the WP leaders and the Exploitation Manager. The PCC will also meet at least every 6 months, in order to ensure that the technical developments and general progress are well coordinated. Interim WP meetings may be arranged independently. Specifically, the PCC will:

- define the schedule of scientific activities;
- evaluate and validate the progress of the project;
- identify project-level risks, track them, and propose corrective actions in the event of problems;
- assign specific responsibility to the most suitable partner when new events require it;
- lay down procedures for publications and press releases with regard to the project.

Advisory Board (AB) – The CliMaFuture Advisory Board (AB) is comprised of leading experts in their fields. The Advisory Board's role is to advise the PC and PCC on a range of issues. In general, the AB provides a review of the project objectives and results to ensure that the programs are sound, pertinent and provide a high impact to the community. The AB can be called on any scientific issues that may arise. The Committee's specific responsibilities include: **1)** Periodically reviewing strategy. **2)** Expanding commitments. **3)** Providing speakers for major CliMaFuture events. The AB is composed with a representative of each partner. The Advisory Board include also 2 external experts: Andrea Toreti, and Carlo Buontempo (agreement letters are attached to the proposal). Other relevant external stakeholders could be included at the beginning of the project. The Advisory Board meetings are scheduled at months 1, 12, 24. The Advisory Board will be led by Andrea Toreti.

Ethical Advisory Board (EAB) -

The CliMaFuture Ethical Advisory Board (EAB) is comprised of three independent leading experts in the ethical field. The Ethical Advisory Board's role is to advise the PC and PCC on any issue related to ethical matters. In general, the EAB provides scientific review of research objectives and results to ensure that the research programs are scientifically sound, pertinent and provide a high impact to the research community.The Ethical Advisory Board will be composed by: **Nina Zugic**, **Dr. Charles Henderson and Dr Michele Barbier** (agreement letters are attached to the proposal). The Ethical Advisory Board will be led by **Nina Zugic**.

WP leaders (WPL) - Each work package is coordinated by a WP leader with the following responsibilities:

- Ensure interaction/collaboration with the project coordinator, the project coordination committee, and other WPs;
- Ensure the activities of the WP proceed according to the project work plan;
- Ensure detailed planning of the WP work, supervise and coordinate the work, and assure quality of the WP results;
- Ensure interaction/collaboration with task leaders and project researchers inside the WP;
- Ensure the timely availability of deliverables;
- Initiate the corrective actions for deviations;
- Convene WP meetings.

Task leaders (TL) - Each work package is organized into several tasks, each of them with a task leader. Task leaders have the following responsibilities:

- Ensure interaction/collaboration with the respective WP leader;
- Ensure the activities of the task proceed according to the work plan;
- Ensure detailed planning of the task work, supervise and coordinate the work, and assure quality of the task results;
- Ensure interaction/collaboration/communication inside the task;
- Initiate the corrective actions for deviations.

Exploitation Manager (EM) - The exploitation manager (EM) will be responsible for the management of the project's innovation and exploitation activities and for the coordination of the exploitation actions of the project as a whole (see section 3.2.2, below). The Exploitation Manager is a voting member of PCC, and will be appointed by the GA in its first meeting from one of the project members.

3.2.1.2 Conflict resolution

The primary mechanism for decision-making throughout all groups within the project will be by consensus. However, where consensus cannot be reached, it is essential that processes should be available to deal with disagreements. The procedures outlined below are defined in full in the consortium agreement, including rules for convening a meeting, definition of a quorum and voting.The potential for some conflict in a complex Integrating Project must be regarded as medium-to-high because it involves individuals from

different backgrounds and organisational cultures working together to complete a complex set of tasks. Day-to-day conflicts may relate to differences in priorities, resource allocation, technology choices, ways of working, or expectations of results.The conflict resolution mechanism described below reflects the overall project management structure and philosophy of devolved responsibility.

Disputes localised within a work package - Where there is sustained disagreement within a work package, the Project Coordinator will mediate and in the absence of consensus, the General Assembly shall be invited to make a decision that is binding.

Disputes between work packages - Conflicts between work packages shall, in the first instance, be mediated by the Project Coordinator through the Project Coordination Committee. If the PCC is unable to reach consensus, the disagreement shall be referred to the General Assembly.

