(Grant Agreement 101093921)

Deliverable D3.4 - A digital citizens space for promoting open source climate data for adaptation

WP3 – Living Digital Environment for Knowledge Co-Production

June 2024

HORIZON-MISS-2021-CLIMA-02-05 - Local engagement of citizens in the co-creation of societal transformational change for climate resilience

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Document History

Deliverable Title	A digital citizens space for promoting open source climate data for adaptation
Brief Description	A description of the Digital Academy to access and use climate data and monitor Climate Risks website developed in Task 3.4
WP number	3
Lead Beneficiary	CMCC
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Dissemination Level	PU - Public

Date	Ver.	Contributers	Comment
31/05/2024	1	CMCC, CIMA, SEI-Tallin	Summary of website including screenshots & co-participating processes
01/06/2024	2	CMCC	Internal review
14/06/2024	3	SEI-OX and SEI-HQ	Review
26/06/2024	4	CMCC	Updated version
30/06/2024	5	CMCC	Final submission

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1. Executive Summary

The objective of this Deliverable is to provide an overview of the Digital Academy to access and use climate data, risk and adaptation tools (hereafter, the "DA"), the co-design and co-development activities related to the DA website, the main characteristics, potential synergies with other AGORA Tasks activities and links to other AGORA platforms, and finally next steps.

Phase I of the initial DA website is available at http://agoradigitalacademy.dataclime.com/ . Phase II will be delivered an improved version of the initial DA website after testing, based on consortium and user feedback, judgments by experts and populated by all modules. The DA website will be improved throughout the lifetime of the project and will have legacy beyond the lifetime of the AGORA project, as it is hosted by Dataclime platform, managed by CMCC Foundation.

2. Introduction

The DA is an individually customized website developed in Task 3.4 of the AGORA project. The main objectives of the DA, as defined in the Grant Agreement, are to:

- identify, provide access to, and share guidance on how to use various open-source climate and risk data
- provide easy access to information
- empower citizens, stakeholders, and policy makers
- enhance the visualisation of climate information

To target the goals, the DA is structured based on three main products (or pillars) including inventories, modules and a citizen science section. The DA website is hosted by the Dataclime portal to guarantee the maintenance of the products beyond the lifetime of the project, ensuring knowledge legacy. This Deliverable will provide an outline of the DA, its conception, review, evaluation and eventual design, layout and functionality.

3. Co-creation, co-development, evaluation and iteration

The DA has gone through several stages of co-design, co-development, evaluation and iteration. This began at workshops (see Figures 1, 2 and 3) as the European Climate Change Adaptation (ECCA) conference (June, 2023), the SISC conference (November 2023), the General Assembly of the AGORA project (January, 2024) and the surveys conducted during the lectures at the Rome UniTre University (April and May, 2024).

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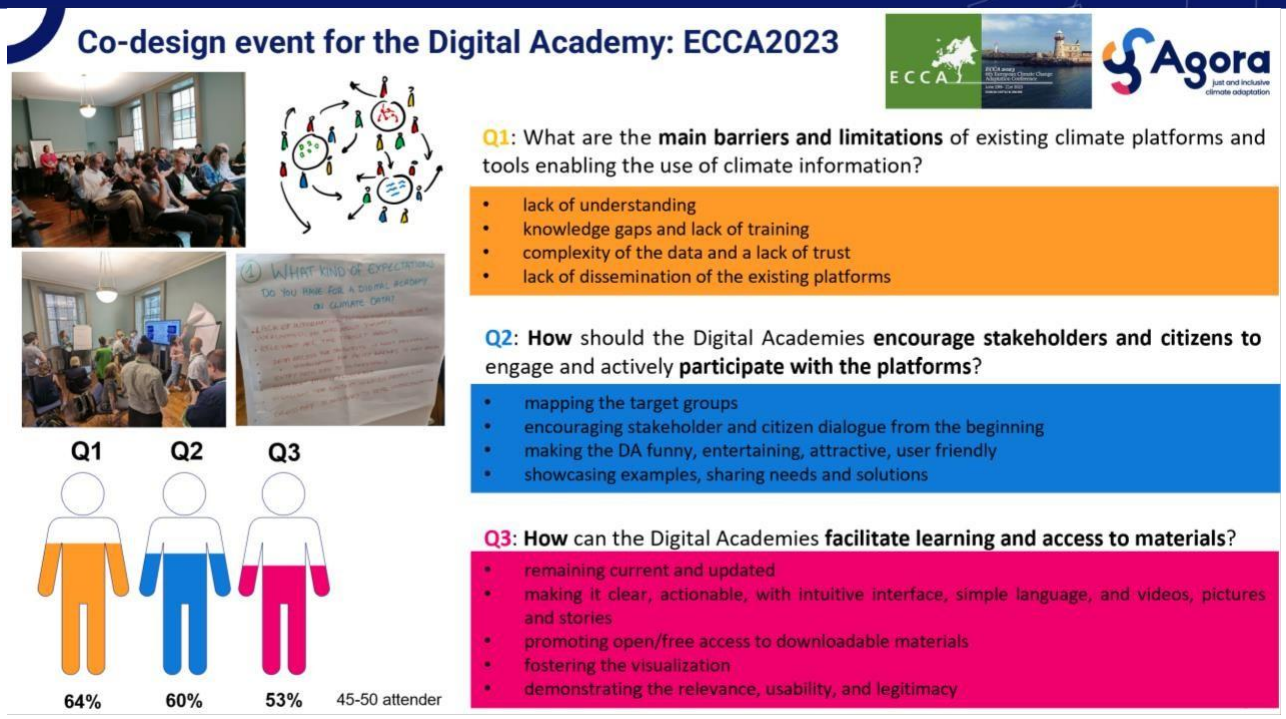

