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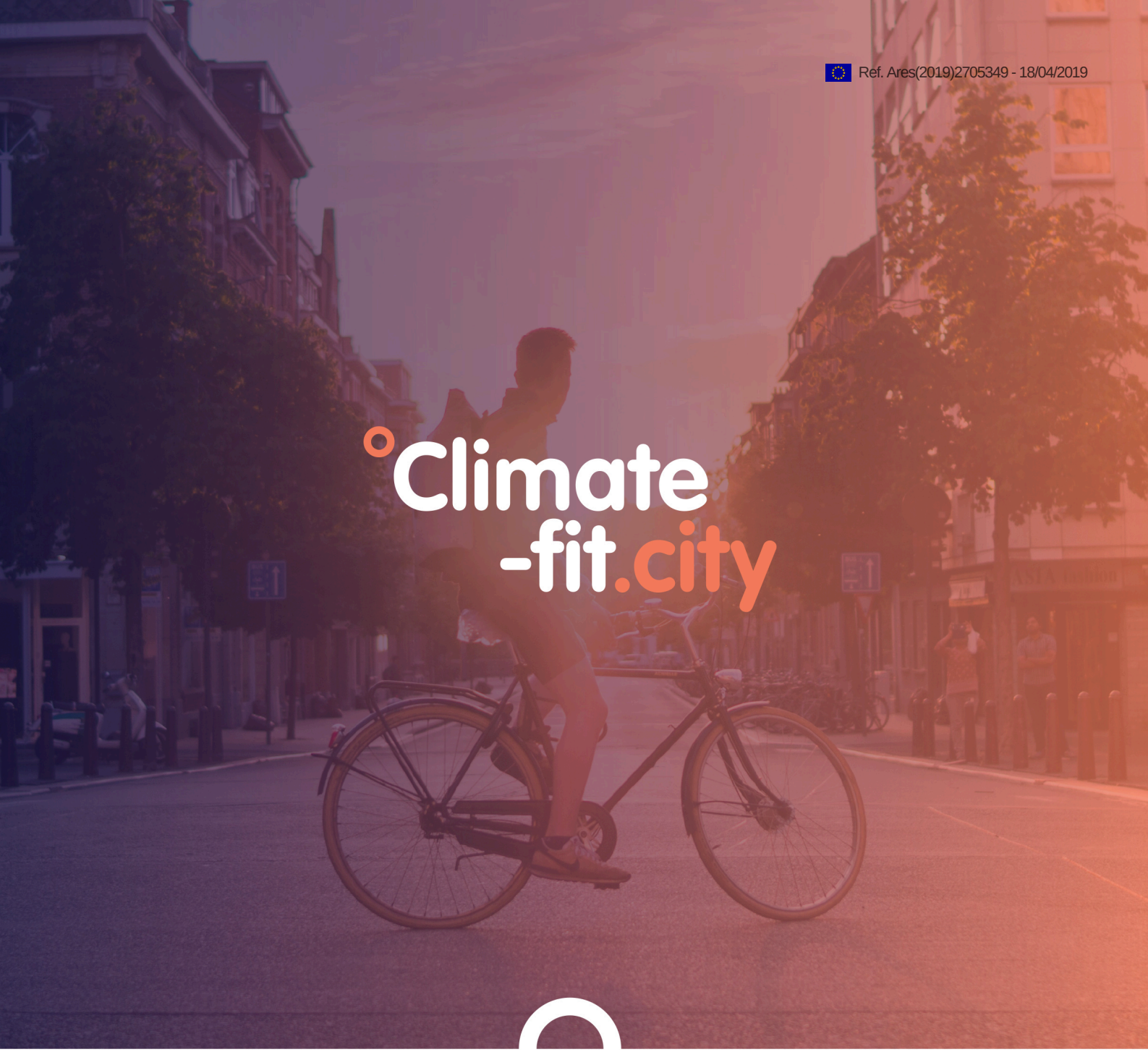

D3.2

Climate-fit.city service evaluation

report

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Deliverable 3.2	Service evaluation framework
Related Work Package:	WP3
Deliverable lead:	Arctik
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Instrument:	HORIZON 2020
Start date of the project:	01 June 2017
Duration of the project:	30 months
Website:	www.climate-fit.city.city
Abstract	Based on the evaluation framework (D3.1), the goal of this present deliverable document 3.2 is to present the process and outcome of the overall and then sectoral evaluation activities of Climate-fit.city services from the user's perspective. This overall evaluation of service demonstration for the Climate-fit.city project has been globally successful. Most of the users have identified a potential for lowering risks related with their sector as a long term effect due to services based on the use of urban or future climate data. After defining users as interacting with climate data providers, service providers, as well as stakeholders, we have relied on different methodological tools such as interviews, online questionnaire, and focus group defined in D3.1. Our goal was to engage users in the active assessment of Climate-fit.city services. The assessment report follows the chronological sequence of the Climate-fit.city project – i) stakeholder mapping; ii) co-design process; iii) service demonstration – and brings a specific contribution about the added value of each sector.

Dissemination level of the document

	PU	Public
	PP	Restricted to other programme participants (including the Commission Services)
	RE	Restricted to a group specified by the consortium (including the European Commission Services)
	CO	Confidential, only for members of the consortium (including the European Commission Services)

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Versioning and Contribution History

Version	Date	Modified by	Modification reasons
v.01	01.04.2019	Adrien Jahier	Complete deliverable ready for the internal review
v. 02	10.04.2019	Filip Lefebre	Reviewed content
v. 03	15.04.2019	Antonella Passani & Giuseppe Forino	Reviewed content
v. 04	16.04.2019	Adrien Jahier	Addressed comments after internal revision

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Table of content

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PUCS has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 730004

PUCS has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 730004

List of figures

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1. Introduction

Local government agencies, public institutions, small and medium companies experience numerous problems when they want to use the Intergovernmental Panel on Climate Change (IPCC) data for their own services. They are in need of intermediaries – climate data services purveyors, for example – those who can provide them with specific climate urban data targeted for their specific activities in comparison with routine data (zero baseline).

Climate-fit.city translates the best available scientific urban climate data into relevant information for public and private end-users operating in cities for sectors including climate and health, building energy, emergency planning, urban planning, active mobility, and cultural heritage. Users play a key role within the Climate-fit.city project, along with climate data providers and service purveyors.

Based on the evaluation framework of T3.1, the goal of this deliverable document D3.2 is to present the process and outcome of the overall and then sectoral evaluation activities from the user's perspective.

While chapter 2 summarises the specific aims of WP3, the third chapter focuses on the role of users interacting with stakeholders.
The forth chapter of this report will go into detail regarding Arctik's and users' roles in the evaluation framework and subsequently the report.
Chapter 5 will provide the methodological background for the scope of evaluation.
The following chapters, i.e. 6, 7, 8, and 9 will apply this methodology for each step of WP2.
First of all, chapter 6 will highlight the main findings of the evaluation of the stakeholder mapping. Secondly, chapter 7 will insist on the assessment of the co-design process in link with service demonstration. Thirdly, chapters 8 and 9 will give an overall evaluation of service demonstration and then a more sectoral one.
The 10th chapter will give the opportunity to give some insight about the potential consequences that this evaluation report brings to other WPs of the Climate-fit.city project.

2. WP3 objectives

According to the DoW, the specific goal of WP3 is about assessing the services implemented in WP2 from the user partners perspective (DoW, p. 17). WP2 was about stakeholder mapping (T2.1), co-design (T2.2), and especially demonstration (T2.3) of the six sectoral service cases to relevant user communities (DoW, Part A, p. 13 & 14).

The outcome of WP3 will provide valuable input for the:

- market replication (WP4)
- socio-economic impact assessment (WP6)
- dissemination and marketing (WP7)
- business development (WP8)

More specifically, this present evaluation report will assess the added value provided by the services that are based on the use of *specific* urban data, in comparison with *routine* climate data.

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3. The primary intended users within Climate-fit.city

There are 6 groups of users that have assessed each demonstration in which they have been involved:

- The Public Climate and health Agency of Barcelona (ASPB) for the Climate and and Health service,
- The private building energy performance modelling company INES for the Building Energy service,
- The city of Antwerp for the Emergency Planning service,
- IURS (The Czech Association of cities and towns) together with the cities of Prague, Ostrava, and Hodonín, for the Urban Planning service,
- The private company BIKE CITIZENS for the Active Mobility service,
- SSBAR (organisational structure of the Italian Ministry of Cultural Heritage and Tourism with the institutional objective to preserve and promote the archaeological heritage of the City of Rome) for the Cultural Heritage service.