Disputes between institutions - In a case of conflicts between Consortium Members, the Project Coordinator will mediate and in the absence of consensus, the General Assembly shall be invited to make a decision.Any conflicts that cannot be resolved through the principles above will be handled according to the dispute resolution provision set forth in the Consortium Agreement.

3.2.2 Innovation management

Innovation management is one of the core responsibilities of the Exploitation Manager (EM), as it requires an understanding of both market and technical problems. In this respect, the EM will explore all internal and external innovation opportunities that may lead to new solutions, services or products. For this purpose, the EM will be a vital link between the consortium and external agents, such as policy makers and stakeholders or companies.

3.2.3 Risk analysis

The risks are no different to those of any collaborative research project operating at the leading edge of hardware and software technologies. These risks relate to the following mainareas:

- withdrawal of a key partner;
- insufficient availability of data or difficulties to interpret/model them;
- delay of implementation and integration activities.
- difficulties to implement the case studies

These risks are described in more detail below, and the consequences and contingency actions are explained.

Critical risks for implementation

Description of risk	Involved WPs	Risk Level	Proposed risk mitigation measures
Difficulties to collect and generalize data in all European countries.	WP1 WP2 WP3 WP4	Low	CliMaFuture partners are involved in many projects and working groups in charge of the collection of data from all European countries on CS products (WP1), policy and supportive frameworks (WP2), CS market segments (WP3), and current practices at EU-level (WP4). An in depth-analysis of the available data will be carried out to highlight general trends and find common points. The KPIs of the objective O1 of Table 1 allow to assess the verification of the risk. Gaps will be managed extending the search of sources or involving more people in selecting and analysing data collected.
Lack of stakeholders' participation.	WP1 WP2 WP3 WP4 WP6	Medium	Participation of stakeholders is crucial for the analysis of current offer of CS (WP1), the survey of current supply channels of CS(WP2), the living Labs, Focus Groups, and the consultation at local level (WP3), the consultation at EU-Level and EU-28 (WP4), the two EU-level workshops (WP6). The stakeholders' participation will be gained through awareness actions and preparative talks aiming to present in a very friendly way the aim of the project and the importance of contributing to the governance of the European policies from the beginning and continuously. Many partners have already carried out public consultations at local, national and Eu-level and they are able to provide valuable inputs. The KPIs of the objective O1 of Table 1 allow to assess the verification of the risk. Many CliMaFuture partners are or have a large network that can mitigate the

			verification of this risk.
Technical issue during the implementation of the Climate ServicesMarket Place	WP1	Medium	The Climate ServicesMarket Place is mainly a customization of the PLAKSS knowledge technology. The consortium has planned an iterative approach that allows to solve possible problems pointed out by the users. The KPIs of the objective O4 of Table 1 allow to assess the verification of the risk. Technical issues will be managed analysing and refining the Climate ServicesMarket Place.
Conflicts or difficulties in finding shared results among actors involved in the market research	WP3 WP4	Low	Cooperation among all stakeholders is a fundamental step in the consultation at local, national, and EU level in order to perform a qualitative market research analysis. The numerous brokering activities (Living Labs, multi-level workshops, Focus Groups, surveys) envisaged by the project (WP3 and WP4) and participatory methods applied (e.g. the Business Model Canvas, the Change Management Approach and the Market Survey Design) aim to prevent and/or to solve possible controversial points of view and build shared solutions among all actors involved in the market research. The KPIs of the objectives O1 and O2 of Table 1 allow to assess the verification of the risk. This risk will be also managed by means the use of well experimented methods of conflict resolution.
Conflicts or difficulties in defining the Climate Services Market Growth Strategy	WP5	Low	The definition of a shared business development strategy, along with best practices and recommendations requires the participative engagement of stakeholders and their agreement. A fruitful interaction among multi-disciplinary stakeholders will be assured by several participative methods, such as the Business Model Canvas, the Change Management Approach and the Market Survey Design. The KPIs of the objectives O3 and O4 of Table 1 allow to assess the verification of the risk. This risk will be managed by means of the use of the abovementioned participative methods and well experimented methods of conflict resolution.
Dissemination channels notappropriate	WP6	Low	This risk will be managed by organizing discussions among all the partners and re-designing the dissemination strategy (and maybe the materials) in order to reach the right groups.
Exploitation strategy notappropriate	WP6	Low	This risk will be managed by organizing discussions among all the partners and redesigning the strategy or the potential final market for the exploitable results.
Bad consortium communication	WP7	Low	This risk will be managed by potentiating team building among members; improving communication facilities; increasing face to face or telephone communications when possible.
Unrealistic Time Schedule	WP7	Low	This risk will be managed by identifying critical components of the projectandremoving those that are not essential.
Conflicts within consortium	WP7	Low	This risk will be managed by organizing internal meeting to gather all points of view and by using well experimented methods of conflict resolution.
Disagreements with ProjectLeaders	WP7	Low	This risk will be managed by evaluating the reasons for disagreement and come to consensus.

