Cross-sectoral planning decision-making platform to foster climate action

Rethink Action

D 7.7 | Results of the demonstration activities of RethinkAction platform

WP7 - RethinkAction Platform: design, development and deployment

Version 1.0 | September 2025

H2020-LC-GD-2020-2: LC-GD-9-2-2020. Developing end-user products and services for all stakeholders and citizens supporting climate adaptation and mitigation

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List of Organizations

	Participant Name	Short Name	Country	Logo
1	Fundación CARTIF	CARTIF	Spain	
2	University of Valladolid	UVa	Spain	
3	IVL Swedish Environmental Research Institute	IVL	Sweden	
4	RINA Consulting	RINA-C	Italy	
5	Euro-Mediterranean Center of Climate Change	CMCC	Italy	
6	Climate Media Factory	CMF	Germany	
7	National Observatory of Athens	NOA	Greece	
8	GMV Aerospace and Defence SAU	GMV	Spain	
9	FCiências.ID - Associação para a Investigação e Desenvolvimento de Ciências	FC.ID	Portugal	
10	ICLEI - Local Governments for Sustainability e.V. (World Secretariat) 10 A | ICLEI European Secretariat GmbH	ICLEI	Germany	
11	United Nations University - Institute for Environment and Human Security	UNU-EHS	Japan	
12	Geonardo	GEO	Hungary	
13	Institut National de la Recherche pour l'Agriculture, l'Alimentation et l'Environnement	INRAE	France	

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Abbreviation and Acronyms

Acronym	Description
Avg.	Average
CS	Case Study
EU	European Union
ECV	Essential Climate Variable
FR	Functional Requirement
GPR	General Platform-related Requirement
IAM	Integrated Assessment Model
LAMS	Land-based Adaptation and Mitigation Solutions
N.	Number
N/A	Not Applicable
NFR	Non-Functional Requirement
NUTS	Nomenclature of Territorial Units for Statistics
Req.	Requirement
TRL	Technology Readiness Level
WILIAM	Within Limits Integrated Assessment Model

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Executive Summary

The RethinkAction project, funded under the Horizon 2020-EU.3.5 Programme, involves the development of a platform tailored to the needs of different end-users. The platform provides information on climate change and offers various tools that support users taking decisions related to the adoption of mitigation and adaptation solutions based on land use.

The present document constitutes deliverable D7.7 - Results of the Demonstration Activities of RethinkAction Platform. This report is part of Task 7.6 of the RethinkAction project - Demonstration Campaign and Monitoring for TRL7 Validation.

The deliverable reports the outcome of various demonstration and validation activities, which were aimed at presenting the platform to stakeholders and collecting user feedback relevant to its enhancement. In particular, the content focuses on the results of surveys and questionnaires administered for the 5th and 6th workshops of the RethinkAction project. The results include both comments provided orally by the participants during the workshops and written responses gathered through closed-ended questions. The report also contains a list of the platform requirements, providing the latest updates on their implementation status.

The content of this deliverable can be used within Task 7.5 - Continuous Integration and Testing - to identify aspects of the platform that present issues or may be enhanced.

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1 Introduction

1.1 Purpose of the Document

The RethinkAction project aims to inform different categories of users about climate change and its related direct and indirect effects, and to support them in the decision-making processes related to the adoption of mitigation and adaptation solutions based on land use. A novel platform serves for this purpose, allowing users to access relevant information on this topic and evaluate existing strategies to address climate change problems both at a local and international level.

The implementation of this project involves a set of demonstration and validation activities intended for the assessment of the RethinkAction platform. In-person workshops with the stakeholders were organized and carried out in six case studies (CSs), each representative of a different regional context, and constituted an opportunity to present the functionalities of the platform to end-users and collect their feedback on the design and functionalities of the tool. This information is essential for the identification of user needs and potential improvements of the platform.

The present report documents the activities carried out within Task 7.6 of the RethinkAction project - Demonstration Campaign and Monitoring for TRL7 Validation. The document does not aim to provide a comprehensive overview of the workshops. While detailed information about their structure and organization is provided in the deliverable D6.5 [1], this report focuses on presenting the user feedback on the platform's functionalities obtained during these events. In particular, the document first includes an overview of the current implementation status of the platform's functional requirements. Then, it provides stakeholders' evaluations and comments regarding their interaction experience with the platform, which were gathered both orally and in writing during the demonstration activities.

1.2 Structure of the Document

This document is structured as follows:

- Section 1: Introduction – Provides an introduction to the document, presenting its purpose and structure.
- Section 2: Methodology for the Demonstration and Validation Activities - Summarizes the methodology used to conduct the demonstration and validation activities. Specifically, this section provides a description of the necessary resources, the involved agents, the demonstration activities, and the expected outcomes.

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- Section 3: Results of the Demonstration and Validation Activities – Presents an updated list of the platform's functional requirements, stakeholder feedback gathered during the demonstration and validation activities, and recommendations relevant to Task 7.5.
- Section 4: Conclusion – Summarizes the work presented in this report, highlighting the main aspects.
- References – Includes the list of referenced sources and documents.
- Annex I – Reports the list of qualitative feedback derived from validation and demonstration activities.

2 Methodology for the Demonstration and Validation Activities

This section includes details on the demonstration and validation activities for the RethinkAction platform, including an overview of the resources used, the stakeholders involved in the workshops, and the types of information collected during these activities.

2.1 Necessary Resources

A necessary resource for carrying out the demonstration and validation activities was the RethinkAction platform [2], an innovative tool designed to address the climate crisis through careful land-use planning. This platform provides users, researchers, and decision-makers with an advanced simulation environment to explore the effects of climate change and potential adaptation and mitigation solutions.

The website is organized into three main sections for a comprehensive, multi-level analysis: the LAMS Catalogue, the Local Analysis, and the EU/Global Analysis.

2.1.1 LAMS Catalogue

The LAMS (Land-based Adaptation and Mitigation Solutions) catalogue is a comprehensive repository of over 60 solutions for tackling climate change. These solutions are categorized across key sectors, including agriculture, forestry, energy, urban development, and water management. The catalogue provides biophysical, environmental, and socio-economic information for each solution, making it a valuable resource for a wide range of users. It was developed by analyzing European Union (EU) and local policy documents and consulting with experts and stakeholders.

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2.1.2 Local Analysis

The Local Analysis section is a scenario simulation engine that allows users to model and evaluate the impacts of land-use-based policies at a fine-grained, local level. It leverages high-resolution, case-level rescaled climate data and land-use maps to help users explore climate risks and test solutions at the NUTS[1] (Nomenclature of Territorial Units for Statistics) 2 and NUTS 3 levels. This feature ensures that the platform's insights are highly relevant for regional planning and on-the-ground action.