3.1. Definition of users within the project

According to the DoW, users are defined as the "organisations actually using the information from the climate service purveyors as part of their activities" (Part B, p. 7).

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3.2. List of users

Name	City of Antwerp	Bike Citizens	SSABAR	INES	IURS (with the cities of Ostrava, Hodonin and Prague)	ASPB
Department	Disaster Management Department					Environmental Quality and Intervention & Climate and health Information Systems
Country	Belgium	Austria	Italy	Switzerland	Czech Republic	Spain
Type	Public	Private	Public	Private	Public	Public
Sector	Emergency planning	Active mobility	Cultural heritage	Building energy	Urban planning	Climate and health
Mission	Planning and management of different types of disasters on the territory of the city of Antwerp	Promoting and stimulating active mobility so as to contribute to improved mobility and environmental quality	Protecting, enhancing and preserving part of the Roman heritage	Private engineering company	Supporting sustainable urban development, helping a wide variety of local stakeholders to understand and follow the principles of sustainable urban development, transferring know-how and initiating the development of new tools for sustainable development of settlements	Monitoring population climate and health status and its determinants, developing and implementing public climate and health interventions and policies

Table 1- List of us

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3.3. Interactions with other stakeholders

Stakeholders are defined as "the group of organisations who do have an interest in the topic of one (or more) sectorial climate service(s). These are the users and climate service providers/purveyors who form part of the project, but also users and purveyors outside of the project, customers of the users, public administrations responsible for a related sector policy implementation, policy makers, communication actors, citizens living in urban areas, regulatory services, private companies providing linked services, etc." (DoW, Part A, p. 9). From a user perspective, there are mostly links with three groups of stakeholders:

- Local stakeholders, i.e., third parties (ex: Barcelona City Council), with which users are in touch to get to know better their needs if they use the service,
- Climate data service providers (ex: VITO) which provide climate data,
- Service purveyors which are businesses providing added-value information to users like consultancy firms or GIS data providers (ex: ISGlobal, Meteotest, KU Leuven, GISAT, JR).

Interactions between the three actors started very early in the process and are still going on.

4. Arctik's and user' role

In this mission, Arctik is defined as a "neutral" partner due to the fact that our company is not a service provider within Climate-fit.city. According to DoW, it will establish an evaluation framework (D3.1), undertake a service evaluation, and provide a report concerning the evaluation (D3.2). It will then work out the market replication cases' evaluation report (D.3.3) as well as a cross-sectoral synergies report (D.3.4).

This entire service evaluation (WP3) takes place between month 12 and 30 of the Climate-fit.city project.

This is noteworthy mentioning that the number of WP3 effort for each user involved in this evaluation is superior to Arctik's one. Indeed, whereas all of them, except INES, do have a WP3 effort equal to 4, Arctik has only 3.

Therefore, Arctik's role was to **coordinate the evaluation, including its preparation with online questionnaires, focus groups and individual interviews and rely on the active participation of users.**

As explicitly requested in T3.1 in DoW, Arctik pays special importance to confidentiality and will guarantee it in relation to data collection and subsequent analysis. This is in line with the various requirements of WP9 Ethics requirements.

Therefore, the report will not include names of individuals and the questionnaire designed by Arctik will not be disclosed outside of the company.

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The dissemination level of D3.1, D3.2, D3.3, D3.4 of WP3 is public and the target audience is above all the different stakeholders of the Climate-fit.city project.

5. The methodology for of the evaluation

The methodology for our scope of evaluation from the user perspective is structured as follows:

1) An assessment of the three WP2 tasks but mostly service demonstration (5.1)
2) that are divided into dimensions (5.2),
3) with Key Evaluation Questions (5.3),
4) relying on quantitative and qualitative indicators (5.4),
5) for which direct questions to users (5.5) are formulated.

5.1. The three different tasks of assessment

According to the DoW, the scope of the evaluation involves the assessment by users of the **services implemented in WP2**. The tasks of WP2 are defined as thus:

- **Stakeholder mapping (T2.1),**
- **Co-design (T2.2),**
- **Demonstration (T2.3).**

Our assessment methodology places emphasis on the **interactions that users have concerning services with climate data providers, service purveyors, and stakeholders before, during, and after the co-design process.**

5.2. Dimension of assessment

We then sub-divide each WP2 task into different **dimensions of assessment**. For example, the dimension related to the success of the service within the service demonstration is a core component of our evaluation framework.

5.3. Key Evaluation Questions

We assess each dimension of WP2 task with a **Key Evaluation Question** (KEY).

Key evaluation questions are high level questions that the evaluation report will answer. In other words, they are not specific questions that will be asked to users in the designed questionnaire. Instead, they are more generalised questions which are both exploratory and explanatory: they shall assess what has happened from the user's perspective and how it relates in terms of interactions with other project partners.

The particularity of these Key Evaluation Questions is that they are in line with SWOT (Strenghts, Weakenesses, Opportunities, Threats) analysis. The European Commission defines SWOT analysis as a "strategic analysis tool" that "combines the study of the strengths and weaknesses of an organization, a geographical area, or a sector, with the study of the

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opportunities and threats to their environment"[1]. The goal of the "analysis is to take into account internal and external factors, maximising the potential of strengths and opportunities, while minimising the impact of weaknesses and threats"[2].

	Positive aspect	Negative aspect
Internal factors	Strengths	Weaknesses
External factors	Opportunities	Threats

Figure 1 - Rationale of SWOT analysis – source : https://europa.eu/capacity4dev/evaluation_guidelines/minisite/en-methodological-bases-and-approach/evaluation-tools/swot-strenghts-weakness-opportunities

Based on this perspective, SWOT analysis was applied to our KEY approaches, the latter of which will pay close attention to:

- the internal strengths and weaknesses of users at each WP2 step,
- while dealing with the opportunities and threats created by interactions with other partners within the Climate-fit.city project.

5.4. Quantitative and qualitative indicators

As explicitly requested in the DoW, Arctik relies on both quantitative and qualitative indicators to perform this evaluation mission. On one hand, quantitative indicators give us a numeric assessment of WP2 tasks from the user perspective. Thus, they facilitate the comparison between different users' experiences. On the other hand, qualitative indicators provide us a non-numeric evaluation of the same tasks. They are a means to go into details about the strengths, weaknesses, opportunities, and threats that users encounter within the Climate-fit project.

5.5. Direct questions to users

The end result being that we provide questions that will be posed to users. After defining each dimension and KEY for WP3 tasks, they are placed as the last and logical step of our evaluation framework.

We do consider that stakeholder mapping (T2.1) and especially co-design process (T2.2) are essential for the development of the demonstration phase (T2.3). However, the latter is obviously the most important to be assessed in link with the previous ones.

Then, these direct questions to users are asked through **a focus group, an online questionnaire and individual interviews.**

[1] https://europa.eu/capacity4dev/evaluation_guidelines/minisite/en-methodological-bases-and-approach/evaluation-tools/swot-strenghts-weakness-opportunities
[2] *Ibid.*

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As regards further details about the methodology used in this evaluation, please check out D3.1 that gives the complete description of the different methodological tools that have been put forward.

6. An evaluation of the stakeholder mapping

Before the co-design (Chapter 7) and demonstration phases (Chapters 8 & 9), stakeholder mapping was the first stage of the Climate-fit.city project and this is where our evaluation begins.

6.1. Introduction

According to the DoW, stakeholder mapping is defined as follows: "Before demonstrating each of the sectoral services, the partners in charge (provider-users pairs) will identify other local stakeholders (third parties) that might benefit from the service. The goal of this task is to collect as many user requirements as possible from all these different stakeholders, allowing to gear the service to the best possible extent to a broad usability. Stakeholder demands will be compared with what is technically and financially feasible and a consensus agreed upon" (Part A, p. 13)

6.2. A high level of interactions with stakeholders beforehand

Before the stakeholder phase, user partners had a high level of interactions with stakeholders that they knew them from previous projects. **As a potential factor for conducting a successful stakeholder mapping, the already existing relationships of users with stakeholders has played a great role**.

6.3. A minimum of 5 identified stakeholders

Except for one, all users have identified at least 5 stakeholders. This is worth noticing that 2 users have mapped more than 10 users.

