



CLIMAS

CLIMAtE change citizens engagement
toolbox for dealing with Societal resilience

Deliverable No. 3.7 – Report on the Climate Assembly Portal
launching. Initial version

Issue date: August 2024

Work package leader: TVS

Author: Suchi Nandi Puja (TVS)

Contributor: Atiqul Hoque (TVS), Dr. Mohammad Azizur Rahman (TVS)

Information Table

Project Acronym	CLIMAS
Grant Number	101094021
Deliverable Number	D3.7
Deliverable Title	Report on the Climate Assembly Portal launching. Initial version.
Responsible Partner	TVS
Contractual Date of Delivery	31/08/2024
Actual Date of Delivery	30/08/2024
Type	DEM - Demonstrator, pilot, prototype
Dissemination Level	PU - Public

Disclosure Statement










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Consortium

Coordinator			
1	 <p>VILNIUS TECH Vilniaus Gedimino technikos universitetas</p>	VILNIAUS GEDIMINO TECHNIKOS UNIVERSITETAS	Contact: Aelita Skaržauskienė aelita.skarzauskiene@vilniustech.lt Kristina Kovaitė kristina.kovaite@vilniustech.lt Monika Mačiulienė monika.maciuliene@vilniustech.lt
Partners			
2	 <p>changing MObility</p>	CAMBIAMO SOCIEDAD COOPERATIVA MADRILENA	Contact: Floridea Di Ciommo floridea.diciommo@cambiamo.net , Maria Alonso Raposo maria.alonso@cambiamo.net
3		VRIJE UNIVERSITEIT BRUSSEL	Contact: Havva Ebrahimi Pour Havva.Ebrahimi.Pour@vub.be Carina Veeckman Carina.Veeckman@vub.be Ilse Mariën Ilse.Marien@vub.be
4	 <p>INSTITUT FÜR HÖHERE STUDIEN INSTITUTE FOR ADVANCED STUDIES Vienna</p>	INSTITUT FÜR HÖHERE STUDIEN - INSTITUTE FOR ADVANCED STUDIES	Contact: Erich Griessler erich.griessler@ihs.ac.at Elisabeth Frankus frankus@ihs.ac.at
5	 <p>ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΙΓΑΙΟΥ UNIVERSITY OF THE AEGEAN</p>	PANEPISTIMIO AIGAIΟΥ	Contact: Amalia Polydoropoulou polydor@aegean.gr Anna Maria Kotrikla akotr@aegean.gr Kyriaki Maria Faneli kmfaneli@noa.gr
6	 <p>European Integrated Projects</p>	EUROPEAN INTEGRATED PROJECTS	Contact: Lucia Cristea lucia.cristea@eiproject.eu Marga Marin marga.marin@eiproject.eu Liliana Denisa Andrei Liliana.andrei@eiproject.eu Iolanda Moldoveanu iolanda.moldoveanu@eiproject.eu
7	 <p>ID Vilnius</p>	UZDAROJI AKCINE BENDROVE ID Vilnius	Contact: Rūta Balkė Ruta.Balke@idvilnius.lt Agata Mackevičiūtė agata.mackeviciute@idvilnius.lt

8		DEEP BLUE Srl	Contact: Rebecca Hueting rebecca.hueting@dblue.it Sonia Matera sonia.matera@dblue.it
9		ASOCIACION PARA EL DESARROLLO DE LA DEMOCRACIA DELIBERATIVA Y PARTICIPATIVA	Contact: Yago Bermejo yago@deliberativa.org Carmen Nieto carmen@deliberativa.org Arantxa Mendiharat arantxa@deliberativa.org Victoria Solé victoria@deliberativa.org
10	 Zaļā brīvība	ZALA BRIVIBA BIEDRIBA	Contact: Ingrida Strazdina Ingrida@zalabriviba.lv Ariana Apine ariana@zalabriviba.lv
11		FUNDACIO EURECAT	Contact: Julià Vicens Bennasar julian.vicens@eurecat.org
12		DEPARTAMENT DE LA PRESIDÈNCIA - GENERALITAT DE CATALUNYA	Contact: Pablo García Arcos pablo.garcia@gencat.cat Núria Pérez Milán nuriaperez@gencat.cat
13		IFOK GMBH	Contact: Julia Hoffmann Julia.hoffmann@ifok.de Constantin Schäfer constantin.schaefer@ifok.de
Associated Partners			
14		Pilieciu mokslo asociacija	Contact: Eglė Butkevičienė info@pilieciumokslas.lt
15		Laimikis.LT, Vsl	Contact: Jekaterina Lavrinec jekaterina.lavrinec@gmail.com
16		RIGA MUNICIPAL AGENCY "RIGA ENERGY AGENCY"	Contact: Janis Ikaunieks ikaunieks.janis@riga.lv