2.1.3 EU/Global Analysis

The EU/Global Analysis section demonstrates how local land-use decisions contribute to broader climate goals. By combining local dynamic models with the WILIAM[2] Integrated Assessment Model, this multiscale approach enables users to evaluate the consequences of their actions (or inaction) on climate resilience, economic outcomes, and societal well-being at the European and global scales. It provides the crucial link between local efforts and their broader impact.

2.2 Involved Agents

Three categories of stakeholders were involved in the demonstration activities: citizens, policymakers, and experts. These groups correspond to the different end-users targeted by the RethinkAction platform. From the platform's landing page, users can register or log in by choosing one of these roles, thus receiving a personalized experience. The next subsections summarize the main differences between the three role options.

[1] NUTS (Nomenclature of Territorial Units for Statistics) is a hierarchical system for dividing the economic territory of the European Union. It was developed by Eurostat to standardize regional statistics and analyses, as well as to frame EU regional policies. The RethinkAction platform uses these levels for its "Local Analysis" section to ensure that the climate solutions it models are relevant to real-world administrative regions. The NUTS system classifies states in three levels: NUTS 1, NUTS 2, and NUTS 3 [5].

- NUTS 2: This level represents the "basic regions for the application of regional policies." These regions typically have a population of 800,000 to 3 million people. Examples include provinces, states, or large administrative districts within a country.
- NUTS 3: This is the most detailed level of the classification, representing "small regions for specific diagnoses." NUTS 3 regions generally have a population of 150,000 to 800,000 people and are often based on smaller administrative units like districts or counties.

[2] WILIAM (Within Limits Integrated Assessment Model) is an advanced, multi-regional Integrated Assessment Model (IAM). An IAM is a simplified representation that simulates the complex interactions between human society, the economy, and the environment. It is used to explore long-term scenarios and evaluate the social, economic, and environmental implications of different policies, particularly those related to climate change [6].

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2.2.1 Citizens

The citizen mode targets non-expert users seeking to obtain information on climate change and available mitigation and adaptation solutions. Accessing the platform as a citizen allows to explore basic Essential Climate Variables (ECVs) and to use both the local and the EU/global functionalities with a predefined set of variables.

2.2.2 Policymakers

The policymaker mode is primarily intended for individuals who work on the definition of policies for climate change. Policymakers can explore the platform and select a limited set of variables for both the local and the EU/global analysis tools.

2.2.3 Experts

The expert mode is designed for users who possess background knowledge or expertise in the domain of climate change solutions. Experts can use the available tools to support their decision-making processes, accessing a wider range of scenarios, configuration options, and features compared to those available to the other stakeholder categories.

2.3 Demonstration Activities and Expected Outcomes

This document includes the latest updates on the implementation status of the requirements associated with the RethinkAction platform (Section 3.1) and then presents user feedback gathered in various ways through the 5th and 6th workshops.

The 5th workshop was held in June 2025 in all six case studies. On this occasion, the RethinkAction platform was presented to stakeholders, who received a demonstration of the complete workflow for its use and, divided into groups, completed activities using various tools and functionalities. Room was also left for discussing the policy insights presented on the platform and the user interaction experience with the system.

The 6th workshop, instead, was organized by CARTIF and held online on the 11th of September 2025. In addition to a brief introduction to the RethinkAction project and the platform, the consultation included a demonstration of the following functionalities: the LAMS Catalogue and Case Study Baseline, the Local Analysis tool, and the EU/Global Analysis tool.

These events provided the opportunity to gather evaluations and feedback on the platform. Specifically, the following information will be reported in this deliverable:

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1. Results of a survey which was distributed to stakeholders after the 5th workshop. The aim of this survey was to collect initial high-level feedback regarding platform aspects such as performance, visual appeal, functionalities, and support features. The results from the survey are presented in Section 3.2.
2. Results of online questionnaires administered during the 6th workshop, which collected stakeholders' feedback on the implementation of several requirements. This content served to explore in greater detail the user evaluation of each platform functionality as well as design and usability aspects that, based on the requirements, were considered particularly significant. The questionnaires' outcomes are presented in Section 3.3.
3. Comments and suggestions from stakeholders who participated in the 5th and 6th workshops. This feedback was collected both orally and through open-ended questions, allowing for more in-dept qualitative insights into users' interaction experience with the platform. A qualitative analysis of the stakeholders' comments is provided in Section 3.4.

3 Results of the Demonstration and Validation Activities

3.1 Functional Requirements

This subsection updates the table of requirements previously presented in Deliverable D7.5 [3]. In that deliverable, the latest set of functional requirements from Deliverable D7.1 [4] was not fully included by mistake. Therefore, the current table is based on the complete and updated list of requirements defined in D7.1 and displays the implementation level of each functional requirement identified for the platform. The legend of the icons is available in Table 1. The updated level of implementation can be seen in Table 2.

Table 1. Legend for displaying the four different levels of implementation of the requirements.

✓	Totally implemented
//	Partially implemented
X	Not implemented yet
⊗	General objective to be covered with the complete workflow

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Table 2: RethinkAction functional requirements and level of implementation.

Req. ID	Functional requirement description	Level of implementation
FR 01	The platform should help users to increase the public awareness of local climate change issues and how they can contribute to solutions	✓
FR 02	The platform should help users to be more aware of the local authorities and organizations' actions carried out to address climate issues	✓
FR 03	The platform should allow users to increase awareness of the impact of climate in the local production of food and the cost of the water	✓
FR 04	The platform should help users to better understand and map the risks derived from climate change	✓
FR 05	The platform should inform users about land-use and water management policy	✓
FR 06	The platform should allow users to connect land-use and sustainability research with practice	✓
FR 07	The platform should target a wide audience and showcase of the importance of LAMS in the local context and how citizens can engage with these initiatives	✓
FR 08	The platform should allow users to access and explore a structured catalogue with solutions for sustainability projects, using filters for an optimum search process, providing clear and complete information about different LAMS	✓
FR 09	The platform should allow users to provide comprehensive and thorough information about the solution from the catalogue, as well as information about behavioural changes that can positively effect on local sustainability issues	✓
FR 10	The platform should allow users to register into the platform providing basic information (i.e. name, e-mail address, profile)	✓
FR 11	The platform should allow users to use the platform with or without registration	✓
FR 12	The platform should allow users to select the role to take: citizen or decision maker, providing different level of information for each of one	✓
FR 13	The platform should allow users to select the scale of analysis: local or EU/global	✓
FR 14	The platform should allow the user to visualize Essential Climate Variables at local or/and EU/Global level, such as Precipitation, temperatures, etc. The ECVs should be shown in graphs and maps to a better understanding of the values	✓