6.4. Less than 5 stakeholders involved in the final project

As a consequence, out of those 5 identified stakeholders, less than 5 were involved in the final project (for 4 users). This is worth mentioning that 1 user had between 5 and 10 and another one more than 10.

6.5. The relative easiness of stakeholder mapping

Three users have found conducting the stakeholder mapping easy whereas 2 summarized it as being difficult. For further details about those challenges, please go to 6.9.

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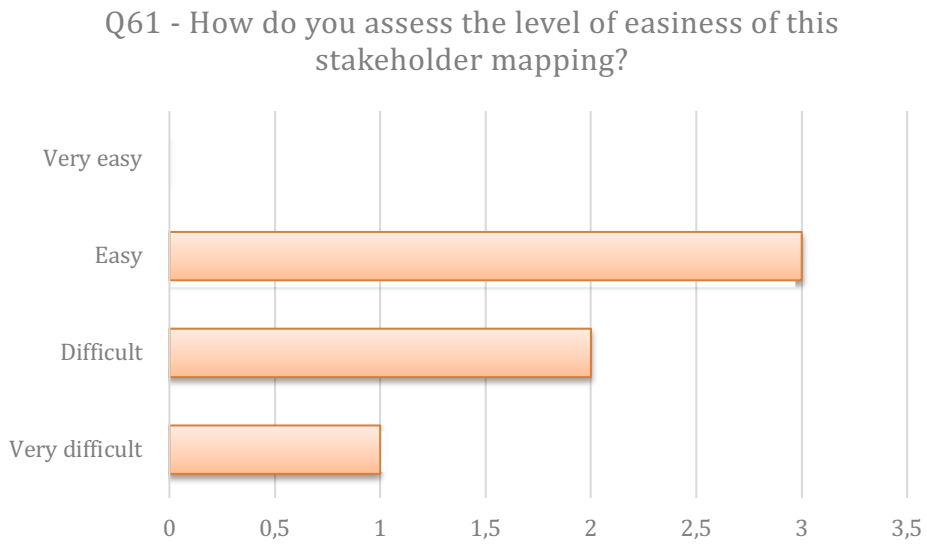

Figure 2 - Answers to question 61 of the online questionnaire

6.6. The usefulness of stakeholder mapping

Four users out of six have found the stakeholder mapping useful and 2 very useful for the demonstration phase.

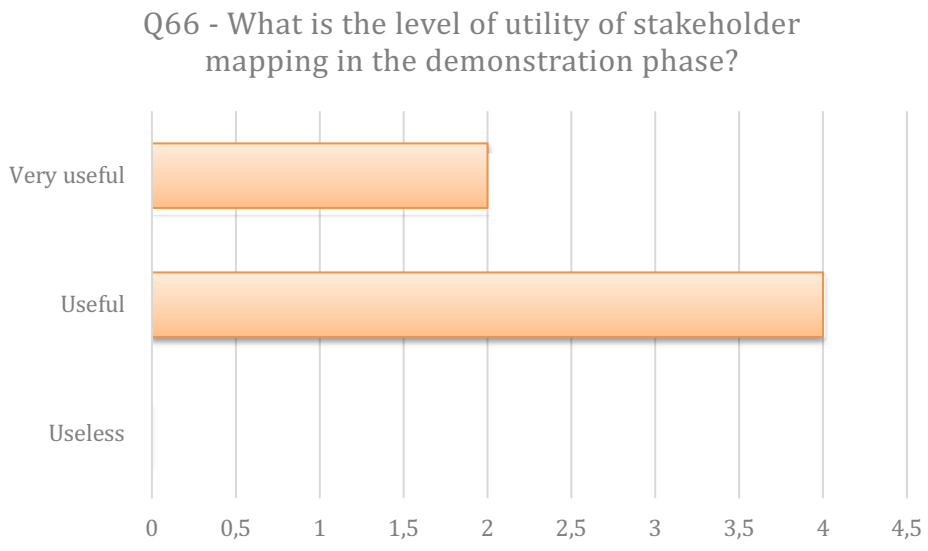

Figure 3 - Answers to question 66 of the online questionnaire

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6.7. The most efficient profile for stakeholder mapping: public authorities

Users which are public authorities (in strong collaboration with service providers) were more favored for stakeholder mapping due to their already existing network and belonging to different groups.
In the climate and health sector, the public authority has a working group on climate change working in which some of the staff is involved. Employees took advantage of some meetings of this group to identify more potential stakeholders. When they presented the initial idea of the service in the sectoral workshop, some of the present stakeholders realized that this service could be interesting for other stakeholders that were not initially identified.
This public authority in the climate and health sector has also extensively used the scientific network of service provider. For example, the service provider was previously invited to give a talk about current ongoing initiatives on global heat climate and health action plans in the event "Action Plan to Avoid the Effects of Heat Waves on Climate and health in Catalonia", which was organized by the Catalonia Government on 27th June 2017. The public authority used this opportunity to detect and reach out potential stakeholders.
Similarly, the public authority in the emergency planning sector which acts as a stage-manager of all the different stakeholders in the defined realm could easily rely on its existing infrastructure, as well as more generally the people and institutions who are involved in the sector.
The public authority in the urban planning sector with its different members had also the opportunity to use numerous contacts of municipalities for stakeholder mapping.
However, companies in the active mobility and the building energy sectors have also worked with their existing network for stakeholder mapping but not to an extent close to previously mentioned public bodies.

6.8. Opportunities in the stakeholder mapping: impact on climate adaptation policy for public authorities, more potential clients for companies

In terms of opportunities for public bodies, the stakeholder mapping provides to public authorities a deeper impact on their local, regional or/and national adaptation policy, as well as an improvement of the tools that are used for this purpose.
In the emergency planning sector, the involvement of the public authority in the stakeholder mapping offers the opportunity to get into contact with other parties inside and outside the city administration which are active in preparedness, adaptation and mitigation. Hence, this user could develop a more general approach to water management and climate adaptation management of the city.
In the climate and health sector, the implication of the public body as user with the service provider in stakeholder mapping has been the starting point for the integration of the Climate-fit.city project in the Climate Plan of the city of Barcelona "Deepen our knowledge of how climate change affects the climate and health and mortality of people in each neighborhood" (2025). After a contact with a stakeholder, the public body realized that there were better land-use maps than those used by default in the urban climate model, and that has improved the overall performance of the climate simulation.

In terms of opportunities for private bodies, stakeholder mapping is considered as a great opportunity for opening potential doors to clients.

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This is the experience of the company in the active mobility sector which could get access to cities as potential future clients.

6.9. Change of decision-makers and their complains as unexpected issues in the stakeholder mapping

Most of the unexpected issues that were raised during the stakeholder mapping phase are related with change of decision-makers throughout the project, as well complains from them not to be consulted enough.
In the case of the climate and health sector, a decision-maker from the Barcelona City Council highlighted that the product should have been a follow-up of previous services jointly generated with the local meteorological agency (project RESCUE), and used the same climate simulation models (WRF at 1km resolution from the project METROBS, among others). The goals were to build upon on previous initiatives and optimize the use of public resources.
The decision-maker strongly emphasized that the City Council should have been contacted before and considered during the elaboration of the project proposal, including the choice of the climate model, so that results were directly comparable with previous projects.
In order to overcome this issue, both end-user and service provider explained that the project was an international endeavor defining a common methodology for all the sectors, and that the choice of the urban climate model was at the base of the project and the consortium. They also explained that the expertise of the end-user had been taken into account during the elaboration of the project proposal, and that the workshop (previous to perform the service) was thought to be the first contact platform for the interaction with politicians and decision-makers. Nevertheless, the explanations did not seem to satisfy the local decision-maker, who would have wanted to have been involved from the very beginning of the elaboration of the project proposal.
As regards the urban planning sector, the change of one of the involved municipalities has been an unexpected issue during the stakeholder mapping. Users could manage the situation by addressing permanent officials and requesting the establishment of a new mayor.

7. An evaluation of the co-design process in link with service demonstration

7.1. Introduction

According to the DoW, "the user requirements gathered in T2.1 (Stakeholder mapping) will be used to mould the services to the best possible extent into relevant ones. The user partner involved in each sectoral case will ensure that these requirements are included, in a co-design process" (Part A, p. 14).

7.2. A clear level of agreement between users and service developers

From the users' perspective, discussion on service design between them and service providers have reached a clear level of agreement. Indeed, 3 users characterize their relationship with service developers as an agreement and 3 as a strong one.