Figure 1: Co-design activities and synthesis of the results at ECCA conference (May 2023).

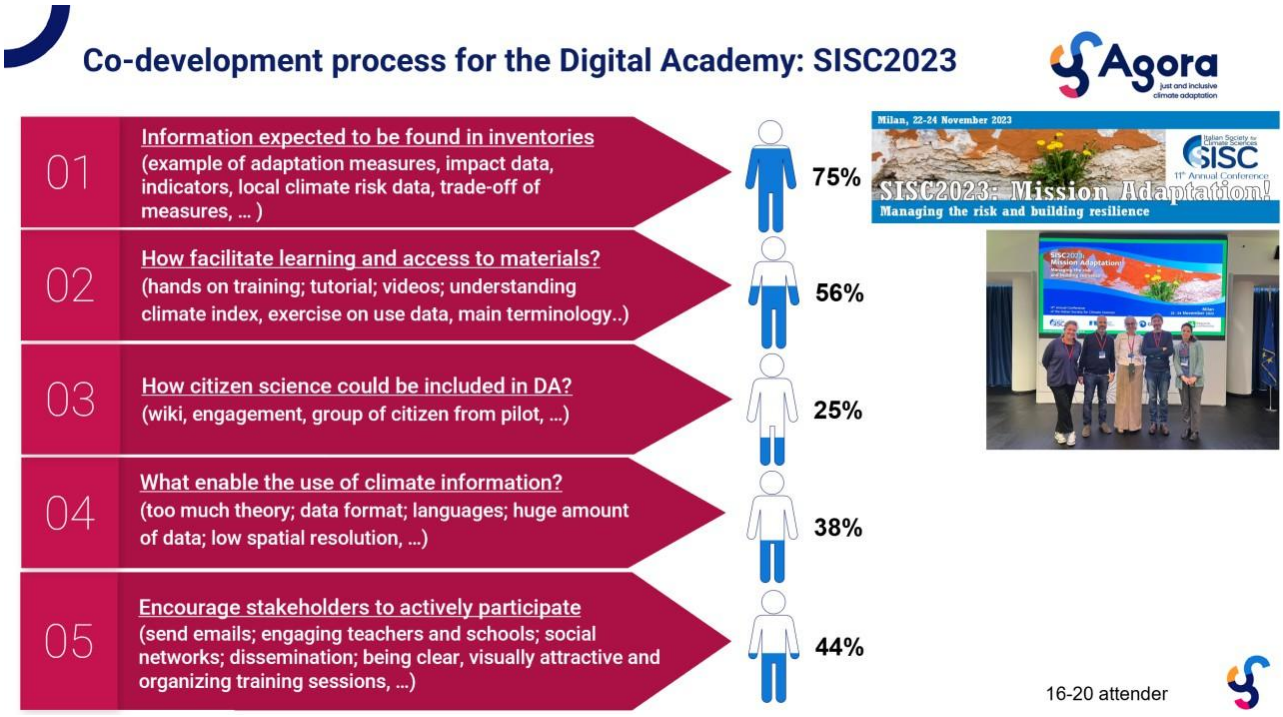

Figure 2: Co-development activities and synthesis of the results at SISC conference (November 2023).