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Req. ID	Functional requirement description	Level of implementation
FR 15	The platform should allow users to select the case study of their interest, in the case of local analysis	✓
FR 16	The platform should allow users to compare Essential Climate Variables at local from one specific case study with those related to EU level	X
FR 17	The platform should allow users to visualize case study level hazards for all the available sectors at Case Study level	✓
FR 18	The platform should allow users to visualize case study level exposures for all the available sectors at Case Study level	✓
FR 19	The platform should allow users to visualize case study level vulnerabilities for all the available sectors at Case Study level	✓
FR 20	The platform should allow users to visualize case study level risks for all the available sectors at Case Study level	✓
FR 21	The platform should offer the user a questionnaire to identify the Case Study more adequate to perform the simulations, taking into account the priorities and objectives of the user	✓
FR 22	The platform should allow users to analyse adaptation and mitigation capacities in each case study by providing information on land use types, carbon stocks and suitability maps	✓
FR 23	The platform should offer users a questionnaire to identify their priorities in the assessment and a multi-criteria decision analysis based on different indicators	//
FR 24	The platform should provide the user with a list of the LAMS that could be performed for the case study, ranked taking into account the level of impact that these LAMS would produce. Besides, the platform should allow the user to add manually to the final list another LAMS not automatically included in the list by the service	//
FR 25	The platform should be able to inform the users about the results of the local or global analysis taking into account the LAMS applied and the intensity of the LAMS selected by the user	✓
FR 26	The platform should allow logged users to store projects, i.e., storing the different choices in every step and also the obtained results	✓
FR 27	The platform should allow logged users to retrieve projects previously created and delete old projects	✓
FR 28	The platform should allow logged users to download information from the different steps in form of tables, reports or images in open format	✓
FR 29	The platform should allow reporting errors to users if they occur during the operation	✓

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Req. ID	Functional requirement description	Level of implementation
FR 30	The platform should allow users upload updated information for comparison purposes	X
FR 31	The platform should present guidelines for its use with clear instructions on the steps that can be followed with the platform and complementary information about the project and the different terms	✓
FR 32	The platform should allow users to switch in between different projects and/or between the different steps in an easy and quick manner	✓
FR 33	The platform should show the user general information about the case study of interest selected	✓
FR 34	The platform should allow the user to select specific impact chains at Case Study level to be visualised	✓
FR 35	The platform should allow the user to modify the intensity of the LAMS included in the final list in an easy and intuitive manner	✓
FR 36	The platform should allow logged users to check projects previously created, the steps covered and the available data related to these projects	//
FR 37	The platform should allow the user to store the combination of the LAMS applied and their intensities as well as the results of the simulations (Solution)	✓
FR 38	The platform should present a ranking of the solutions stored by the user (ranking of simulated LAMS) for a specific project	✓

Overall, most of the functional requirements have been successfully implemented, either partially or fully, demonstrating the progress achieved in the development of the RethinkAction platform. Only two requirements have not been covered: FR 16 and FR 30.

It is important to remark that only the table of functional requirements has been reported here, since the other categories of requirements (non-functional requirements and general platform-related requirements) do not show significant advances compared to previous versions, where most of them were already fulfilled. Nevertheless, two requirements outside the functional category remain only partially achieved:

- ***NFR 1 – Performance*** *(1.4): The web interface shall support the latest version of the following browsers: Internet Explorer 9, 10 and 11, Edge, Firefox and Chrome, and shall be prepared to be accessed from different devices and screen resolutions.*

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This requirement is partially met, as the platform is not fully optimized for all browsers, and no dedicated mobile application has been developed.

- *GPR 9 – System configuration requirements: The platform shall provide an administrator account with the following functionalities: (1) Broad and high access privileges over the platform to configure and admin settings and the included databases; (2) Manage users accounts privileges (create, delete or modify); and (3) Manage projects created by user's accounts.*

  This requirement is also partially met, since no administrator account is available through the graphical interface. These operations currently need to be carried out via the back-end, mainly by directly accessing the databases.

3.2 Results of the 5th Workshop

This subsection presents the results of the survey administered after the 5th workshop of the RethinkAction project.

Following the 5th workshop, an online survey was distributed to the event participants to collect their feedback in written form. The survey comprised items related to various aspects of the platform, including its performance, visual appeal, functionalities, and support features. A few open-ended questions also allowed users to provide extensive comments and indicate the features they considered unnecessary, difficult, or particularly appreciated.

The respondents participated in the workshop organized for case studies CS4 and CS6, which took place in Valle d'Aosta, Italy, and Azores Archipelago, Portugal, respectively. A total of 10 people with heterogeneous backgrounds provided responses to the survey, covering all the user categories targeted by the platform: citizens (4 participants), experts (5 participants) and policymakers (1 participant). Of these 10 participants, 7 had participated in CS6 and 3 in CS4. Although this sample is relatively small and does not encompass all the case studies, the resulting data provide an initial insight into users' perception of the platform.

While the user feedback provided through the open-ended questions will be integrated in Section 3.4, closed-ended responses are presented below.

The survey included a total of ten closed-ended questions. Six of these questions, reported in Table 3, required selecting answers expressed as categories (e.g., "Very easy," "Easy," etc.), all based on a 5-point scale. For convenience and to standardize the data, these categorical responses have been

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converted and reported into numbers from 1 to 5, with "1" expressing the lower rating (e.g., "Very difficult") and "5" representing the highest rating (e.g., "Very easy"). The distribution of responses for each option is illustrated in Figure 1.

Table 3: Questions rated on a 5-point scale with average scores from the 5th workshop.

Question ID	Item	Avg. evaluation
Q1	How easy is it to navigate through the RethinkAction Platform overall?	3.4
Q2	How satisfied are you with the platform's loading speed and response time?	3.9
Q3	How would you rate the overall design and visual appeal of the platform?	3.9
Q4	How well does the platform meet your expectations for data analysis and results?	3.7
Q5	How efficient are the tools in helping you achieve your goals on your work?	3.5
Q6	How satisfied are you with the level of guidance or support provided within the platform (tutorial, help sections, information etc.)?	3.6