17		TECHNOVATIVE SOLUTIONS LTD	<p>Contact: Mohammad Azizur Rahman aziz@technovativesolutions.co.uk Tamanna Khan tamanna@technovativesolutions.co.uk Shams Shifat shamsshifat@technovativesolutions.co.uk</p>
18		JRC -JOINT RESEARCH CENTRE- EUROPEAN COMMISSION	<p>Contact: Ângela Guimarães Pereira angela.pereira@ec.europa.eu</p>
19		Gemeinde Edermünde	<p>Contact: Thomas Petrich bgm.petrich@gemeinde.edermuende.de</p>

Version Control Sheet

Version	Date	Main modifications	Organisation
v0.1	01/08/2024	Initial draft	TVS
v0.2	10/08/2024	Internal review	VUB, EURECAT, VILNIUS TECH
v0.3	20/08/2024	Response to the internal reviewers' comment	TVS
v1.0	28/08/2024	Final report to submit	VILNIUS TECH

Quality Reviewers

Name	Organisation
Carina Veeckman	VUB
David Laniado	EURECAT
Monika Mačiulienė	VILNIUS TECH



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List of Acronyms

Acronym	Definition
AHP	Analytical Hierarchy Procedure
AI	Artificial Intelligence
API	Application Programming Interface
CAP	Climate Assembly Portal
CA	Climate Assembly
CMS	Content Management System
CRM	Customer Relationship Management
ERP	Enterprise Resource Planning
MCA	Multi-Criteria Analysis
MCDA	Multi-Criteria Decision Analysis
ML	Machine Learning
SOA	State of the Art



CLIMAS Project Overview

Climate change is one of the most critical issues to tackle today as it is foreseen to have detrimental social, environmental, and economic impacts in the near future. The last climate change events, such as floodings in Germany and Belgium in both Continental and Atlantic regions, heat waves, and lack of water in both Mediterranean and Boreal regions, show that the policymakers, experts, and stakeholders' actions are not enough, and a 360° citizens' engagement is urgently needed. Therefore, we need to learn from the good experience in citizens' engagement in climate change action and build up citizens' supporting infrastructure for climate adaptation measures to help the 150 European regions and local communities resist. Climate assemblies and Living labs are considered as sustainable and reasonable tools to stimulate deliberative democracy in climate policymaking.

The ambition of the CLIMAS project is to support a transformation to climate resilience by offering an innovative problem-oriented climate adoption Toolbox co-designed with stakeholders by applying a values-based approach, design thinking methods, and citizen science mechanisms. All that will be carried out with a gender and diversity approach. It is expected that the use of the Toolbox will anticipate possible tensions, points of controversy, and dilemmas vis-a-vis the adaptation to resilience. Therefore, the Toolbox aims at enabling empowerment and engagement strategies that produce a society "resilient by design". In addition, CLIMAS will include the empirical component for testing this Toolbox and formulating scientific-based guidelines for policymakers on how to shift Climate Assemblies from technically based deliberations that belong to climate change experts to multi-stakeholder deliberations based on solving the dilemmas from a bottom-up, more societal, and value-based perspective. CLIMAS outcomes will positively influence policy development and awareness-raising processes and offer sustainable strategies to enhance the acceptance of citizens' led decisions by policymakers.