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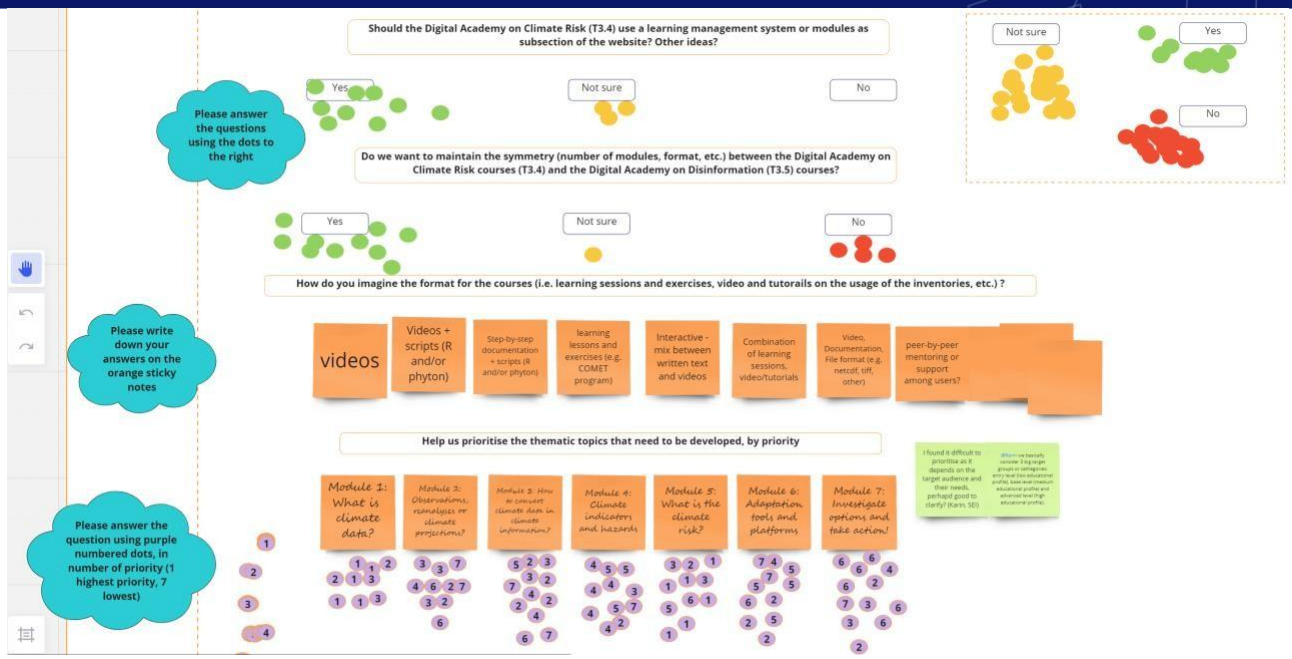

Figure 3: Co-development activities by using a Miro board at the General Assembly of the AGORA project (January 2024).

A session at the ECCA Conference dedicated to the AGORA project was jointly organized by SEI-Oxford, SEI-Headquarter and CMCC (see Figure 1). Participants of the co-design session helped AGORA partners identify several existing gaps, expectations, and priority modules for the DA. Suggestions were made for both thematic areas, products and functionality. For example, the most impactful suggested points, currently included in the DA, are:

1) associate the modules with skill levels (base, intermediate, or advanced) to make them accessible to different target groups based on their own starting knowledge level
2) suggest what relevant information on climate datasets are to be included in the inventory
3) use the "wiki" approach for the developments of modules
4) use form to account for citizens' feedback and suggestions

Based on this feedback, an initial design of DA was created and shared with the AGORA Consortium, specifically, in the context of WP3 activities, also to build synergies among the other tools developed in AGORA such as the Digital Agora, now known as the Agora Community Hub, and the Digital Academy against Climate Change disinformation.

Further feedback and iterations on the draft version of DA (wireframe) were gathered during the public event of the SISC conference, held in November 2023, and summarised in Figure 2. The feedback gathered during the co-design event was integrated into the wireframe, and again discussed in several WP3 meetings with an iterative approach.

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Once the wireframe of the DA received positive feedback, a beta version of the website was launched, with the support of a website developer. Another iterative co-development event was held in Zaragoza during the 2024 AGORA General Assembly. The set-up of an interactive board (Figure 3) helped to gather feedback from the AGORA Consortium.

Moreover, surveys conducted during the lectures at the Rome UniTre University (see Figure 4) in April and May 2024, helped to showcase the DA website and gather feedback from students.

Figure 4: Co-development activities at the Rome UniTre University (April 2024).

Lastly, during June 2024, AGORA's PM delivered a sustainability workshop to top managers from the Spanish firm Acciona. The cohort of 25 individuals represented decision-makers that work in the firm in various jurisdictions, form Australia to USA, with the majority working in Europe. This allowed to have an additional view as to how this type of platform could be useful to a different set of potential users, and whether it could also contribute to provide valuable information and how it can be used for decision-making in the private sector. Many of these managers require having access to specific datapoints and/or to expand their knowledge on climate-change related concepts as they are becoming more and more relevant in their personal and professional spheres.

In particular, they mentioned incorporating more clear definitions of how the data had been treated and what the excel files that were downloaded would represent in different frameworks. In addition, they suggested improving the web-responsiveness as well as considering how the functionalities would work under different type of browsers. Lastly, the majority highly valued the organization of the modules and how there were three levels according to previous knowledge the

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user had on this subject, and recommended adding more details on the overall project, and information on the different scenarios of climate-related risks that could impact every area.