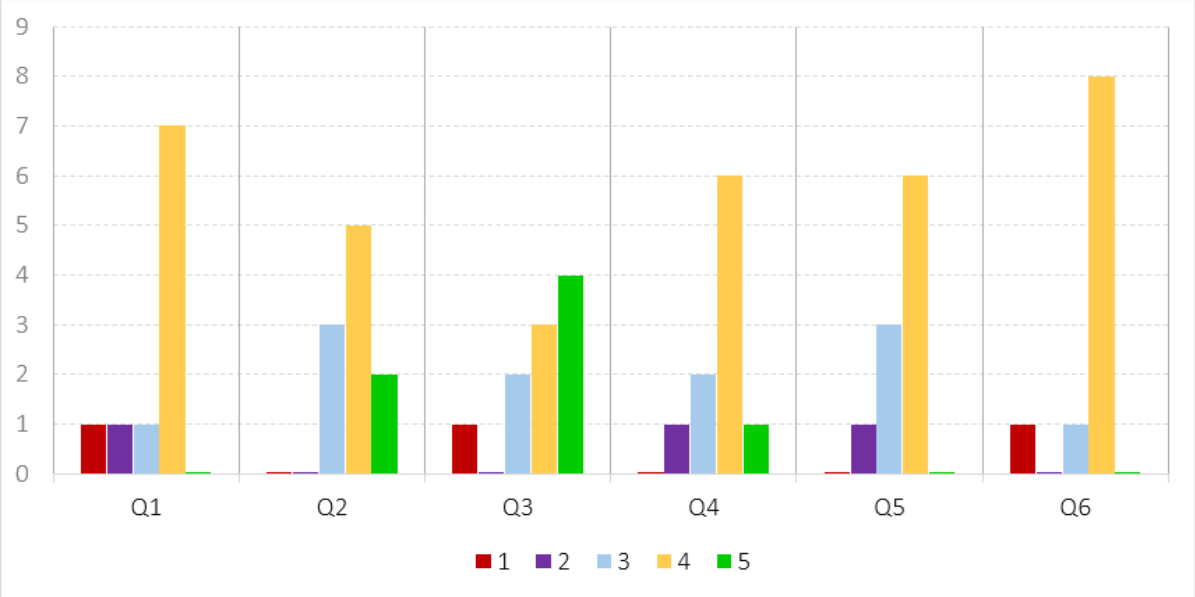

Figure 1: Response distribution for questions in Table 3.

Questions Q1-Q6 show variable responses, although the average ratings are generally positive, above 3 for all items in Table 3. The scores receiving the highest number of responses were 4 (Q1, Q2, Q4, Q5, Q6) and 5 (Q3), indicating a moderate-to-high level of user acceptance of the platform. However, the average evaluations are not particularly high, ranging between 3.4 and 3.9, suggesting that there may be areas of improvement.

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The remaining four questions, detailed in Table 4, required agreement responses on a 3-point scale (i.e., "No", "Somewhat", and "Yes"). Figure 2 shows the distribution of responses for these items.

Table 4: Questions rated on a 3-point scale from the 5th workshop.

Question ID	Item
Q7	Are the instructions and labels throughout the platform clear and helpful?
Q8	Are the maps and visual elements easy to interpret and analyze?
Q9	Are the temporal series graphs easy to interpret and analyze?
Q10	Are the catalogues easy to understand and use?

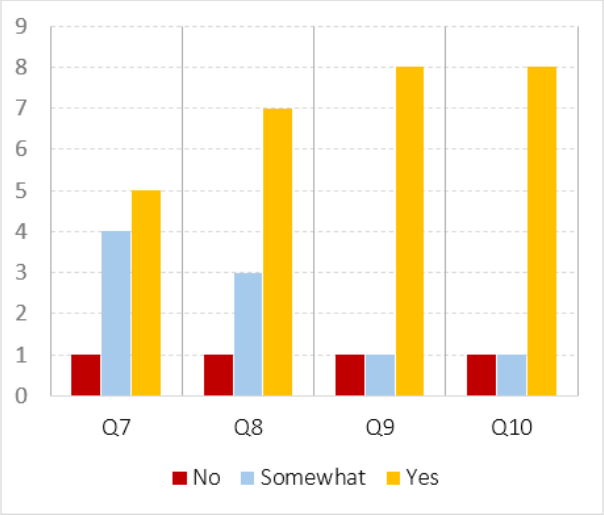

Figure 2: Response distribution for questions in Table 4.

As shown in Figure 2, while negative responses ("No") remain limited (one person per question), a majority of positive responses ("Yes") is observed for all items in Table 4. Questions Q7 and Q8 show a few respondents answering "Somewhat". This data suggests only partial user satisfaction with the instructions and labels provided within the platform, as well as with the ease of interpreting the map results.

3.3 Results of the 6th Workshop

This subsection illustrates the outcome of the 6th consultation of the RethinkAction project.

During this event, participants were invited to fill out a questionnaire after attending a demonstration of each platform functionality. They expressed their agreement with several statements, using a Likert scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree"). The questionnaire items were defined

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by RINA-C based on the platform requirements, with a few additional questions included to further assess certain aspects of the EU/Global Analysis tool.

Tables 5, 6, 7 and 8 report the average responses for the items in the questionnaires, along with the associated requirement. Please note that the number of respondents vary from item to item, as participants were allowed to skip items that were not applicable to their experience with the platform.

Table 5: Average evaluation of the questionnaire items related to LAMS Catalogue and Case Study Baseline.

Req. ID	Item	N. of respondents	Avg. evaluation
FR 1	The platform helps me understand the local climate change issues and potential solutions	14	4.1
FR 7	The platform clearly showcases the importance of Land-use Adaptation and Mitigation Solutions (LAMS)	16	4.0
FR 8	I can easily access and explore the structured catalogue of sustainability solutions using filters to find relevant information.	16	4.4
FR 9	The platform provides comprehensive information about solutions from the catalogue and about related behavioral changes.	15	4.1
FR 15	I can easily select the specific case study I want to analyze.	16	4.6
FR 21	The platform's questionnaire is helpful for identifying the most relevant case study for my needs.	15	4.6
FR 33	The platform shows useful general information about my selected case study.	15	4.7

Table 6: Average evaluation of the questionnaire items related to the Local Analysis functionality.

Req. ID	Item	N. of Respondents	Avg. Evaluation
FR 4	The platform helps me to better understand and map the risks derived from climate change in my chosen case study.	15	4.2
FR 14	The platform effectively visualizes Essential Climate Variables (e.g., precipitation, temperature) for my selected local case study.	15	4.7
FR 17, FR 20	The platform clearly visualizes local hazards, exposures, vulnerabilities, and risks.	15	4.1
FR 22	The platform allows me to effectively analyze the adaptation and mitigation potential for each land-use type.	14	4.1
FR 23	The platform's questionnaire and analysis tools help me identify my priorities for assessment.	14	4.1
FR 24	The platform provides a useful ranked list of LAMS for a case study, and I can manually add other LAMS to my analysis.	15	4.1
FR 25	The platform clearly informs me about the results of my local analysis based on the LAMS I applied.	14	4.2

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Req. ID	Item	N. of Respondents	Avg. Evaluation
FR 34	I can select and visualize specific impact chains at the case study level.	15	4.1
FR 35	It is easy and intuitive to modify the intensity of the LAMS in my analysis.	15	3.9
FR 37	The platform allows me to store specific combinations of LAMS and their simulation results as a "Solution."	14	4.1
FR 38	The platform presents a clear and useful ranking of the different "Solutions" I have stored for a project.	14	4.1

Table 7: Average evaluation of the questionnaire items related to the EU/Global Analysis functionality.