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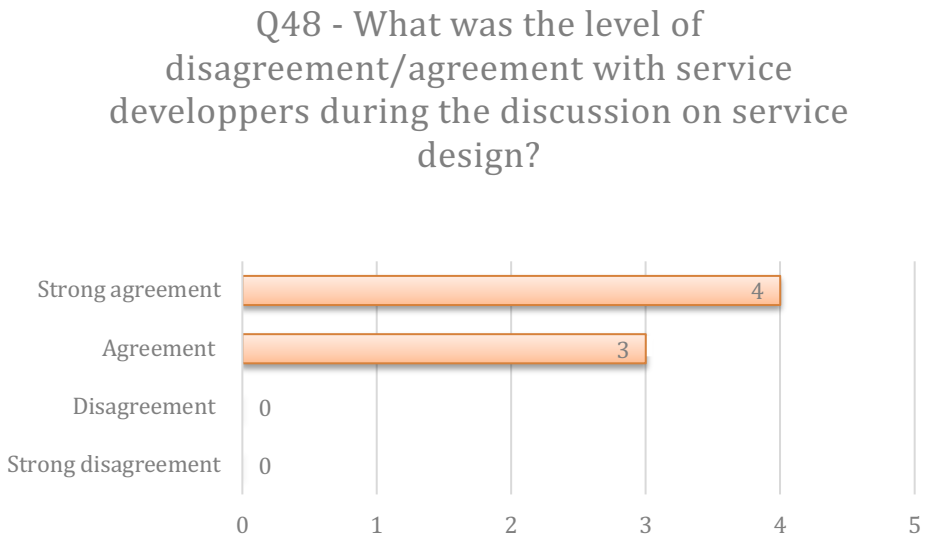

Figure 4 – Answers to question 48 of the online questionnaire

Among agreements between both partners, the user in the emergency planning sector gives the need to have a tool for setting intervention priorities on the basis of risk analysis and the need to raise resilience from citizens, neighborhoods, institutions.
The user in the building energy sector emphasizes the number of test cities, test building types, locations per city, as well as simulated results (criteria's).
As regards the climate and health sector, the involved user insists above all on the statistical model used. Both this user and his/her service provider could perform a case-crossover design (to be able to link each death to a specific temperature) and to use a generalized linear model with lags (we also agreed on the number of lags). They also decided to study age, sex and level of studies and agreed on what would be the threshold to separate the groups in each one of them. This is how they decided how they could study the adaptation to extreme temperatures by separating the analysis period in two subperiods. Then, the agreement was reached on which climate indicators to calculate from climatic data like the most basic temperature indicators (average, maximum, minimum temperature), some temperature percentiles, torrid and tropical nights, number of heatwaves days, as well as which periods, for which future projections (RCP 4.5 and 8.5) and in which geographical units (the grid of 100x100m, by neighbourhoods and districts). Finally, they have agreed on the socioeconomic and environmental indicators to include, and what statistical model to use.
The user in the urban planning case could easily agree on the understandability of the results, the credibility of the results, and the user friendly interface.
As regards the cultural heritage sector, the involved user agreed with the service provider that weather data as well air quality data needs to be provided through computer processing.

As a result of the clear level of agreement between users and service providers, **there was not any tangible disagreements or very few**. Among them, some might have taken place around the length of results processing or the long communication between stakeholders.

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7.3. The very usefulness of the co-designed services stage in the demonstration phase

It is again noteworthy that **all users find the co-designed services stage as being very useful for the demonstration phase**.

Among the **most tangible benefits** of those co-designed services for the next step, we find the following ones:

- the participatory process, open and empathetic with dialogues and discussions that have generated shared commitments (one of the users talked about this "*feeling of co-ownership, given the fact that all have contributed to the building of the service by providing their own data*");
- the possibility to test - continuously - the solutions adopted gradually and the opportunity of adapting, resizing or developing parts of the entire context;
- the raising of the end users' awareness by making climate change effects visible;
- the strengthening of users' network and, for local governmental authorities, the goal of protecting in a pro-active way citizens.

As regards **barriers**, the following ones are mentioned by users:

- the impossibility to maintain a high level of attendance and participation of all the stakeholders that have participated at the beginning of the process in the then co-design phase. Two main reasons are provided: 1) in the beginning, the description of the service was rather abstract, not very concrete ; 2) there were stakeholders which were poorly staffed, and therefore obliged to set priorities in the short term while climate change is still considered by many as rather a long term phenomenon where urgent decisions are not needed.
- communications with participants who deal with different disciplines because they use different languages and methods of product representation (this was an element to be overcome during the initial meetings);
- the time factor and the level of expertise of the individuals, especially in relation to the different some specific areas.

8. An overall evaluation of service demonstration

8.1. A lack of previous experience with climate services

4 users out of 6 acknowledge their relative lack of previous experience with climate services – i.e. positioning themselves as being novice or average – whereas one considers itself as being well experienced and another one very well experienced.

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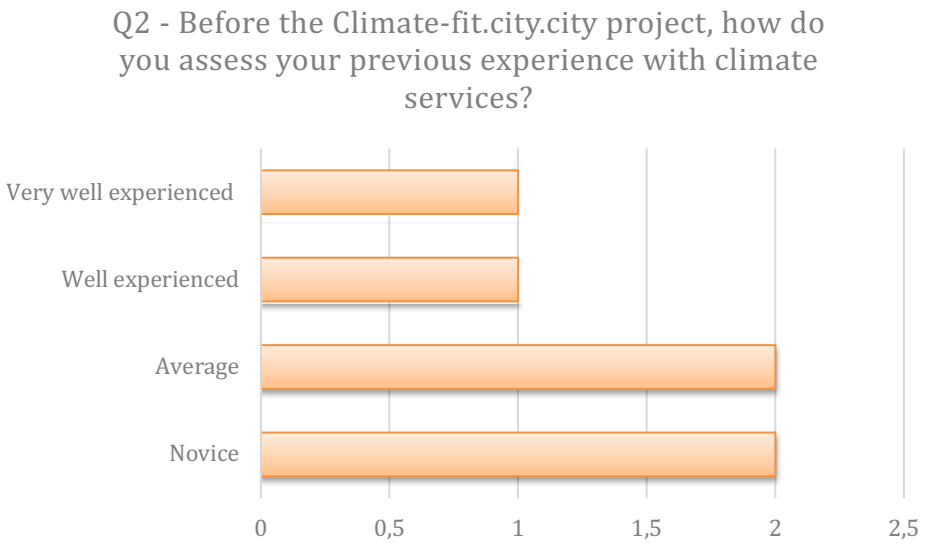

Figure 5 - Answers to the question 2 of the online questionnaire

Interesting enough is to know, for the least experienced, **what sort of weaknesses/problems they had to overcome with service demonstration and what solutions they implemented**.
In broad terms, some users, like the one in the urban planning sector, had difficulties to deal with underlying concepts and methodologies of climate services. The solutions were therefore, to conduct an independent study on the Internet, consulting colleagues which had more experience with the topic, and going to some specific conferences and seminars.
Among other obstacles, the user in the urban planning sector depended very much on some other people. He also lacked a very clear idea of what would be modeled and could not verify results as much as they would have liked. Furthermore, he had to deal with the growing loose of interest from cities. Then, the provided solution for the latter was to keep cities interested in the project with personal, targeted meetings. The associated service provider could also greatly helped to speed up the process.
As regards the cultural heritage sector, the user's concerns were much more specific: a first one was about, on the one hand, displaying climate data in the different urban areas (i.e. the difficulty of realizing the data exchange system for the 5 days forecasts); the second one was about, on the other hand, statistics for the place of culture centers, in particular the number of visitors, that was not easy to find. The first problem was solved in perfect coordination with the project-external data provider, who proceeded to write the specific software. The system consisted of a standalone Matlab executable and a configuration file which controls the date and location of input and output files; the second weakness has been solved for the places of culture owned by the State (which provided the access tables), while for the places of civic property the statistical data were available of the year 2016.