4. The DA products

The DA is designed to make scientific and high-quality information available to citizens, policymakers and stakeholders, thus helping them better understand complex data sets and how to use data. In doing so, climate data, risk tools and adaptation information can be used as a knowledge basis for climate data supported decision making processes, as well as ongoing climate-risk monitoring and adaptation processes. The DA can contribute to increase community awareness on climate, climate risk and adaptation-related issues. By leveraging developed inventories, the DA provides easy access to information and initiatives fostering climate adaptation and resilience at local and pan-European levels, which also serve as examples of how open-source climate data, risk and adaptation tools can be applied in practice, and to data from citizen science activities. The DA does not only provide access to data, but also supports users with learning modules on how to read, interpret and effectively use the information. Ultimately, the DA has potential to empower stakeholders and

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Figure 5: Home page of DA and list of the products available in the DA (as it is in June 2024).

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foster adaptation actions. As a living tool, it allows citizens to identify existing initiatives and good practices at local and European levels, to guide and inspire other communities on how to tackle climate-related risks.

The DA website is structured as in Figure 5 with a general **Home page** that serves as a place from which the contents of the DA are described. After a brief description of the DA and its objectives, the list of the DA products/pillars is reported, as in Figure 5, to access inventories, modules and citizen science section. In the upper right side of the DA website there are: (i) the **About AGORA** to link other AGORA platforms as the official AGORA project website, the Agora Community Hub and the Digital Academy against climate change disinformation, and (ii) the **Products** to allow a quick navigation among the key products of the DA (as inventories, modules and citizen science section).

4.1 Inventories

The inventories aim to identify, provide easy access to information, and share web-based climate-related tools, atlases, portals or platforms that have been increasingly published over the years. They can convey climate data, derived climate information on climate risk and adaptation, and sector- or user-specified climate services to a large range of users.

Based on the inventory conducted in the ClimVis project, a revised and expanded version of the inventory on climate data, and new inventories on climate risk and climate adaptation were developed in the context of DA in the AGORA project, involving several criteria (as data sources, format, technical validation, target area, languages, time period, spatial resolution, visualization options) to ensure that the data collected is comprehensive, accurate, and useful for users. Identifying the data sources is the initial step to collect data (as from meteorological stations, satellite observations, reanalysis products, and climate models) and to use existing databases and archives (as from the World Meteorological Organization and Copernicus). Then, determining the geographical region, time frame, and specific climate variables (e.g., temperature, precipitation, wind speed, etc.) and risks to be included represents the second step. The data quality control allows a technical validation to ensure accuracy, the identification of gaps or anomalies, to ensure that the data is in a consistent format. The inventories also highlight the possibility to download raw data, to customize maps and to create graphs supporting the data visually.

The inventories can be filtered, to select among climate data, risk and adaptation, currently integrated into the DA (Figure 6). To facilitate the data access, browsing capabilities (as illustrated in Figure 7) allows to download an excel file reporting the sources, collection method, characteristics, and metadata links.

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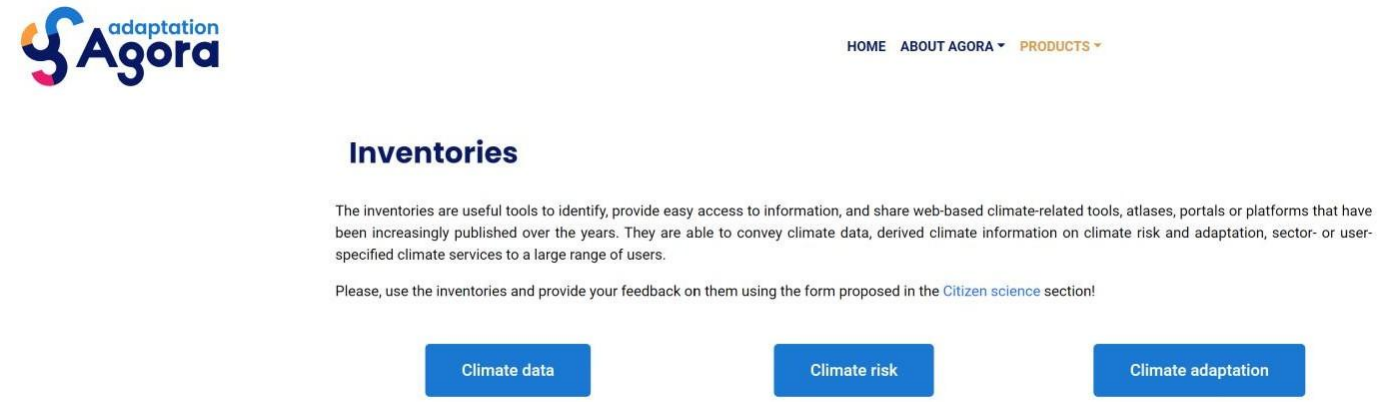

Figure 6: Inventories section (as in June 2024).

The inventories will be reviewed, improved and updated during Phase II of the DA development and throughout the lifetime of the project and will have legacy beyond the lifetime of the AGORA project. To enhance the usability and relevance of the inventories, users can provide feedback through the **Citizen science** section.

The comprehensive and reliable inventories have the ambition to support citizens and decision-makers and enhance access and usage of climate data, risk and adaptation tools.