Req. ID	Item	N. of respondents	Avg. Evaluation
FR 13	I can easily select the scale of analysis I am interested in (local or EU/global).	12	4.7
FR 14	The platform effectively visualizes Essential Climate Variables (e.g., precipitation, temperature) at the EU and Global levels.	12	4.3
FR 25	The platform provides clear information and results when I perform a global-level analysis.	12	4.3
N/A	The data and visualizations (maps, graphs) at the EU/Global scale are clear and easy to interpret.	12	4.3
N/A	The platform's tools make it easy to explore and compare climate trends across different large-scale regions (e.g., comparing Northern and Southern Europe).	11	4.0
N/A	The EU/Global analysis provides a valuable context for understanding local climate challenges.	12	3.8
N/A	The platform effectively presents long-term climate projections and trends at a continental/global scale.	12	4.4

Table 8: Average evaluation of the questionnaire items related to usability and design aspects of the platform.

Req. ID	Survey Item	N. of respondents	Avg. Evaluation
FR 10	The process of registering on the platform is simple.	12	4.5
FR 11	I can use the platform's features effectively even without being registered.	11	4.0
FR 26	As a logged-in user, I can easily store my projects, choices, and results.	10	4.3
FR 27, FR 36	As a logged-in user, I can easily retrieve, review, and delete my previously created projects.	10	4.3
FR 28	As a logged-in user, I can download information (tables, reports, images) in an open format.	10	4.3

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Req. ID	Survey Item	N. of respondents	Avg. Evaluation
FR 29	The platform provides clear error messages if something goes wrong.	12	3.6
FR 31	The platform provides clear guidelines and instructions for its use.	12	3.8
FR 32	I can switch between different projects or steps within a project easily and quickly.	12	3.9
GPR 1	The platform's design is simple, clean, and predictable, making it easy to navigate.	12	3.5
GPR 3	The geoviewer (map tool) is interactive and easy to use for exploring geographic information.	12	4.1
NFR 1	The platform responds quickly and operates smoothly, providing an effective user experience.	12	4.1
NFR 2	The login and registration process feels secure, and I trust the platform with my data.	11	4.2

Overall, the responses obtained from the questionnaires indicate that end-users evaluated positively several aspects related to the platform requirements, with an average score of 4.2 and all the items assigned a value greater than 3. The average score of this consultation has increased regarding the last one.

The item that received the lowest score is associated with GPR 1, which relates to the ease of navigation on the platform. Although still within the positive range, the average evaluation for this item is 3.5. Other aspects that were rated below average include the presence of error messages in case of technical failures (FR 29, avg = 3.6), the availability of guidelines and instructions (FR 31, avg. = 3.8), and the presence of valuable context for understanding local climate challenges in the EU/Global Analysis (avg. = 3.8). For this, an effort has been done in the generation of the more robust user manual, and in the improvement of the information offered directly by the platform in the last part of the development of the platform.

To gather qualitative feedback from users, the questionnaire administered during the 6th workshop also included three open-ended questions in the following form:

“Do you have any other comments, suggestions, or issues to report regarding [the specific aspect: case study baseline, local analysis, EU/global analysis]?”

The responses to this question are presented in the following section.

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3.4 Qualitative Feedback and Recommendations

This subsection summarizes the main observations and recommendations that emerged during the 5th and the 6th workshops. Stakeholder comments where provided either orally and documented, or in written form, through the open-ended questions in the survey and questionnaires. Therefore, the suggestions presented in this section are based on specific experiences from the case studies, and can be taken as a reference point for the completion of the activities of Task 7.5 - Continuous Integration and Testing. While the complete list of comments from the stakeholders is included in Annex I, the main points emerging from the users' feedback are set out below.

First, the need has emerged to provide more **accurate explanations** about both the functioning of the available tools and the descriptions included in the platform. In particular, users from various case studies stressed the importance to provide the following:

- Clear information about the datasets and resources used to display the data and charts within the platform.
- Explanations on the methods and criteria used to compute what is presented through functionalities such as Hazards, Exposure, Vulnerability, and Risks in the Local Analysis tool. Stakeholders highlighted how this improvement would help users interpret the results more easily. For example, in the Analysis of LAMS functionality, it should be explained how solutions are ranked after the selection of criterias and objectives; in the Climate Change Impact tool, it should be clarified how to interpret maps properly and what defines exposure and vulnerability in each sector.
- An introduction to the items presented in the platform, including, for example, the relationship between LAMS and policies, what are the “objectives” in the Analysis of LAMS, and what the legend “high/medium/low” indicates in climate change analysis maps.
- Definitions for specific terms and abbreviations. These include, for example, ECV, LAMS, “healthy Willet diet”, and “regenerative”.

As a solution, it was recommended to use modal and pop-up boxes including explanations and to adopt a toggle button to show or hide tips and definitions as needed. This solution would allow users to keep the interface clean while using the tools. Finally, part of this support information has been added to the platform modal boxes, and the user manual has been completed with all the relevant information .

From a **technical** point of view, several users reported issues with navigating the platform, stating that some functionalities do not work properly. One stakeholder specified that using Mozilla Firefox web

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browser prevents normal operation, and another reported that the information button on the page illustrating the LAMS solutions for the models does not work.

Some participants also raised concerns about the **accuracy of the results** presented by the platform, indicating issues with the drought risk map and the irrigated cropland area for the case study of Gotland (CS1) used in the SD model, as well as with the land use tables. Furthermore, additional data were recommended for the Local Analysis tool, such as seasonal and solar variations, and soil and geographical parameters. It is therefore recommended to revise the correctness and completeness of all the information presented in the platform, and in particular within the local analysis maps to explain more in depth the reason on the results with focus on issues like uncertainty. Indeed, users reported inaccuracies in the units of measurement, such as precipitation expressed as "mm" instead of "mm/day" or wind speed shown in meters per second rather than in the more common "km/h".

A few comments also concerned **usability** aspects. The platform accessibility could be improved by integrating keyboard shortcuts, such as enabling the Enter key to submit the login and the Shift in combination with the mouse scroll to zoom on the maps. Regarding the **choice of colors**, a user recommended integrating a black-and-white option for viewing the platform; another adjusting the temperature scale from blue to red at 0 degrees in the EU/Global Analysis maps; the use of similar shades of green in the maps was also pointed out as problematic.

Finally, mention was made of the possibility to **keep track of the results** obtained from the analyses. This includes ensuring that the search results are preserved when navigating back and forth (e.g., in the LAMS recommendation) and enabling the saving of maps presented in the platform in specific formats. Including this last would be beneficial for sharing results on other platforms.

Despite these potential areas for improvement, several comments provided positive feedback on the platform, whose functions were overall considered good and useful. In particular, the integration of historical and climate data, as well as their visualization tool, were especially appreciated.