3.3 Consortium as a whole

The consortium has been built according to the specific competences and experiences of the individual partners and the contribution they can provide for the successful outcome of ClimaFuture project. The proven partners' skills and experience identified are strategic for the ClimaFuture objectives. The consortium includes in fact, a valuable team of Research Institutions, Universities, Scientific Centre, SMEs, distributed in Belgium, Cyprus, UK, Germany, Spain, France, Italy, Portugal, Finland, Slovakia. The roles of partners

are complementary (as evident by the roles of partners in the WPs description, and in the section 4 of Partners' profile). Participants are well integrated in their competencies and specific skills. The consortium consists of:

Partner's name: Consiglio Nazionale delle Ricerche (CNR)
Partner's expertise: CNR with IRPPS has a wide experience in coordinating international projects and strong multidisciplinary skills on the Social informatics, Digital ecosystems, Web applications, Knowledge sharing systems, Social Networking and participatory methodologies.
Partner's role in WPs and tasks: CNR will lead: - Creation of the Climate Services Market Place (Task 1.2) - Coordination and Project Management (WP7) - Consortium Management (Task 7.1) - Technical Management (Task 7.2) - Project Administration (Task 7.3)
Partner's name: Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA)
Partner's expertise: ISPRA as Institute for Environmental Protection and Research will contribute in ClimateFuture mainly identifying and sharing stakeholders and knowledge sources on all environmental issues, and assisting policy makers in the formulation of questions and strategies which need to be supported by scientific and technical information and evidence.
Partner's role in WPs and tasks: ISPRA will lead the: - Review of CS products, availability and use (Task 1.1.1) - CS support to adaptation strategies in European cities (Task 1.3) - Assessment of policy and supportive frameworks and technical requirements (Task 2.1) - Develop Best Practices and Recommendations Reports (Task 5.6) - Communication, Dissemination and Citizen Awareness (WP6) - Dissemination and Communication Strategy (Task 6.1) - Execution of the Dissemination and Communication Strategy (Task 6.2) - CliMaFuture Final Conference (Task 6.5)
Partner's name: XPRO Consulting Limited (XPRO)
Partner's expertise: XPRO Consulting due to its expertise in the areas of business strategy formulation, knowledge management systems, knowledge dissemination, change management and training will actively contribute in various assessment activities of ClimateFuture, by focusing on the definition of the business development strategy and fostering CS market acceptance.
Partner's role in WPs and tasks: XPRO will lead the: - Enabling Market Growth (WP5) - Assessment of Market Enablers and Barriers and Define a Business Development Strategy for Climate Services (Task 5.1) - Foster Climate Services wide Market Acceptance (Task 5.5) - Disseminate widely the project's results, experiences, best practices (Task 6.2.3) - Project Quality Assurance (Task 7.1.2) - Project Risk Assessment &Management (Task 7.1.3)
Partner's name: Milieu (MIL)
Partner's expertise: Milieu Ltd is a law and policy consulting firm specialised in providing high-quality consultancy services to European and International institutions such as DG Climate Action, DG Environment, the European Environment Agency (EEA), the European Parliament, etc. Milieu has extensive experience in climate services, in particular for climate adaptation and disaster risk management. In reason of this experience, Milieu will contribute in ClimateFuture mainly in encompass strategic planning, policy development and evaluation, capacity building, policy recommendations, and stakeholder consultations.
Partner's role in WPs and tasks: MIL will lead the: - Regional and National Level Survey in Partner MSs (Task 3.3) - EU-level and EU-28 Market Research and Consultation (WP4) - EU-level Climate Services stakeholder consultation (Task 4.2) - EU-28 Member States Stakeholder Consultation (Task 4.3)