Executive Summary

In response to the urgent need for inclusive and participatory approaches to address the climate crisis, the CLIMAS project has launched a Climate Assembly Portal (CAP). This platform aims to enhance citizen engagement in climate assemblies by providing a transparent and accessible space for information sharing, deliberation, and active participation. It also allows access to the innovative tools developed in the CLIMAS project. Therefore, the Climate Assembly organisers are facilitated by innovative tools for effective CA set-up, formation, operation, and follow-up. This online portal will engage people more deeply in expressing their opinions at every stage of policymaking. CAP was developed based on the foundation of a citizen engagement portal named Citizen Tone, created by TVS. A dedicated portal has been launched to exploit the results and reach the climate assembly and citizen assembly stakeholders (<https://citizen-assembly.com/>). During the first period of the reporting period of CLIMAS, the following features were developed: Survey and Poll module, Proposal module, multi-criteria analysis module (scenario prioritisation, T3.4), CA preparation, and operation monitoring and Evaluation Module (T5.1). It is integrated with external tools, such as DPSIR and PESTLE analysis. During the second reporting phase of the project, the following CLIMAS tools will be integrated: Scenario generation toolkit (as guidelines, T3.1), CA set-up and formation guidelines (as guidelines, T3.2), Citizen science toolkit for CA (T3.3), Follow-up and monitoring of climate assembly recommendation in dynamic climate change adaptation plan (T3.5), CA Agenda setting tool (T3.6). We will also explore the opportunity to integrate some external open-access tools required for effective CA execution.



1 Introduction

A Climate Assembly (CA) is a form of citizen's assembly explicitly addressing climate change issues. It brings together diverse citizens representing the broader population to deliberate on climate policies and strategies as detailed in CLIMAS deliverables D2.1, D2.3 and D3.2. The aim is to engage ordinary people in decision-making, ensuring that the resulting policies reflect various perspectives and are more likely to gain public support. Participants are selected through sortition to represent different demographics. They are provided detailed information from experts and stakeholders about climate issues, solutions, and impacts (*KNOCA – Knowledge Network on Climate Assemblies, 2024*). This participatory approach empowers citizens to contribute to climate policy and enhances the legitimacy and acceptance of the resulting policies (Climate Assembly UK - Climate Assembly UK, 2020). These assemblies provide a platform for informed and open-minded discussion, help bridge political divides, and enable policies that reflect the people's collective will (Voice, 2021).

CA typically includes several structured activities to inform and engage participants in the climate policy-making process. CLIMAS D3.2, "Methodological Guidelines and Manual for Setting Up and Facilitating Climate Assemblies—Initial Version," outlines the key steps in organising and conducting CAs, broadly categorised into five key phases (see Table 1 below). It is important to note that many interlinked processes are involved in a CA that need to work in parallel.

Table 1.1 Key Phases of the Climate Assembly.

Phase	Short Description
Activation phase	This initial phase involves evaluating the political and budgetary feasibility of the Climate Assembly and activating core players who will be instrumental in its execution. It ensures the necessary support and resources are in place, setting the foundation for the assembly.
Preparation phase	During this phase, the agenda is set, and the content for the assembly is provided. This includes defining the roles of observers, ensuring transparency, establishing communication strategies, and organising an inclusive democratic lottery to select participants. This phase ensures that all logistical and procedural elements are in place for a smooth operation.
Design of sessions and facilitation phase	This phase focuses on planning the citizens' work agenda and the dynamics of facilitation. It includes defining criteria for inclusive facilitation to ensure that all voices are heard and that the sessions run effectively and equitably.
Climate Assembly sessions	This is the actual event where the assembly convenes. Participants engage in discussions, presentations, and deliberations to address climate issues. This phase is the core of the Climate Assembly process, where the groundwork laid in previous phases is implemented.
After-Assembly phase (follow-up and impact)	This phase follows the assembly outcome and involves following up on decisions and assessing their impact. It ensures that the assembly's outcomes are implemented and monitored, closing the loop on the assembly process and ensuring accountability and tangible results.