4 Conclusion

Demonstration activities offered valuable insights to assess the platform's functionality and acceptance by end-users. The information collected during these events with the stakeholders has been used in the final phase of platform development and integration, improving the platform wherever possible, taking into account time and resource constraints.

Apart of that, the feedback collected can be taken into account to further evaluate the fulfillment of the platform requirements and to enhance specific aspects of the platform in the future.

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Overall, the closed-ended questions of the surveys administered in the occasion of the 5th and 6th workshops show a good level of acceptance of the platform by the stakeholders, and provide further confirmation that many requirements have been successfully met.

Nonetheless, the qualitative feedback provided by the workshop participants highlights some critical issues that would be worth considering. In particular, the need for more explanations and guidance on the use of the platform and its contents emerged clearly from both the closed-ended evaluations in the workshops and the qualitative comments provided during the demonstration activities. An improvement to the user manual and the support information offered by the platform has been made in response to this concern. Other critical issues related to technical functionality, data presentation, and usability choices have been highlighted in this report.

This deliverable is part of the final phase of the rethinkAction project. Then the feedback collected in this report offers key evidence for evaluating the overall effectiveness and success of the RethinkAction platform and may be valuable for any future enhancements of its functionalities.

References

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Annex I: Comments and notes collected during the validation and demonstration activities

The following table includes all the comments and notes collected during the validation and demonstration activities. For each item in the table, the corrensponding case study and the type are reported. The type can be either a "Comment", if it is feedback received directly from the user in a written form, or a "Note" if it was reported by another participant attending the workshop. Please note that strictly grammatical errors have been reviewed in order to facilitate the comprehension of the comments.

Table 9: List of feedback received from participants of the 5th and 6th workshops.

CS	Type	Comment
CS1	Comment	Works poorly in Firefox.
CS1	Comment	More explanation for whom and why in the home page, as well as through the entire platform.
CS1	Comment	Make sure everything works, there are a lot of things that are not working properly.
CS1	Comment	Change the text to natural storage.
CS1	Comment	Change the text from cattle to livestock and add industry as well.
CS1	Comment	Without information about what information is behind the graphs it is not possible to use them for anything.
CS1	Comment	Add some kind of definition on what is counted as irrigated land since this can differ from sector to sector.
CS1	Comment	I would also be interesting to see how things change over a year not just between the years, this is especially important for agriculture.
CS1	Comment	The drought risk map on Gotland is wrong, this is not true there has to be a more exact then just 2 months with no precipitation! If it comes like 3 drips during summer does not work. (Or at least describe the definition of "drought" so that it is clear for the user how it is defined).
CS1	Comment	Do not use abbreviations such as ECVs without explanation, it limits the user friendliness.
CS1	Comment	The two greens in the maps are basically the same, impossible to see a difference.
CS1	Comment	The SSPs hovering explanation does not show on all the ECVs.
CS1	Comment	In the LAMS chooser it is not saved when going back and forth, this is kind of annoying.
CS1	Comment	I should say see more/ see less more common usage of terminology.

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CS	Type	Comment
CS1	Comment	When you click on a project it should open, it is a little hard to understand that you should press the different buttons to the right.
CS1	Comment	It should be made clearer that the "LAMS" chooser is not relevant for the modelling part.
CS1	Comment	When choosing the LAMS it is hard to understand what "objectives" means.
CS1	Comment	They do need info buttons because there is no understanding of what you are actually modelling.
CS1	Comment	What does the already decided levels mean?
CS1	Comment	Not all seems to work.
CS1	Comment	What does the diet mean? 50 % plant based is that when half the plate is not meat?
CS1	Comment	Healthy? There is no such definition as healthy willet diet, it is not common knowledge what a willet diet is.
CS1	Comment	If you use regenerative, you need to add a definition.
CS1	Comment	Use more common used words and look over the language and sentences in the entire platform, see examples below: - Photovoltaic = solar panels. - Floatvoltaics = floating solar panels.
CS1	Comment	Water usage in economy? Which economy? Local, western, national.
CS1	Comment	Domestic, is e.g., tourism included? What is included?
CS1	Comment	Maybe easier to click in which crops or that the default crops is 0.
CS1	Comment	Precision agriculture, precision in what way?
CS1	Comment	For Gotland the aereal seams to bee 0f especially the amount of the different types [typos in the original comment have been preserved, as interpretation was not possible].
CS1	Comment	How do you add that the LAMS is already active in the case study?
CS1	Comment	There are no suitability maps or they are just white.
CS1	Comment	Would it be useful to have a short explanation of the modelling (how it is done, what is behind the modelling), so that it is easier to interpret the results.
CS1	Comment	Seasonal variation missing (only showing annual values).
CS1	Comment	Need to explain ECV (what this abbreviation means).
CS1	Comment	Not clear how to interpret "exposure" and "vulnerability". Useful with a short explanation/description of what is meant.
CS1	Comment	"Irrigated cropland" seems to be overestimated on Gotland.
CS1	Comment	The suitability by land use tables is still faulty (for example water is suitable for increase in cultivated area).

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CS	Type	Comment
CS1	Comment	It would be better if the temperature scale changed from blue to red at 0 degrees.
CS1	Comment	The unit for precipitation is said to be mm, but it seems to be mm/day (which is an unusual unit).
CS1	Comment	The scales for windspeed and humidity would probably be easier to understand if they were monochromatic and not dichromatic. Especially the wind.
CS1	Comment	It doesn't say what area the temporal series represent.
CS1	Comment	Carbon stock in biomass - Above ground (tC ha-1) - why does the scale look so different from the other carbon stores? Are these decimal commas or thousand separators in the wrong place? If it is the first, why using any decimal in the legend?
CS1	Comment	It is not apparent that "Download factsheet" will open a pdf with much *more* information than what you have in the panel about the LAMS. My assumption was that the panel was the factsheet, and I would not have to click a "download"-button just to see the information about the LAMS. "Open factsheet" would be easier to understand. The fact sheets are good though. It's a pity if people won't see them because they don't feel the need to download stuff.
CS2	Note	Positive feedback on the integration of historical and spatial climate data.
CS2	Note	Uncertainties about some model outputs, including unexplained decreases in cropland area.
CS2	Note	Questions raised about risk variable classifications and requests for access to related documentation.
CS2	Note	Lack of online agrivoltaic maps, though local projects are monitored via Ombrea and Sun'Agri.
CS3	Note	Participants found the platform accessible and potentially useful but were asking for greater transparency on input data, as its operation felt like a "black box".
CS3	Note	Participants suggested including additional soil and geographical parameters.
CS3	Note	Participants suggested improving visual outputs by showing results geographically.
CS3	Note	Participants suggested enabling scenario comparisons, and adding a clear help function to ease interpretation.
CS3	Note	Some outputs were seen as unrealistic or not locally relevant, particularly due to missing legal and political considerations in Hungary.
CS3	Note	Stakeholders stressed the importance of stronger links to local decision-making and noted that artificial intelligence could improve data quality and recommendations.
CS4	Comment	It is better to reduce the number of information for the general user and use that detailed data to create a brief scenario based on the data shown in the graphic, for example if the temperature continues to increase in a specific land. Give the message that 1-2 degrees can change drastically the weather condition of the land.
CS4	Comment	I like the most the button to filter the anomalies for some case studies.
CS4	Comment	[I like the most] i grafici molto essenziali e puliti (trasnl. *Very simple and clean charts*).
CS4	Comment	[I like the most] The projections.
CS4	Comment	[Have you experienced any issues with the stability of the platform (e.g., crashes, bugs)?] It is difficult to use the platform from a mobile device.