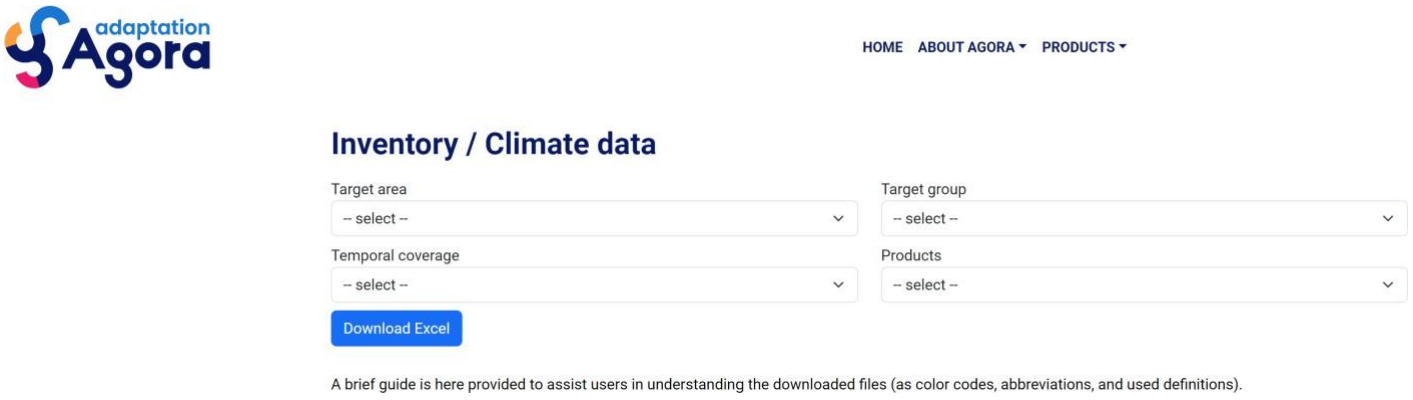

Figure 7: Exploring the Inventory on climate data (as in June 2024).

4.2 Modules

The modules aim to provide a theoretical background to climate data, and climate risks and adaptation sources, guiding on the appropriate use of the climate information provided in the inventories. The modules share scientific knowledge providing overview about specific topics as climate change, climate models, visualization tools, risk assessment, adaptation governance, and

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opportunities to empower citizens, stakeholders, and policy makers. An open-source learning management system (i.e. LearnPress as plugin in WordPress) is used to develop courses based on eight different modules.

The access to the module roadmap and quizzes requires a login registration.

Within AGORA, a common Glossary is being developed so that all key terms related to climate change adaptation are used to refer to the same concepts, and these are applied in all activities ranging from face-to-face events within the Pilot regions to all the digital tools. Therefore, in all the learning journeys included in the Digital Academies, as well as within the Digital AGORA the concepts are always used respecting the definitions provided in the AGORA Glossary. While this final document will be presented at the end of the project, the main concepts used throughout the Modules that have been agreed upon and are a core part of the Glossary have been included in this document within Annex I to provide an overarching framework for reference.

The contents of the modules are developed in synergy with institutions involved in Task 5.1 activities, with specific agreed assignments. As of June 2024 (Month 18 of the AGORA project), Module 1 “What is climate?” is available on DA (Figure 8) and it was developed by CMCC.

The modules include the title, a brief and extended overviews, a list of encountered topics and objectives of the course. By means of the **curriculum section** it is possible to access the roadmap, a hypertextual narrative page (a sort of “wiki” page) with links to short existing videos (available products in Copernicus Data Store, and other EU projects), to easily support the learner. In the curriculum section, quizzes referring the module are available.

Into the **instructors session**, the instructors in charge of the module are presented with a short description.

In the **material section**, the links to videos or tutorials or practical exercises on the specific topics, showing “how to do” specific tasks, is reported as well as the list of sources and referred papers suggested for more interested users.

The list of modules and related topics is illustrated in Figure 9. The modules from 2 to 8 will be developed in the months 19-24, as agreed with the WP3 team and institutions in charge of the modules development.