- Organisation of 2 EU-level workshops (Task 6.4)

Partner's name: ICLEI-Europe (ICLEI)

Partner's expertise: The European Secretariat of ICLEI – Local Governments for Sustainability (ICLEI Europe) addresses local sustainability in Europe, working closely with local governments and their partners to achieve this. Building on a wide range of experiences in the field of sustainable energy, mobility, resource-efficiency, climate mitigation and adaptation, sustainable public procurement, integrated management and urban governance, ICLEI will contribute in the ClimateFuture project as capacity facilitator between local authorities and research institutions, but also the private sector that provide advanced and sustainable technical solutions for the urban challenges of today.

Partner's role in WPs and tasks: ICLEI will lead the:
- Living Labs and Local and National Level Market Research (WP3)
- Create and Run Living Labs in 5 Partner Cities (Task 3.1)
- Develop Climate Services Best Practices and Recommendation for Cities and Peri-Urban Areas (Task 5.6.3)
- City Actors and Citizen Awareness (Task 6.3)

Partner's name: IMDEA Institute (IMDEA)

Partner's expertise: IMDEA has large experience and very relevant expertise on water scarcity and drought risk management, in particular, in Mediterranean and drought prone areas, with strong links to climate change effects and how to enhance adaptation.

Partner's role in WPs and tasks: IMDEA will lead the:
- Projection of Macro Economic EU Market Potential and Employment Opportunities (Task 5.4)

Partner's name: Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC)

Partner's expertise: The BSC undertakes research on the development and assessment of dynamical and statistical methods for the prediction of global and regional climate on time scales ranging from a few weeks to several years. The formulation of the predictions includes the development and implementation of techniques to statistically downscale, calibrate and combine dynamical ensemble and empirical forecasts to satisfy specific user needs in the framework of the development of a climate service. In reason of this expertise, BSC will contribute in the identification of supply channels of Climate Services.

Partner's role in WPs and tasks: BSC will lead the:
- Supply Channels of Climate Services (WP2)
- Survey Current Supply Channels of CS (Task 2.2)
- Evaluation of CS Demand and Supply Pathways (Task 5.3)

Partner's name: Caisse Centrale de Réassurance (CCR)

Partner's expertise: Caisse Centrale de Réassurance (CCR)has a strong experience in activities for risk reduction and capacity building about ClimateFuture issues.

Partner's role in WPs and tasks: CCR will participate in:
- Assessment of the current offer of Climate Services (Task 1.1)
- Assessment of policy and supportive frameworks and technical requirements (Task 2.1)
- Survey Current Supply Channels of CS (Task 2.2)
- Designing and Planning the Quantitative Market Research (Task 4.1)
- Evaluation of CS Demand and Supply Pathways (Task 5.3)

Partner's name: GfK

Partner's expertise: Market Research Company

Partner's role in WPs and tasks: GfK will lead the:
- Execute Focus-Groups Market Research (Task 3.2)
- Market research results analysis and conclusions (Task 3.4)
- Designing and Planning the Quantitative Market Research (Task 4.1)

Partner's name: Justus-Liebig-University of Giessen (JLU)

Partner's expertise: The Justus-Liebig-Universität Gießen (JLU) was founded in 1607. The Department of Geography was founded in 1864 and is one of the oldest in Germany. It has chairs of human geography, regional planning, economic geography, geomorphology and climatology. Since April 2009, Prof. Luterbacher is chair of the Climatology, Climate Dynamics and Climate Change group. One focus of the

group is the reconstruction of past climate and changes, including the hydrological cycle, the understanding of processes leading to climate variations in Europe and the role of internal and external forcing. Another focus is the statistical modelling of weather and climate extremes. The group has experience in the analysis of the influence of the atmospheric circulation on local precipitation and temperature extremes, the development of statistical models to characterise these variables, statistical and dynamical downscaling for future climate, assessment of uncertainties and daily data quality control and homogenisation.

Partner's role in WPs and tasks: JLU will lead the:

- Climate Services Market Place (WP1)
- Assessment of the current offer of Climate Services (Task 1.1)
- Identify Gaps and Suggest Solutions: Designing the next generation of Climate Services (Task 5.2)

Partner's name: City of Bologna (BOL)

Partner's expertise: The city of Bologna will contribute to the ClimaFuture project as tester for the CliMaFuture research methodology.