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CS	Type	Comment
CS4	Comment	[Have you experienced any issues with the stability of the platform (e.g., crashes, bugs)?] Durante la prova effettuata aveva tempi lunghi di caricamento (transl. *During the test, it had long loading times*).
CS4	Comment	[Difficult functionalities] The part about the risks and the incident is a little tricky because it is too structured. The ideal is to have a guided carousel or a stepper module that gives a direct output of the previsions for the next years and gives possible solutions for problems.
CS4	Comment	[Difficult functionalities] È stato difficoltoso capire quali criteri hanno generato il risultato (transl. It was difficult to understand which criteria generated the result).
CS4	Comment	[Difficult functionalities] Some graphs.
CS4	Comment	[Non-necessary functionalities] I log in as a guest and in general a citizen of the European Union needs to have a similar interface that contains online the most important messages or info that a general user can understand easily, for example show a summary of all case studies and give the possibility to click or see a tooltip with specific elements that everyone can understand.
CS5	Comment	The platform should give clear indications on the datasets and sources from which the data used in the platform were collected
CS5	Comment	In order to fully exploit the platform, it is essential to be able to use the models for another CS that are not included in the project. This would aid in further replication and use of the platform
CS6	Comment	There is no Portuguese version.
CS6	Comment	Nice colours but B&W option could be helpful.
CS6	Comment	There should be a toggle button that shows all the tips and technical explanations when the user needs them and turns them on. The off position would make the interface free of distractions.
CS6	Comment	Climate visualization tool is intuitive, unique and is the only one currently available that displays the climate in the region and in a detailed fashion.
CS6	Comment	Base map in map views could also have a satellite option.
CS6	Comment	In the risks and risk components there could be balloons that would pop up to explain what each component is, similarly to what is found in the LAMS part.
CS6	Comment	The risk names and structure are not intuitive.
CS6	Comment	The name “Dry days” seems to be related to humidity, which in Azores there is a lot, but in reality, it relates to low levels of precipitation. This should be more obvious.
CS6	Comment	The hazards define the risk hazard by hazard, but the risks are multi-hazard.
CS6	Comment	The impact chains do not show a label that identifies the sector to which they relate to.
CS6	Comment	It’s not obvious what defines exposure and vulnerability in each sector.
CS6	Comment	“Drought” hazard shows to be green in all scenarios and all periods. Is this so?

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CS	Type	Comment
CS6	Comment	What is considered high, medium and low?
CS6	Comment	Shift + Mouse Scroll does not work to zoom in the map.
CS6	Comment	In general, it is ok but with some issues.
CS6	Comment	The LAMS do not appear in order of rank or at least this is not obvious.
CS6	Comment	Maybe the rank of objectives and criteria could have numbers.
CS6	Comment	The LAMS that relate to specific sectors should be marked, maybe with icons.
CS6	Comment	In the real-world geothermal energy can also benefit from repowering (response was that this energy source was not included by the model across the different case studies).
CS6	Comment	Difficult to extract relevant information from the model (response was that this part was not concluded).
CS6	Comment	Solutions seem not to have an effect.
CS6	Comment	Solutions parametrization shows numbers that are out of scope in the region.
CS6	Comment	Link between the LAMS and the solutions is not evident. Are they the same (response was that the LAMS catalogue was adapted to solutions which could be tested by the model)?
CS6	Comment	More space in the main meteorological variable (the full name is not variable). However, we verified that the full name appeared if we put the mouse over the name.
CS6	Comment	It is difficult to understand the annual variation in the map (change colour?).
CS6	Comment	Wind does not appear in the map. Modify from m/s to km/h, that is more readable for the stakeholders.
CS6	Comment	In the variables name, should first appear the variable (for example, Precipitation), and then the parameter (for example, Maximum Daily).
CS6	Comment	One more separator to select the time in the SPI.
CS6	Comment	When we push the anomalies button, all the selections chosen previously disappeared (it returned to the beginning). There should be an information saying that there are less variables available in the anomalies.
CS6	Comment	It will be important to save the map that the user is seeing on the screen, with the possibility to specify a format (to use in different platforms).
CS6	Comment	Relative Humidity is not available (very important for fungi in the crops).
CS6	Comment	Is there the possibility to have a version of the platform in Portuguese?
CS6	Comment	Hazards: Should appear Extreme Precipitation in Azores.

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CS	Type	Comment
CS6	Comment	Drought risk is not correct, it is higher in some municipalities that are “strange”.
CS6	Comment	The methods and criteria to compute the Hazards should be presented/explained.
CS6	Comment	Dry days seem more correct, but there are some municipalities more difficult to understand.
CS6	Comment	Exposure (dry days): How is it computed? What are the main variables/criteria to evaluate?
CS6	Comment	Vulnerability (dry days): needs better explanation. It is “strange” that in Pico island it is higher. Terceira and Faial should be the opposite level.
CS6	Comment	If the project wants to get more information about damage to crops: local services have maps with historical data relying on damaged crops and why they were damaged (droughts, strong winds and excessive precipitation) – Direção Regional de Agricultura (Agriculture Regional Services).
CS6	Comment	Risk (dry days) seems better in the historical scenario. In the future seems “odd”, it needs more information with criteria and methods.
CS6	Comment	More information about crops: São Miguel island, more important crop: Corn, the yield is directly proportional to milk production; Pico island, more important crop: Wine; becoming more residual, Flores can be an example.
CS6	Comment	Tourism in Flores: high risk for drought is “really strange”. Graciosa should not be green (low).
CS6	Comment	Desalination can be a solution for near future in Santa Maria, Graciosa and Pico, due to saline intrusion in aquifers. Another person said that this solution should be the last option.
CS6	Comment	Increase of regenerative crops “does not make sense” in some crops, but it has for all.
CS6	Comment	We run the model choosing several LAMS with the objective to save water in the future. Water demand increases due to increase the population.
CS6	Comment	Precipitation: Manually choose period - Start to count precipitation since 2020, for example. Define when starts and when finishes the size of interval in expert’s perspective.
CS6	Comment	Precipitation: Add annual variation for tourism – The months that will be more humid for example, or by season. Choose by month in the time variation on graph or map (for tourism will be important).
CS6	Comment	Stakeholders ask for Sunshine hours and Solar radiation; both because they are different and very useful for tourism and also energy sectors.
CS6	Comment	Options do not show variables that are interesting for tourism (tropical nights, rainy days, humidity, precipitation).
CS6	Comment	Scale with trustworthy values or percentiles; add explanation for the high, medium and low scale.
CS6	Comment	Exposure: add pop-up window with explanation.
CS6	Comment	Thermal comfort risk is not present: very useful for tourism, fundamental for Azores (especially the combined effects of high humidity with temperature).
CS6	Comment	Risk result for Nordeste (municipality) in São Miguel (Island) is green. Why?