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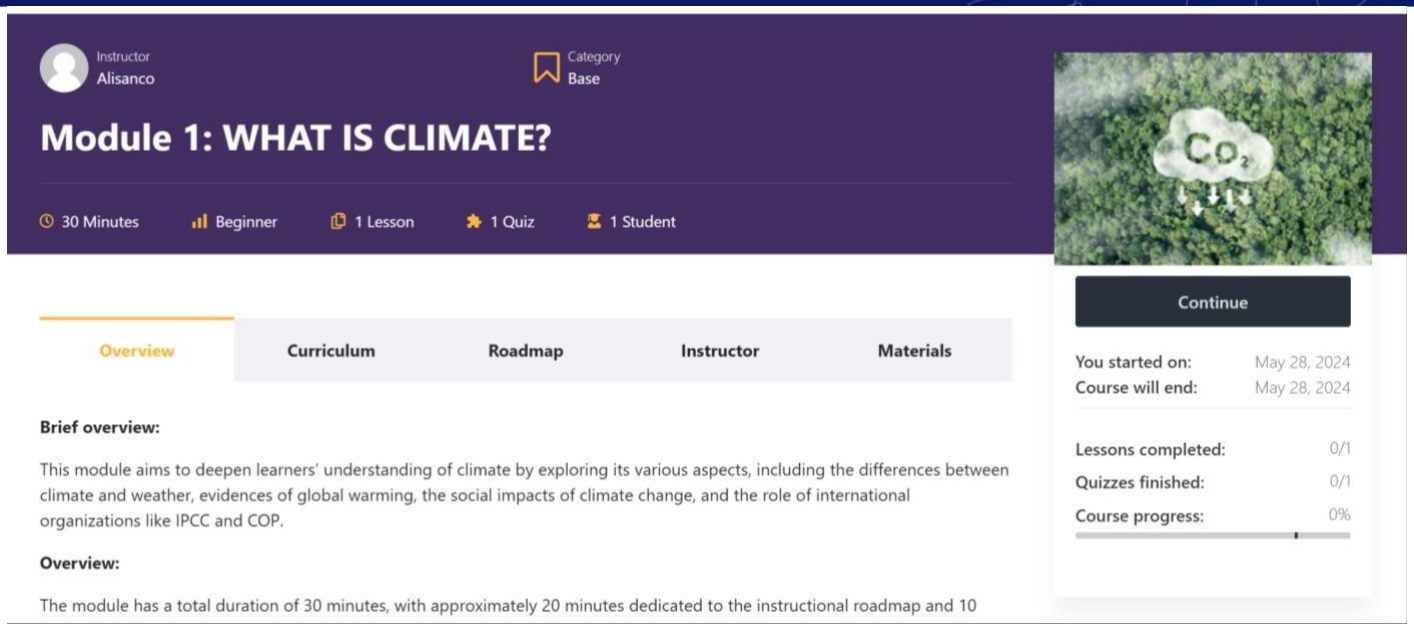

Figure 8: Description of Module 1 of the Digital Academy.

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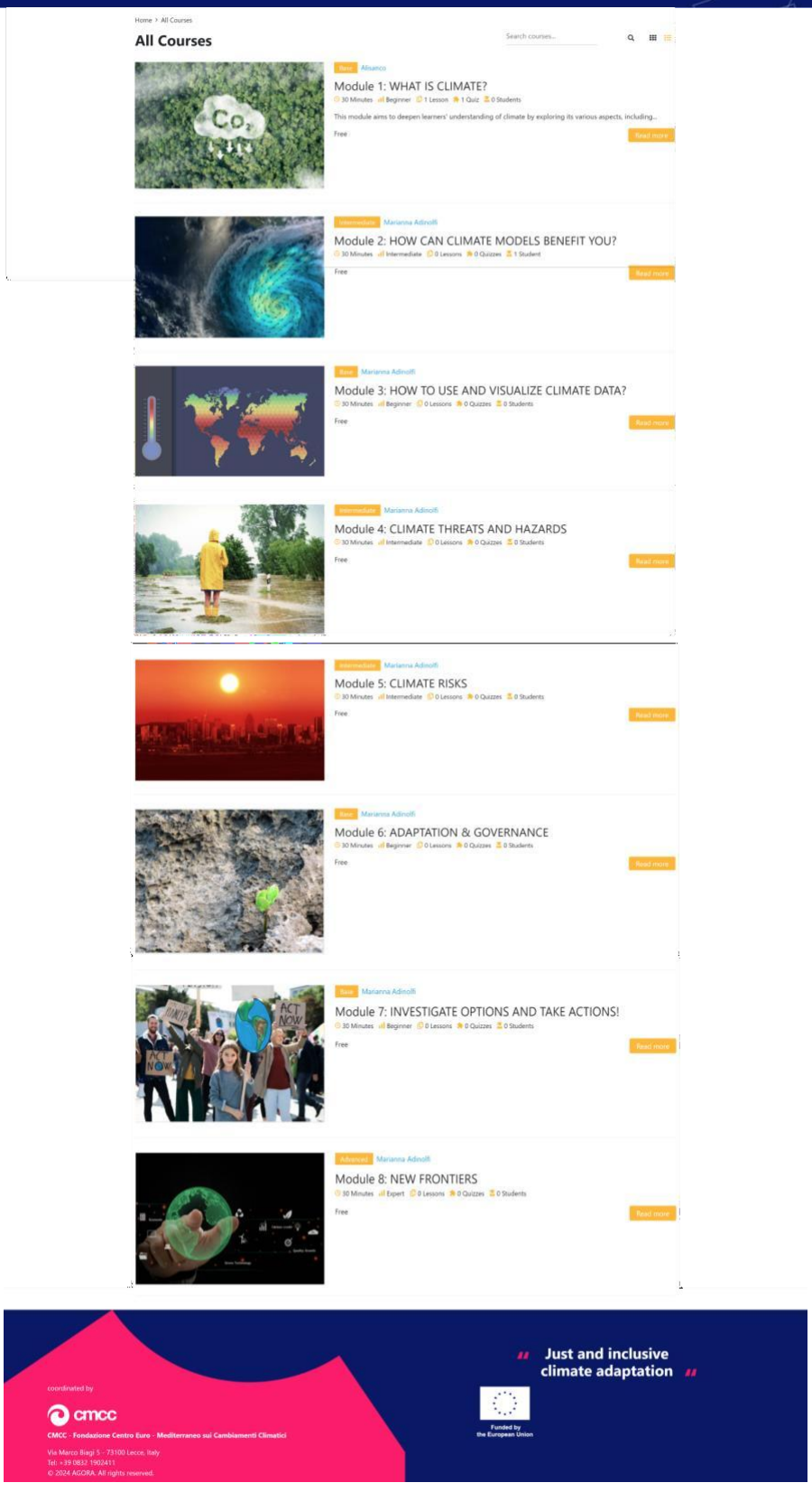