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8.2. A reasonable match between stakeholders' initial expectations and the final service demonstration

From the user's perspective, **all of them evaluate that the similarity between stakeholders' initial expectations and the final service demonstration as being a reasonable match.**

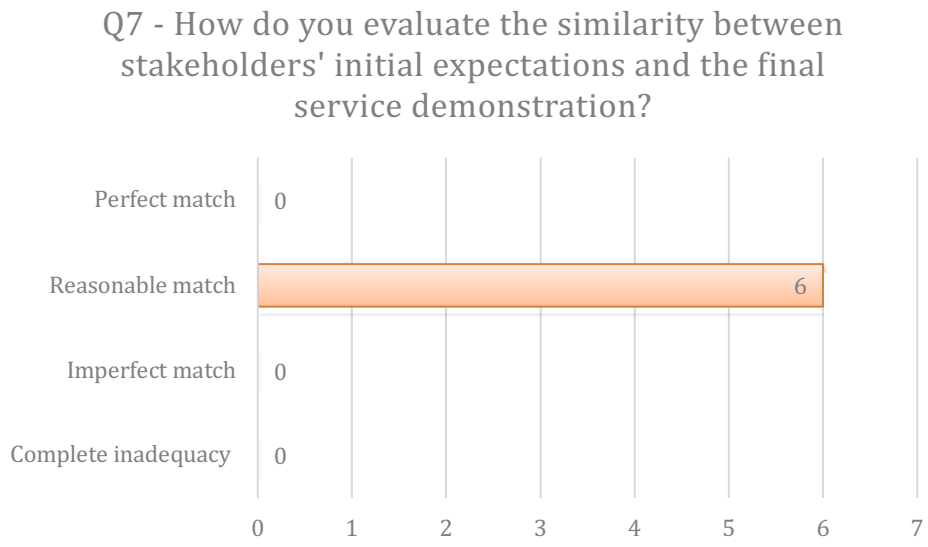

Figure 6 - Answers to question 7 of the online questionnaire

When one takes a closer look on provided answers by users, there are, according to them, 3 sorts of groups among stakeholders.
A first one, like the ones that worked within the urban mobility sector, had no clear expectations.
A second one, like the ones which were involved with the urban planning sector, did not have realistic expectations at the very beginning of the process. One of the main problems was related with the uncertainty of results. For example, a municipality had already a temperature map in its adaptation strategy, which has differed somewhat from the results presented within the Climate-fit.city project. Otherwise, their literacy skills are at the level of a « citizen's sense map », and the stakeholders would not be motivated to buy.
The 4 remaining users, like in the climate and health, building energy, emergency planning as well as the building energy sectors, considered that most of their stakeholders' initial expectations were fulfilled. For example, as regards those who worked with the user in climate and health sector, they were particularly interested in extreme heat, heat waves, and other specific indicators as torrid nights that are of special interest in the involved city. Eventually, they had been included in the final list of calculated climate indicators. Also, the Climate-fit.city.city project has been included in the Climate Plan of the city, fixing as objective "Deepen our knowledge of how climate change affects the climate and health and mortality of people in each neighbourhood" (2025), through the European research project funded by Climate-fit.city.city, in which the user and the service provider participated. This has been accomplished at district level and they are working to do it also at neighborhood level.

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8.3. A reasonable match between users' initial expectations and the final service demonstration

Users consider that the match between their initial expectations and the final service demonstration is reasonable.

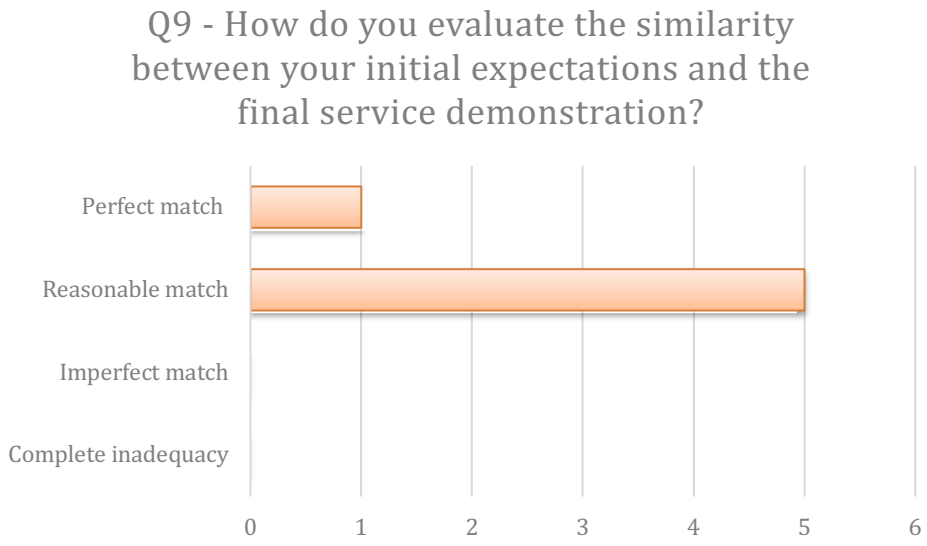

Figure 7 - Answers to question 9 of the online questionnaire

Among users, only one from the climate and health sector, has a more balanced assessment about the match between its initial expectations and the final demonstration
According to this user, the main objectives of the service have been successfully provided. However, some of its initial expectations were not fully accomplished: the initial idea was to have the result of the mortality analysis by neighborhood level but it finally end up having the results by district level.
The association between heat and mortality has been calculated using only one climate indicator (mean summer temperature). It expected to have the association using more climate indicators that could be of interest such as maximum temperature, heat waves or torrid nights.
Attributable fraction and attributable number of deaths are a good way to report the results of such climate and health analysis, however, not any measures of impact (on climate and health) have been calculated.
No future predictions of temperature provided by the climatic model have been used to estimate association between heat and mortality in the future. They only have results for past periods.
The user expected more variability in the climatic data. For example, under future climate change scenarios, the increase in the temperature-related indicators is almost constant resulting in equivalent spatial patterns and not allowing us to see differences in any part of the city. This user wanted to use this high resolution climatic data to assess urban heat islands in Barcelona.
As end users, their efforts have been underestimated. They supported the service provider in the association analysis and the results visualization (much) more than what was initially specified.

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8.4. An overall great progress with the involvement within Climate-fit.city services

All the users acknowledge the great progress they have made with climate services through their involvement within Climate-fit.city.
Even if there is room for improvement, the user in the urban planning sector can now fully use the application prepared by the service provider.
For the climate and health sector, even though the data processing has been done by the service provider, they have now a better knowledge from the interaction with them and they have the intention to learn more. In terms of interpretation, they already knew how to interpret. However, they have now more experience in small area interpretation. For communication purposes, the developed interactive web will serve to communicate the resulting climate indicators.
As regards the building energy sector, the involvement of its user within Climate-fit.city has made his understood urban climate effects and therefore, assessed standard TMY and established building codes.

However, it is remarkable that none of the 6 users have turned themselves into climate data purveyors, except the user involved in the emergency planning sector. Indeed, the latter delivered climate data risk assessment to several institutions.

9. A more sectorial evaluation of service demonstration

Climate-fit.city has 6 sectoral case-studies. After this general evaluation of service demonstration, it is essential to get into each of them in order to assess the most important features of each climate service.

9.1. Assessment of the most important features of the services

Users were asked to provide/indicate up to maximum 5 main features of their service demonstration. Then, they had to evaluate each of them, using a scale from 1 to 6 where 1 star is low and 6 stars high, according to the following parameters:

- Fit for use, its capacity to correspond to the usage;
- Effectiveness, i.e. its capacity to produce desired output;
- Usability, i.e. its capacity to be solution-oriented;
- Understandability, its capacity to be understood by the organisation.

The findings for each sector are given below.