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CS	Type	Comment
CS6	Comment	Option to save the variables used before, because we always had to set up the variables again.
CS6	Comment	Difficulties on the interpretation of map in south part of São Miguel island.
CS6	Comment	Sporadic tourist visitors are not considered and probably the risk maps for tourism do not account for this variable; underlying criteria account only for establishments, but do not have any more factors.
CS6	Comment	IUV index should be interesting that others for tourists and online workers [typos in the original comment have been preserved, as interpretation was not possible].
CS6	Comment	Have a framing in the map of the case study with a legend for high, medium and low values
CS6	Comment	Text is dense, should be clearer and more incisive (to not create confusion with different sections of the interface).
CS6	Comment	Divide criteria and objectives by area (local and regional) to make the selection easier.
CS6	Comment	Assumptions of LAMS ranking after criteria and objective selection are not clear.
CS6	Comment	Water domestic – scale measure is very difficult to understand – m3 per person is more commonly used.
CS6	Comment	Information button inside the solutions of the model does not work.
CS6	Comment	We did not have time for the model results (graphs), ended in the calculations part.
CS6	Comment	Consider to use "View time series" instead of "View temporal series".
CS6	Comment	A selection of seasons could be nice: Summer (JJA), Fall (SON), Winter (DJF) and Spring (MAM).
CS6	Comment	"Hazards" selection could also have "Rainy", "Windly" and "Cloudy" weather.
CS6	Comment	Possibility of choosing a year season (summer, winter, spring and fall) and the time periods (Year1-Year2).
CS6	Comment	The usability was variable according to the section of the platform. Without extending the form too much try to get different inputs for different sections of the platform. This is what you do for visual appeal. Maybe try to use a matrix to reply about usability, performance and visual appeal. Stay focused on asking things that can improve the platform. When playing with the Azores local analysis I occasionally get "Error al recuperar datos" (transl. Error in retrieving the data).
CS6	Comment	[Have you experienced any issues with the stability of the platform (e.g., crashes, bugs)?] Yes. Some ECVs maps are not displayed.
CS6	Comment	[Have you experienced any issues with the stability of the platform (e.g., crashes, bugs)?] Yes. Some maps of ECVs are not shown or not working in some browsers (e.g. Firefox).
CS6	Note	They liked the climate visualization a lot and they also liked the LAMS selection. They also liked the risks visualization albeit they don't understand some features and the meaning of the low, medium and high scale in the risk components (exposure, hazard and vulnerability).

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CS	Type	Comment
CS6	Comment	I like that the data is available, and that there is a help section to give a similar case study if my area is not listed. I think the "Do you need any help to select a Case Study?" section needs to be much more prominent to show the usefulness of the tool beyond the selected case studies. I could imagine a word cloud or something for each of these questions. For example, oh, agriculture is really important? These case studies share that, and then as you select or deselect, the relevant case studies appear or disappear. If one hovers over the case studies on the local-analysis page, the criteria that they correspond to on the help page may be useful.
CS6	Comment	[I like the most] Anomalies, baseline comparison.
CS6	Comment	[I like the most] Visualization of maps and time series. Comparison tools.
CS6	Comment	The risks were not easy to understand. For instance, Dry days does not have an obvious link with precipitation but rather with humidity, which in the Azores is very high most of the time. The links are not obvious between the LAMS in the catalogue and the LAMS in then model. The model outputs are somewhat overwhelming to manage. It's not understood what features/LAMS of the model are functioning or not.
CS6	Comment	It's annoying to have to refer back to the guide each time. This to me indicates poor user-design as a whole. There are many acronyms listed without a clear explanation of what they are. This makes it feel like one needs to be an expert in ALL the areas to understand anything - not even academic experts will be able to do that. The scenarios are not explained as far as I can tell. I am not a climate change expert and I don't know how the data was derived, but from my intended use case, how is it explained how the data gets derived? What if people are not convinced about the scenarios? Can they play with how this works? I understand the platform itself may not be the place for this, but perhaps pop-up boxes that link to other places to find more information could help, or hyperlinked references available on the platform itself. The variables and scenario boxes cut the text off, one needs to guess what is being selected. When one selects a local case study, I don't know what I was expecting but a block of text with a static image wasn't it - this is useful but not as the main landing page. I feel like if I was using this for a case study not listed, I would like to know how my area is and isn't similar to the selected case study. Perhaps if the items on the help page were listed here with explanations, that would make comparison easier. So a common legend or framework that gets used consistently everywhere.
CS6	Comment	[Difficult functionalities] Impact scale (High, Medium, Low) needs more explanation.
CS6	Comment	[Difficult functionalities] Impact scale (High, Medium, Low) needs more explanation of how are got.
CS6	Comment	[Non-necessary functionalities] To have the catalogue LAMS selection inside the project, this could be outside with the case study. As it is, this gives the idea that they are connected automatically when they are not. Maybe if there a correspondence between the simulated LAMS and the LAMS selected from the catalogue is made then maybe an automated connection could be made or indicated. If that is the case, then the LAMS selection could remain inside the projects.
CS6	Note	The climate part was considered unique and good to have; the overall design and functions good; the LAMS from the catalogue should indicate to which sectors do they apply to, using a symbol or an information balloon; there could be a link to the publication of the LAMS; the concepts of the anomalies, the risk quantification and the risk components should have some explanations available and easy to reach. It was

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CS	Type	Comment
		suggested to have a toggle button which would make all explanations visible or to have information balloons that appear when clicking and "i" (information) button.
CS6	Comment	I considered this platform from a civic engagement perspective, and from a perspective not connected to a specific case study, so, from an "outsider" point of view, and I understand that this may not be your target audience, so please understand the context of the critique. I think there is a large amount of very useful data and findings in here but the platform does not do a good job at making it accessible to the general public. This project has a lot of potential for citizen engagement and I would like to explore the potential to extend this data into a game context. If you are interested, please contact me. The objective would be to extend the professional, academic tools to reach the general population, allowing a playful approach to explore the physical world, learn more about the models that allow climate predictions. In short, use the data for broader purposes.

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