Figure 9: Overview of the modules (as in June 2024)

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4.3 Citizen science

The citizen science section is designed to engage the users in scientific research and data collection of the AGORA project. This section intends to be user-friendly, informative, and motivating, offering a clear form to be filled to assess the impact of DA (Figure 10). The form includes name, email, age, location, scientific interests or areas of research, useful tools or platforms that could be included or considered to be part of inventories, URL and links to the suggested elements, user feedback on the DA and motivation behind the participation to the citizen science section.

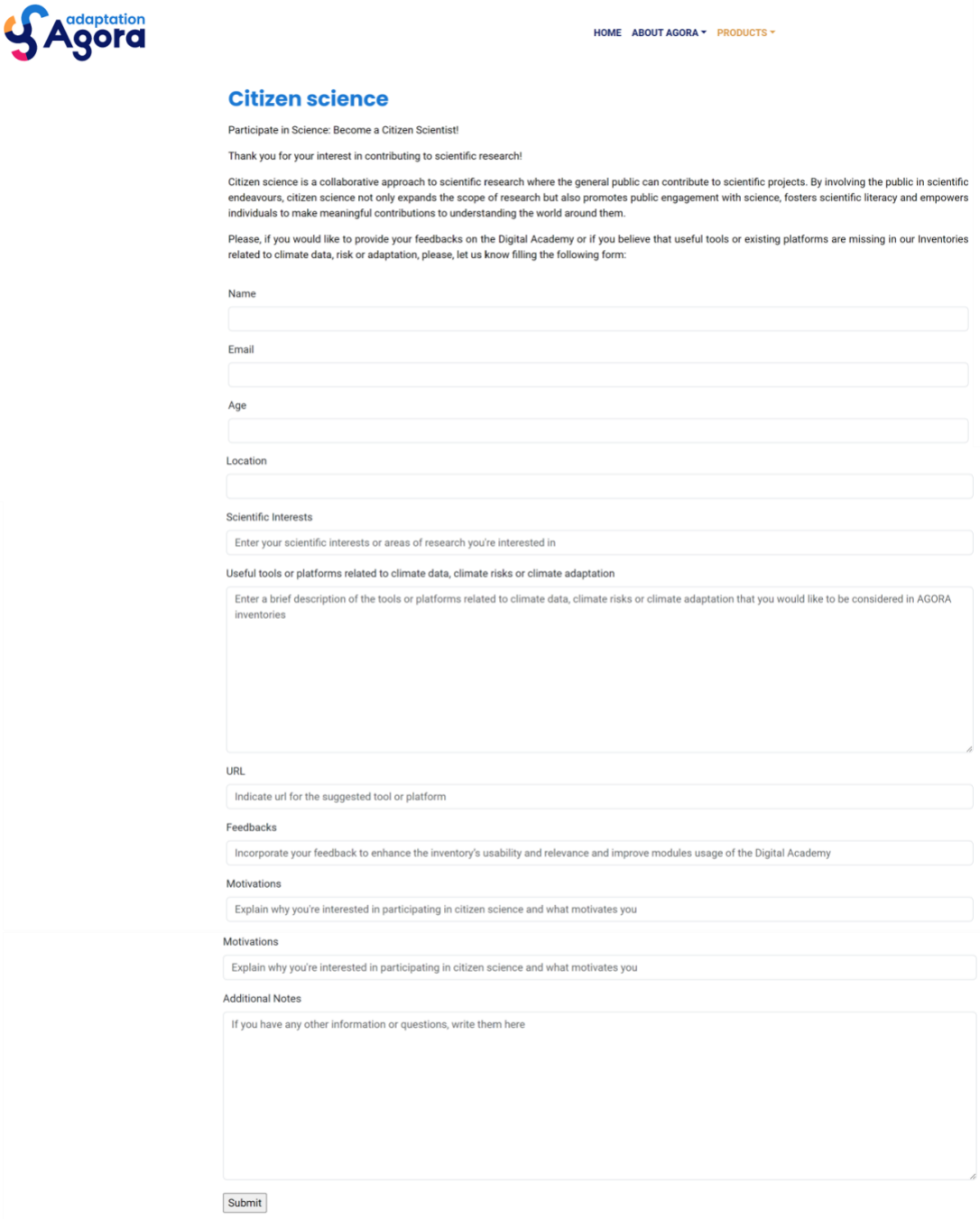

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Figure 10: Overview of the citizen science section (as in June 2024)