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	Feature 1 and specific assessment	Feature 2 and specific assessment	Feature 3 and specific assessment	Feature 4 and specific assessment	Feature 5 and specific assessment
Emergency planning	**Risk assessment of stakeholder's infrastructure**	**Clear priorities for the emergency services**	**Climate data are easily accessible**	**Stakeholders can add their own data**	**Visualizing and translating climate change into concrete risks**
(using a scale from 1 to 6, where 1 star = low and 6 stars = high) Fit for use, i.e. its capacity to correspond to the usage	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★★
Effectiveness, i.e. its capacity to produce desired output	★ ★ ★	★	★ ★ ★ ★★	★ ★ ★ ★ ★	★ ★ ★★
Usability, i.e. its capacity to be solution-oriented	★ ★ ★ ★★	★ ★ ★ ★	★ ★ ★ ★★	★ ★ ★ ★★	★ ★★
Understandability, i.e. its capacity to be understood by the organization	★ ★ ★ ★★★	★ ★ ★ ★★	★ ★ ★ ★★	★ ★ ★	★ ★ ★ ★

Figure 8 - Assessment of the 5 main features for the service demonstration in the emergency planning sector

	Feature 1 and specific assessment	Feature 2 and specific assessment	Feature 3 and specific assessment	Feature 4 and specific assessment	Feature 5 and specific assessment
Climate and health sector	**Climate indicators with high spatial resolution in the past and future periods**	**Association and impact between extreme temperature and mortality at small area level**	**Association stratified by socio-economic variables**	**Analysis of adaptation by dividing the analysis period**	**Interactive tool to show results and indicators**
(using a scale from 1 to 6, where 1 star = low and 6 stars = high) Fit for use, i.e. its capacity to correspond to the usage	★ ★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★

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Effectiveness, i.e. its capacity to produce desired output	★ ★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★★★	★ ★ ★ ★★★	★ ★ ★ ★★★
Usability, i.e. its capacity to be solution-oriented	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★★★	Respondent skipped this question)	★ ★ ★ ★★★
Understandability, i.e. its capacity to be understood by the organization	★ ★ ★ ★★★	★ ★ ★ ★★★	★ ★ ★ ★★★	★ ★ ★ ★★★	★ ★ ★★

Figure 8 - Assessment of the 5 main features of the service demonstration in the climate and health sector

	Feature 1 and specific assessment	Feature 2 and specific assessment	Feature 3 and specific assessment	Feature 4 and specific assessment
Building energy	**Easy to use**	**Added value aspect "urban"**	**Added value aspect "future"**	**Well validated with measured data**
(using a scale from 1 to 6, where 1 star = low and 6 stars = high) Fit for use, i.e. its capacity to correspond to the usage	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★
Effectiveness, i.e. its capacity to produce desired output	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★
Usability, i.e. its capacity to be solution-oriented	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★
Understandability, i.e. its capacity to be understood by the organization	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★

Figure 9 - Assessment of the 4 main features of the service demonstration for the buiding energy sector

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	Feature 1 and specific assessment	Feature 2 and specific assessment	Feature 3 and specific assessment
Cultural heritage	**Centralized system of tourist information**	**Centralized system of weather information from reliable stackholders**	**Information provided in real time**
(using a scale from 1 to 6, where 1 star = low and 6 stars = high) Fit for use, i.e. its capacity to correspond to the usage	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★
Effectiveness, i.e. its capacity to produce desired output	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★	★ ★ ★★ ★ ★
Usability, i.e. its capacity to be solution-oriented	★ ★ ★ ★★	★ ★ ★ ★ ★ ★	★ ★ ★ ★ ★ ★
Understandability, i.e. its capacity to be understood by the organization	★ ★ ★ ★ ★	★ ★ ★ ★ ★	★ ★ ★ ★ ★

Figure 9 - Assessment of the three main features of the service demonstration for the cultural heritage sector

	Feature 1 and specific assessment	Feature 2 and specific assessment	Feature 3 and specific assessment
Active mobility	**Sensitivity of cyclists (response functions)**	**Spatial differences**	**Cities climate attractiveness**
(using a scale from 1 to 6, where 1 star = low and 6 stars = high) Fit for use, i.e. its capacity to correspond to the usage	★ ★ ★ ★	★ ★ ★★	★ ★ ★ ★ ★ ★
Effectiveness, i.e. its capacity to produce desired output	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★★★

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Usability, i.e. its capacity to be solution-oriented	★ ★ ★ ★★★	★ ★ ★ ★★	★ ★ ★ ★★★
Understandability, i.e. its capacity to be understood by the organization	★ ★ ★ ★ ★	★ ★ ★ ★★★	★ ★ ★ ★★★

Figure 10 - Assessment of the 3 main features of the service demonstration for the active mobility sector

	Feature 1 and specific assessment	Feature 2 and specific assessment
Urban planning	**Changes in land use and influence on temperature situation in urban structure**	**Detail Modeling Change in Small area - Models for Ostrava and Hodonín Square**
(using a scale from 1 to 6, where 1 star = low and 6 stars = high) Fit for use, i.e. its capacity to correspond to the usage	★ ★ ★ ★★★	★ ★ ★ ★★★
Effectiveness, i.e. its capacity to produce desired output	★ ★ ★★	★ ★ ★★★
Usability, i.e. its capacity to be solution-oriented	★ ★ ★ ★★	★ ★ ★ ★ ★ ★
Understandability, i.e. its capacity to be understood by the organization	★ ★ ★	★ ★ ★ ★ ★ ★

Figure 12 – Assessment of the 2 main features for the service demonstration in the urban planning sector

9.2. Evaluation of the added value sector per sector

From the user's perspective, the next step is to **evaluate the added value of the specific climate data compared with routine data for service demonstration by using the following structure : 1) Characteristics of the exante situation; 2) Characteristics of the current situation; 3) Opportunities and threats with the current situation.** In comparison with routine data, all participants stated that climate service data represented an added value. In particularly, data represented an added value in terms of better resolution

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and improved service. It has also helped to consider the interactions between urban environment and climate, as these impacts were not visible in routine data.
The findings are given below.

9.2.1. Active mobility

The ex-ante expectation was indifferent concerning the usable output. However, the findings during the service demonstration are exceptional. The opportunity is now to gain additional customers. The major threat is that the market is not properly ready for the service (willingness to pay is too low so as to establish the service).

9.2.2. Urban planning

The issue of climate change is a relatively new in the context of urban planning in Czech Republi. The heat islands that are mapped to this climatic service provide new insights into the issue.
There is currently a demand from the state level in the country. Cities and more generally, regions need to develop some adaptation strategies for climate change. Such strategies require modeling of change of land use and its influence on the distribution of heat in the city. This is a great opportunity for a climatic service. A major threat lies in the problem of verifying the obtained results and the lack of scientific evidence and procedures. Without this information, the results are impaired.

9.2.3. Cultural heritage

Previously there was no centralized information. The information was available, but not easily accessible, distributed among different institutions, making it difficult to make decisions regarding complex climatic situations. Currently, the involved user has created an application that allows you to check the monument directly on a geo-referenced map.
One can get now some information on the weather status of the next 5 days (heat stress, air quality, pollen data, weather) for each area related to the monument. As far as opportunities are concerned, the system provides a decision support tool that can be used by institutions.

9.2.4. Climate and health

Before the Climate-fit.city.city project, the user analyzed mortality with data from weather stations. Therefore, it could only work with some specific-located climate indicators.
The climate data from the UrbClim was giving it the opportunity to obtain climate indicators at small administrative area level, in a daily format for past and future periods.
In addition, this data would have also given the involved user the possibility to study the association between temperature and mortality at small administrative level. In the current situation, it has realized the power of data in such a small grid. At the beginning, it was looking forward to work in small administrative area level, but with the georeferenced mortality data and the specific climate data, their team has been able to link each death to a very specific temperature. Furthermore, the team has now the change of calculating many (climate and health related) climate indicators. At the moment, it has around 20, but in the future it will

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look for more. They have performed an useful interactive (and online) tool to explore all the results obtained from the service.
Finally, the involved user now wants to improve some of the things that they have not been able to do in time for the project. They need the ERA5 data (less biased) to improve the estimations, and calculate climate indicators that permit to detect urban heat islands. Also, given the future temperature periods, they want to assess the impact for the next years, and finally improve their statistical analysis to have the mortality risk depending on temperature at neighborhood level (now at district level).

9.2.5. Building energy

In terms of characteristics of the exante situation, TMY-data without urban effects has led to systematic performance gap in building performance simulation related analyses.
As regards characteristics of the current situation, new urbanized TMY generation has reduced the performance gap and led to better adapted building design process.
Eventually, the climate-fit.city project will contribute to a faster integration of this new TMY data in regulations bodies

9.2.6. Emergency planning

For the exante situation, interventions of the emergency services were almost entirely driven by phone calls from citizens. Priorities were set on this basis and/or based on the experiences of the past. There was no possibility to plan or foresee in advance. Past experiences are not representative anymore since the climate is changing.
Then, the characteristics of the current situation are thus: interventions in the city center can now be prioritized on the basis of a risk analysis of several flooding scenarios and the related impacted infrastructure. It also become clear and visible that circumstances are changing and that fire brigade logistics may need to change accordingly.
For threats and opportunities with the current situation, there is a risk that the viewer is used only to assess current operational situations, and that the predictive aspect on climate change is neglected either due to the far time horizon (2050) or because of the fact that a shorter time horizon (2030) displays neglectable changes in the situation. There is a risk that the exercise will not be repeated for the whole surface of the city agglomeration. However, the climate service is helpful to establish priorities. There is an opportunity to integrate the viewer into a more elaborate dashboard and to connect it with other sources of information (weather forecasting, camera pictures, sensor information, pluviographic grid…) in the CUTLER-project (H2020). There is an opportunity to feed the model with detailed meteorological forecasting information on a local city scale by using an X-band radar.