Partner's role in WPs and tasks: BOL will participate in:

- CS support to adaptation strategies in European cities (Task 1.3)
- Living Labs and Local and National Level Market Research (WP3) in particular in the creation of the Living Labs, in focus groups and in the qualitative market research.

Partner's name: City of Newcastle (NCS)

Partner's expertise: The city of Newcastle will contribute to the ClimaFuture project as tester for the CliMaFuture research methodology.

Partner's role in WPs and tasks: NCS will participate in:

- CS support to adaptation strategies in European cities (Task 1.3)
- Living Labs and Local and National Level Market Research (WP3) in particular in the creation of the Living Labs, in focus groups and in the qualitative market research.

Partner's name: City of Almada (ALM)

Partner's expertise: The city of Almada will contribute to the ClimaFuture project as tester for the CliMaFuture research methodology.

Partner's role in WPs and tasks: ALM will participate in:

- CS support to adaptation strategies in European cities (Task 1.3)
- Living Labs and Local and National Level Market Research (WP3) in particular in the creation of the Living Labs, in focus groups and in the qualitative market research.

Partner's name: City of Lahti (LAH)

Partner's expertise: The city of Lahti will contribute to the ClimaFuture project as tester for the CliMaFuture research methodology.

Partner's role in WPs and tasks: LAH will participate in:

- CS support to adaptation strategies in European cities (Task 1.3)
- Living Labs and Local and National Level Market Research (WP3) in particular in the creation of the Living Labs, in focus groups and in the qualitative market research.

Partner's name: City of Bratislava (BRA)

Partner's expertise: The city of Bratislava will contribute to the ClimaFuture project as tester for the CliMaFuture research methodology.

Partner's role in WPs and tasks: BRA will participate in:

- CS support to adaptation strategies in European cities (Task 1.3)
- set up living lab and organization workshops (Task 3.1)
- in the organization and participation in focus groups (Task 3.2)
- conducting interviews and selecting stakeholders (Task 3.3)

Partner's name: Nina Zugic (NZ)

Partner's expertise: Ethics

Partner's role in WPs and tasks: NZ will lead:

- The Ethical Advisory Board

3.4 Resources to be committed

Table 3.4a: Summary of staff effort

	WP1	WP2	WP3	WP4	WP5	WP6	WP7	Total Person/ Months per Participant
1 -CNR	5	1	0,5	0,5	2	3	**10**	**22**
2 - ISPRA	3	3	1	1	3	**7**	0,5	**18,5**
3 - XPRO	1	2	1	3	**10**	2	2	**21**
4 - Milieu	0	0	3	**9**	2	3	0,5	**17,5**
5 - ICLEI-Europe	0	0	**8**	4	1	4	0,5	**17,5**
6 - IMDEA	0,5	0,5	0	0	4	0	0,1	**5,1**
7 - BSC	2	**8**	2	1	3	1	0,5	**17,5**
8 - CCR	0,5	0,5	0	0	2	0,5	0,1	**3,6**
9 - GFK	0	1	10	8	2	0,5	0,5	**22**
10- JLU	**10**	2	1	1	3	1	0,5	**18,5**
11 - BOL	0	0	3,5	0	0	0,3	0,1	**3,9**
12 - NEW	0	0	3,5	0	0	0,3	0,1	**3,9**
13 - ALM	0	0	3,5	0	0	0,3	0,1	**3,9**
14 - LAT	0	0	3,5	0	0	0,3	0,1	**3,9**
15 - BRA	0	0	3,5	0	0	0,3	0,1	**3,9**
16 - NZ	0	0	0,5	0,5	0,5	0	1,5	**3**
Total Person/Months	**20**	**19**	**44,5**	**29**	**32,5**	**22,5**	**17,2**	

Table 3.4b: 'Other direct cost' items

13 - ALM	**Cost (€)**	**Justification**
Travel	2800	Internal meetings, event organization
Equipment		
Other goods and services	1000	Services for the management of living labs and focus groups
Total	3800	

13 - BRA	**Cost (€)**	**Justification**
Travel	2800	Internal meetings, event organization
Equipment		
Other goods and services	1000	Services for the management of living labs and focus groups
Total	3800	