5. Synergies in the development of the DA and next steps

The DA has collected and are going to collect many resources throughout the AGORA project not only in the context of the Task 3.4 but also building synergies with other tasks. Specifically, the development of the DA is fostered by the collaboration with Task 5.1 “Co-produce capacity building resources” partners. Furthermore, the quizzes prepared for the modules of the DA will also populate the AGORA gamified app that will be developed in Task 2.2 “Empower and involve citizens to tackle disinformation”.

The Phase II of the DA development will span the remaining months of the AGORA project. It will include the development of the remaining modules (module from 2 to 8) listed below:

N°	Modules
1	What is climate?
2	How can climate models benefit you?
3	How to use and visualize climate data?
4	Climate threats and hazards
5	Climate risks
6	Adaptation & governance
7	Investigate options and take actions!
8	New frontiers

Moreover, feedback from general users associated to experts' field will be gathered during Phase II and implemented on the website. Then, additional co-development events are scheduled for the next months, as the EMS 2024 Conference in Barcelona (Spain) and SISC 2024 in Lecce (Italy).

Annex I

The following table presents key terms from the AGORA Glossary that have been defined and agreed upon to date. While the final version of the AGORA Glossary will be presented at the end of the project, the main concepts used throughout the Modules and the DA development that have been agreed upon and are a core part of the Glossary have been included in this Annex I to provide an overarching framework for reference.

Table 1. Key AGORA glossary terms used throughout this deliverable.

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Term	Definition	Source
Climate services	Relevant, credible, and accessible to users, acknowledges uncertainty, is communicated through a user-specific format, and is timely for user needs. It is developed by users and producers through tailored interaction, while building trust, and increasing users' capacity for using the service and understanding the issue at hand. The service delivers benefits to the user and supports better decision-making for adaptation	Boon et al., 2024, p.5
Citizen Science	Partnerships between scientists and non-scientists in which authentic data are collected, shared, and analyzed	Jordan, RC, Ballard, HL, Phillips, TB. 2012. Key issues and new approaches for evaluating citizen-science learning outcomes. Frontiers in Ecology and the Environment 10: 307-309. DOI: http://dx.doi.org/10.1890/110280.
Co-benefit	A positive effect that a policy or measure aimed at one objective has on another objective, thereby increasing the total benefit to society or the environment. Co-benefits are also referred to as ancillary benefits.	IPCC Glossary Search
Co-Creation	Collaboratively creating outputs like tools or policy recommendations. A process that can add value and increase innovative potential through intentional experience design	https://www.navarinoneo.se/knowledge-co-creation https://link.springer.com/chapter/10.1007/978-981-10-8500-0_2
Co-defined	To articulate the implicit and explicit meaning of a particular term together with one or more people, in this case climate change adaptation strategies, policies or actions.	AGORA project definition
Co-design	To create ways in which challenges can be addressed together with one or more people, implementing different methodologies and/or approaches such as lateral thinking to propose innovative solutions to current pressing climate change related issues. It may also include devising effective and sustainable problem-solving techniques and strategies	CO-DESIGN | English meaning - Cambridge Dictionary

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	directly applicable to the challenges that need to be addressed.	
Co-develop	To determine the best manner to satisfy the requirements for an expected output together with one or more people or organizations. This includes evaluating baseline requirements and consider all potential alternatives to solve a particular climate risk or impact challenge.	CO-DEVELOP | English meaning - Cambridge Dictionary
Co-explore	Explore the perspectives of key actors within co-production processes to assess the challenges and opportunities faced, and describe this idea to capture the process through which boundaries might be actively subverted through sustained engagement between the origins of multiple, diverse perspectives.	Howarth, C., Lane, M., Morse-Jones, S., Brooks, K., & Viner, D. (2022). The 'co'in co-production of climate action: challenging boundaries within and between science, policy and practice. Global Environmental Change, 72, 102445.
Co-evaluation	To validate potential solutions or partial solutions to a particular challenge or issue jointly with one or more people. This implies considering available information, processes and how adequate the solution is in meeting the needs and expectations of stakeholders.	Couldn't find any definitions online
Co-management	Co-regulation and co-management give the right to participants to be directly included in designing, revising or reviewing regulations and risk management measures, rule-making processes or programmes for monitoring risks.	IRGC (2020). Involving stakholders in the risk governance process. Lausanne: EPFL International Risk Governance Center. DOI: 10.5075/epfl-irgc-282243
Co-production	"Iterative and collaborative processes involving diverse types of expertise, knowledge and actors to produce context-specific knowledge and pathways towards a sustainable future" (Norström, et al., 2020:183).	(Norström, et al., 2020:183)

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