10. Consequences for other WPs

After this very sectoral assessment of the added value brought by the Climate-fit.city project, the present evaluation aims to see what findings it brings to other WPs such as work on market replication (WP4) and socio-economic impact assessment (WP6).

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10.1. On market replication (WP4)

Most of the users consider pretty high the probability to uptake the service and use it on a regular basis. More exactly, it was asked to each user to what extent some parts of the service will be used after the end of the project and/or which parts of the service are most interesting for the replication WP4. The findings are given below.

10.1.1. Active mobility

It is planned to develop a climate attractiveness comparison between European largest cities. The response functions are quite useful to calibrate tracked GPS data with data provided by counting stations. The spatial differences are dependent on the client's budget. In the end, every developed service has the potential to become a market solution.

10.1.2. Urban planning

From the point of view of cities, there is a great interest in modeling concrete problems and specific project development. However, the daily usage of the Climate service is unrealistic. In their words, cities would rather outsource this activity with a given company. Instead of having the city that owns and maintains the entire service, a company would deal with the specific assignment.

10.1.3. Cultural heritage

After the end of the project, the service could be used by the institutions, with a very low cost. Indeed, the system uses open data. The future potential strength may depend on the implementation of new functions, especially for what concerns new technologies like augmented reality and machine learning. The system can also be powered with new open data sets.

10.1.4. Climate and health

The usage of the service in the future takes different paths:
One of them is an online application that will be accessible through the user's website. This will include many climate indicators at a 100x100m scale, neighborhood and district level.
The results of the association between temperature and mortality analysis (stratified by sex, age and educational level, and viewing possible adaptation) and other features will be freely available to the users and the stakeholders.
Also, this service could be used by public administration to prioritize in which areas interventions should be carried out in case of extreme heat conditions.
Moreover, this could be used for designing community based level interventions in the context of some strategies at neighborhood level that are been carried in Barcelona city, such as, "Pla de barris" and "Barcelona heath in the neighborhoods".
This study will be included in the Climate Plan of the city of Barcelona which "gives an integrated overview of the measures to tackle climate change, allowing the objectives of the new Covenant of Majors for Climate & Energy, which Barcelona City Council has signed, to be achieved". It says that the objective of the project is "deepen our knowledge of how climate change affects the climate and health and mortality of people in each neighbourhood", so it

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could be useful for the implementation of a surveillance system to monitor the effects of climate change on climate and health.
Finally, this service can be used to better fit and improve the regional heat-wave early warning system to the city of Barcelona.

10.1.5. Building energy

Regulations will be adapted within approximately 5 years. After this planning, engineers will apply urban and future TMY data sets as mandatory standard in building design process.

10.1.6. Emergency planning

This depends on one very important question that has to be solved: the calculations about sewerage capacity versus precipitation intensity were made for the city center only. Therefore, at this stage, the user can do risk assessments only for certain infrastructures like buildings. However, this is not possible for the fire brigade to set clear priorities if they have only information about some part of the city (approximately 33% of the city surface). Hence, the involved user is looking for funds to make the calculations for the entire city. This is first priority now. In any case, the emergency planning department will continue to use the service to make specific risk assessments for important buildings in the city center.

In addition to these mentioned users, six new users will join the Climate-fit.city project involving new cases. This present report resulting from the service evaluation framework will be then relevant for these news users in terms of market replication (WP4).

10.2. Socio-economic benefits (WP5)

It was asked to **each user if it does consider that they have some social and economic benefits for their company/administration. The findings are given below.**

10.2.1. Urban planning

Thanks to the Climate-fit.city project, the user could better assist cities in their sustainable development.

10.2.2. Cultural heritage

Within the Climate-fit.city project, the involved user wants to enhance its capacity to deal with the effects of climate change that is expected to damage fragile materials from intense precipitation but also to worsen the conditions for touristic activities. Consequently, it believes that the demonstration service is a 'tool' capable to help users in the management of the climate risk related to the exploitation of tourist places. As a consequence, tourists could find information in real time and plan their itinerary more accurately.

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10.2.3. Climate and health

In the future, if the website is used to identify the most vulnerable areas and prioritize interventions, the service could end up in a reduction of temperature related issues, principally morbidity and mortality. It will suppose a reduction of climate and healthcare costs.

10.2.4. Emergency planning

It is difficult to assess any potential social and economic benefits with the service demonstration for their company/administration as long as no new pluvial floods occur. In any case, it has become easier for the partners to take preventive action. More generally, some economic convenience in prioritizing equipment is now possible in most flooded area thanks to the service.

11. Conclusion

From the user's perspective, this overall evaluation of service demonstration for the Climate-fit.city project has been globally successful. Most of the users have identified a potential for lowering risks related with their sector as a long term effect due to services based on the use of urban or future climate data.
After defining users as interacting with climate data providers, service providers, as well as stakeholders, we have relied on different methodological tools such as interviews, online questionnaire, and focus group defined in D3.1. Our goal was to engage users in the active assessment of Climate-fit.city services.

The assessment report follows the chronological sequence of the Climate-fit.city project : i) stakeholder mapping; ii) co-design process; iii) service demonstration.

i) Firstly, an evaluation of the stakeholders mapping, in strong link with the service demonstration, was performed. The main findings are the following ones: a high level of interactions with stakeholders beforehand has existed and a minimum of 5 stakeholders was identified by users. Globally, the stakeholder mapping was fundamental for the next steps. However, public authorities were more efficient in this initial step in comparison with other types of organisations. The main opportunity they could take was to have an impact on climate adaptation policy. The main threats they could deal with were change of decision-makers, as well as complains from them.
ii) Secondly, an assessment of the co-design process, in strong association with the service demonstration, was conducted. What comes out of it was a clear agreement between users and service developers at that stage and its usefulness for the following demonstration phase.
iii) Thirdly, the evaluation of the general and sectoral service demonstration has brought some tangible results. Despite a clear lack of previous experience with climate services, there has been a reasonable match between stakeholders' and users' initial expectations and the final service demonstration. Users have learnt a lot and have achieved an overall great progress with the involvement within Climate-fit.city services. The content of the present reports gives then the added value for each sector: climate and health, urban planning, active mobility, emergency planning, energy building, and cultural heritage.

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This report and the upcoming deliverables D3.3 and D3.4 are also some potential contributions to other climate services projects (e.g. CLARA, CLARITY, PROSNOW, …). More generally, they could also help to capture the generalised added value and benefits of climate services for users, as well as improve transferability and usefulness of results beyond the overall Climate-fit.city's outcomes.

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13. ANNEXE

13.1. Online questionnaire

How do you evaluate service demonstration (Part 1)?

1) Name of your organisation

2) Before the Climate-fit.city.city project, how do you assess your previous experience with climate services?
   Please attribute a value from 1 to 4:
   1) Novice
   2) Average
   3) Well experienced
   4) Very well experienced

3) If you were already well or very well experienced (if no or little experience, go directly to question 5) with climate service demonstration, what were the advantages of participating in the activities?

4) However, could you identify some internal weaknesses for your climate service demonstration?

5) If you had a very small or even non-existing experience with climate service demonstration, what weaknesses/problems did you have to overcome?

6) What solutions did you find to solve them? Please list and explain them.

7) How do you evaluate the similarity between stakeholders' initial expectations and the final service demonstration? Please attribute a value between 1 and 4 with:
   1) 1 star: complete inadequacy
   2) 2 stars: imperfect match
   3) 3 stars: reasonable match
   4) 4 stars: perfect match

8) Please explain your answer.

9) How do you evaluate the similarity between your initial expectations and the final service demonstration? Please attribute a value between 1 and 4 with:
   1) Strong disagreement
   2) Disagreement
   3) Agreement
   4) Strong agreement

10) Please explain your answer.

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11) Please list the most important features of the service (for each feature 4 questions will be asked. Feature 1: questions 12-15, feature 2: questions 16-19, etc.).

12) For feature 1, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Fit for use, i.e. its capacity to correspond to your use

13) For feature 1, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Effectiveness, i.e. its capacity to produce desired output

14) For feature 1, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Usability, i.e. its capacity to be solution-oriented

15) For feature 1, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Understandability, i.e. its capacity to be understood by your organization

16) For feature 2, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Fit for use, i.e. its capacity to correspond to your use

17) For feature 2, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Effectiveness, i.e. its capacity to produce desired output

18) For feature 2, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Usability, i.e. its capacity to be solution-oriented

19) For feature 2, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Understandability, i.e. its capacity to be understood by your organization

20) For feature 3, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Fit for use, i.e. its capacity to correspond to your use

21) For feature 3, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Effectiveness, i.e. its capacity to produce desired output

22) For feature 3, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Usability, i.e. its capacity to be solution-oriented

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23) For feature 3, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Understandability, i.e. its capacity to be understood by your organization

24) For feature 4, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Fit for use, i.e. its capacity to correspond to your use

25) For feature 4, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Effectiveness, i.e. its capacity to produce desired output

26) For feature 4, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Usability, i.e. its capacity to be solution-oriented

27) For feature 4, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Understandability, i.e. its capacity to be understood by your organization

28) For feature 5, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Fit for use, i.e. its capacity to correspond to your use

29) For feature 5, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Effectiveness, i.e. its capacity to produce desired output

30) For feature 5, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Usability, i.e. its capacity to be solution-oriented

31) For feature 5, please rate (using a scale from 1 to 6, where 1 star = low and 6 stars = high) the following characteristic:
- Understandability, i.e. its capacity to be understood by your organization

32) Globally, how do you assess the service demonstration? Please attribute a value between 1 and 5 with:
    1) Very negative
    2) Negative
    3) Neutral
    4) Positive
    5) Very positive

How do you evaluate service demonstration (Part 2)?

33) Please provide no more than 600 words (or 3000 characters) for your answer to the following question: what is the added value of the specific climate data compared

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with routine data for your service demonstration? Use the following structure in your answer:
1) Characteristics of the ex-ante situation
2) Characteristics of the current situation
3) Opportunities and threats with the current situation

34) To what extent do you think that the service or parts of the service will be used after the end of the project?
Please provide no more than 300 words (or 1500 characters) for your answer.

35) How do you define your role in comparison with the different partners of the Climate-fit.city project?

36) Did this role change before, during, and after the co-design process and demonstration one?

37) What were your initial capabilities in terms of using, processing, interpreting, communicating climate data?

38) What are they now?

39) Did you transform yourself into climate data purveyors?

40) If so, what were the exact configurations and with whom?

41) Do you consider that you have reached some social and economic benefits with the service demonstration for your company/administration?

42) If so, are they related (for each answer, please provide any relevant explanations like figures):
1) Jobs
2) Cost reduction
3) Direct or indirect income
4) Better information for your audience
5) Other?

43) What is the probability that you will uptake the service and use it on a regular basis?

44) Did you identify a potential for lowering risks related with your case-study (for example, mortality) as a long term effect due services based on the use of urban or future climate data?

45) Please explain your answer.

46) What is the probability that you will invest in further improvements in the future?

47) Please provide any comments that you find relevant for this assessment report.

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How do you evaluate the co-design process in link with service demonstration?

48) What was the level of disagreement/agreement with service developers during the discussion on service design? Please attribute a value between 1 and 4 with:
    1) 1 star: strong disagreement
    2) 2 stars: disagreement
    3) 3 stars: agreement
    4) 4 stars: strong agreement

49) How many important agreements did you have with service provider during the codesign process? Please provide a value between 1 and 5.

50) What were these agreements? Please list and explain them.

51) Do you remember how many important disagreements did you have with service providers during that discussion?

52) What were these disagreements? Please list and explain them: what were the reasons?

53) Would you say that the final service output is:
    ☐ similar to what you agreed with other partners during the discussions?
    ☐ different to what you agreed with other partners during the discussions?
    Please write a one page answer that justifies your answer.

54) Please provide no more than 600 words (or 3000 characters) to justify your answer.

55) What is the level of utility of the co-designed services stage in the demonstration phase? Please attribute a value between 1 and 3 with:
    1) Useless
    2) Useful
    3) Very useful

56) Please explain your answer.

57) Globally, what benefits and barriers did you identify from the co-design process in the demonstration phase? Please provide no more than 600 words (or 3000 characters) to justify your answer.

How do users evaluate stakeholder mapping in link with service demonstration?

58) How do you assess your level of interactions with stakeholders beforehand? Please attribute a value from 1 to 6 with:
    1) 1 star: non-existent
    2) 2 stars: low
    3) 3 stars: very low
    4) 4 stars: high level
    5) 5 stars: very high level

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59) How many did you identify? Please select one of the options below:
   1) ☐ <3
   2) ☐ <5
   3) ☐ <10
   4) ☐ >10

60) How many stakeholders were involved in the final project? Please select one of the options below:
   1) ☐ <3
   2) ☐ <5
   3) ☐ <10
   4) ☐ >10

61) How do you assess the level of easiness of this stakeholder mapping? Please attribute a value from 1 to 4 with:
   1) 1 star: very difficult
   2) 2 stars: difficult
   3) 3 stars: easy
   4) 4 stars: very easy

62) Please explain your answer by listing your internal strengths and weaknesses for that purpose.

63) More generally, what unexpected opportunities did you identify in that stakeholder mapping? Please list and explain them.

64) What unexpected issues did you have to handle?

65) How did you overcome them?

66) What is the level of utility of stakeholder mapping in the demonstration phase? Please attribute a value between 1 and 3 with:

   1) 1 star: useless
   2) 2 stars: useful
   3) 3 stars: very useful

67) Globally, what benefits and barriers did you identify from the stakeholder mapping in the co-designed process and demonstration phase? Please provide no more than 300 words (or 15000 characters) for your answer.

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13.2 Notes of the focus group conducted in parallel with the Climate-fit.city General Assembly in Prague (13th of December)

Previous experience with climate services

Almost all participants stated they had no previous experience with climate services; however, they have engaged in their career with climate issues and climate data.

Initial expectations and the difference between these expectations and the reality of the climate service

Participants expressed different views about their expectations and differences between expectations and reality. For some of them, the implementation of the service was not easy at the beginning. They had to understand what to do and how to manage data, as well as what data and variables meant. This process of understanding was useful not just for working with the service, but also for communicating it with local stakeholders. Indeed, to communicate in an effective way, participants had to understand first what they were going to communicate. However, the service providers were helpful in data processing and therefore things were easier along the project.
In this way, some participants revealed that at the initial stages they thought their work would have been just to send data, but then the work became more intense. This was also due to that there were no indicators specific for that kind of service or they had to find and harmonize suitable data. However, others stated they did not underestimate the effort; they knew things would have been complicated at some point, so they approached the work with a "trial and fail" approach.
For emergency planning, expectation was more about combining climate data with meteorological data to use the actual climate situation as a weather everyday situation to have real time data, but now the data are more long term, so there is some difference with initial expectations.
Similarly, in the case of urban planning, the pilot cities expected a service providing a sort of "technical point of view"; for example, each city required a different resolution and they had to ask Vito to change resolution for Hodonin. In this way, at the end the pilot cities were satisfied but there is always need for more detailed data.

Comparison between climate service data and routine climate data

In comparison with routine data, all participants stated that climate service data represented an added value. In particular, data:

- Represented an added value in terms of better resolution
- Improved service in terms of better conceptualizing the relations between energy and building
- Considered the interactions between urban environment (land cover, presence of green, type of soil, type of buildings) and climate, as these impacts were not visible in routine data

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Replicable aspects

To replicate the data there is need for further data. For climate and climate and health, you would need geocoded mortality, but not all cities have. In addition, it is necessary cities are of large size to have significant statistical data.
Budget is always an issue to replicate data. In particularly, the focus of the climate service could be on a regional scale in order to have access to Structural Funds, that are based on regions.

Regular use of service

Participants expressed different opinions on this. It is currently too early to say they will use on a daily basis as they don't know yet the willingness to pay by stakeholders and business development is at the beginning.
In addition, emergency planning stated that for a daily basis they need the combination of climate with meteorological data. In other cases, they daily usage depends on the needs of the city and willingness by policy makers.

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