Source: CLIMAS D3.2 "Methodological Guidelines and Manual for Setting-Up and Facilitating Climate Assemblies - Initial Version"

To enhance citizen engagement and ensure transparency in the Climate Assembly's activities, it is crucial to establish an open-access platform where individuals can access information and stay updated on the progress of various initiatives (Perlaviciute & Squintani, 2020). One central outcome of the CLIMAS project is the Citizen-Assembly Portal (CAP). This report aims to discuss the launch of the CAP designed to foster greater citizen involvement in all phases (information phase, deliberation phase, and recommendation phase) of the assembly's work. Interactive digital platforms and online repositories allow continuous access to educational materials, enhancing participants' learning experience (The Path to Net Zero, 2019).



For the recommendation phase, decision-support tools such as multi-criteria decision analysis (MCDA) and voting module help participants prioritise and finalise their recommendations (Climate Assembly UK, 2020). These tools assist in systematically evaluating various options and reaching a consensus on the most viable solutions (CLIMAS D3.4). By integrating these tools throughout the Climate Assembly process, organisers can enhance participant engagement, facilitate informed deliberations, and produce well-considered, actionable recommendations that are more likely to gain public and political support (CLIMAS D3.2). This report will consist of the methodology design and the description of the CAP, including tools from various citizen science activities from T3.1-T3.6 in the CLIMAS project, other related information, and linkages to other relevant databases and websites.

The CAP is expected to bring numerous benefits. These include enhanced transparency, increased participation, effective CA organisation, monitoring and follow-up of CA recommendations, informed deliberations, collective ownership, etc. By making all information and deliberations publicly available, the CAP ensures that the process is open and transparent, fostering trust and credibility.

The launch of the CAP marks a significant step forward in our efforts to address the climate crisis through inclusive and participatory approaches. By leveraging digital technology, we aim to empower citizens to shape climate policies that actively reflect various perspectives and expertise. Structured processes and user-friendly interfaces also help CA organisers plan and operate different activities related to CA. We invite everyone to explore the CAP, engage with the resources, and contribute to the collective effort to build a more sustainable and resilient future.

The report is structured as follows:

- **Section 2:** Discusses the purposes of the CAP and how all relevant parties, such as citizens, CA organisers, stakeholders, and policymakers, can benefit from using it.
- **Section 3:** Explains what innovative tools make the CAP different from the existing citizen engagement portal.
- **Section 4:** Discusses the basic features and tools of the CAP and how all the tools are relevant to meet the purpose of the CLIMAS project. These tools include engagement, management, and decision tools that ensure citizen engagement in a CAP.
- **Section 5:** This section mentions the development of CAP with short descriptions and screenshots.



2 Purpose of Climate Assembly Portal

The CAP is an all-inclusive web-based tool intended to facilitate and improve climate assemblies' operation and reach its audience as much as possible. Its main goals are Encouraging citizen engagement, ensuring transparency, supporting CA organisers and facilitating informed discourse on climate-related problems. The CAP intends to enable people to actively engage in the processes of decision-making that drive climate policies by offering an organised and easily accessible environment. The CAP provides digital tools, interactive guidelines and information for the CA organisers to operate CA successfully in different regions worldwide (Knowledge Network On Climate Assemblies, 2024). The key purposes of the CAP are outlined below below:

- **Ensuring inclusion by design:** One of the CAP's core objectives is to democratise the participation process in climate assemblies. By leveraging digital technology, the CAP ensures that diverse voices are heard, regardless of geographical location, socio-economic status, or physical ability (Report and Evaluation of the 2021 Global Assembly, 2023). The portal provides a streamlined process for individuals to express their interest in participating, coupled with a transparent selection mechanism that ensures a representative sample of the population and also tools and functionalities such as multilingual support, screen reader compatibility, and mobile-friendly design to ensure that everyone can access and navigate the portal with ease.
- **Advancing knowledge-based decision-making:** practical deliberation requires participants to be well-informed about the issues (The Path to Net Zero, 2019). The CAP serves as an educational hub, providing comprehensive resources that enable participants to engage in meaningful discussions. These include articles, videos, and infographics on climate science, policy options, and case studies to build a foundational understanding. It will also include a discussion forum where participants can engage with experts and each other to clarify doubts, share perspectives, and make a collective knowledge base. The CA organisers are also facilitated by advanced technology, such as Artificial Intelligence(AI) and Machine Learning (ML)AI and ML, to make informed decisions. The information-based tool also helps the organisers set agendas, Topics, and dilemmas for the CA.
- **Ensuring transparency and accountability:** transparency is crucial to building trust in the climate assembly process. The CAP enhances transparency by providing continuous updates on the progress of the assemblies, including schedules, agendas, meeting minutes, and summaries of discussions (*Global Assembly on the Climate and Ecological Crisis Global Assembly on the Climate and Ecological Crisis Evaluation Report, 2023*). It will also allow the broader public to view live streams or recordings of assembly sessions, ensuring that the process is open and observable, where applicable.
- **Facilitating proactive involvement of citizens through deliberative tools:** the portal is designed to actively involve citizens in every phase of the climate assembly process, from deliberation to decision-making. It includes interactive polls and surveys like tools for gathering input from participants and the broader public on key issues, helping to shape the agenda and priorities of the topics for assemblies (Cherry et al., 2021). To secure transparent voting systems allowing participants to vote on proposed recommendations and policy options. It also includes feedback channels for participants and the public to provide feedback on the process and outcomes, ensuring continuous improvement and responsiveness.



- **Creating a sense of collective responsibility and community:** the CAP fosters a sense of community among participants and the broader public through collaborative spaces like virtual forums where participants can collaborate on projects, share experiences, and support each other in their climate action efforts. The portal highlights and celebrates participants' contributions and showcases success stories to inspire further engagement. To enhance community, this portal will include tools for organising local events and discussions that extend the reach and impact of the climate assemblies beyond the digital realm (Report and Evaluation of the 2021 Global Assembly, 2023).

The overall concept of the CAP is that it is a pivotal tool in addressing the climate crisis through democratic, inclusive, and transparent processes. By providing a comprehensive learning, discussion, and participation platform, the portal enables citizens to actively participate in establishing educated, equitable, and diversely reflective climate policy (Perlaviciute & Squintani, 2020). Using this endeavour, we aim to construct a more robust and sustainable future propelled by joint efforts and knowledgeable public involvement.



3 Innovation in Climate Assembly Portal (CAP) in CLIMAS

In the CLIMAS project, several innovative tools and guidelines have been planned to be developed and integrated within the CAP (<https://citizen-assembly.com>). That means the CLIMAS CAP will contain general-purpose tools required for effective citizen engagement and innovative climate assembly tools developed in the CLIMAS project. This combination makes the CAP unique and novel. Table 3.1 compares different features available in State-Of-the-Art (SOA) platforms and the CAP. After an extensive review of the portal, we have selected these three platforms: Decidim (<https://decidim.org>), CitizenLab (<https://www.govocal.com>), and COFOE (<https://jef.eu/cofoe/>). We compared these platforms because they are all designed to engage citizens in every step of citizen engagement projects. Still, these are not dedicated to the Climate Assembly, whereas our CAP is dedicated to the Climate Assembly.

Table 3.1 CAP with the SOA Platforms

Feature	Decidim	CitizenLab	COFOE	CAP in CLIMAS
Voting and Polling	Available	Available	Available	Done
Participant registration and authentication	Available	Available	Available	Done
Data export and download	Available	Available	Available	Done
Automated email notifications	Available	Available	Available	Done
Moderation and content filtering	Available	Available	Not Available	Done
Integration with third-party tools	Not Available	Available	Not Available	Done
Multilingual support	Available	Available	Available	Work in progress
Discussion Forum	Available	Available	Available	Done
Idea Generation	Available	Available	Available	Done
Analytics and Reporting	Available	Available	Available	Done
DPSIR and PESTLE Tool	Not Available	Not Available	Not Available	Integrated
CA monitoring and Evaluation	Not Available	Not Available	Not Available	Done
Customisable design and branding	Available	Available	Available	Work in progress
Document Management	Available	Not Available	Not Available	Work in progress
Collaborative document editing	Available	Not Available	Not Available	Work in progress
Integration with social media platforms	Available	Not Available	Not Available	Work in progress
Dedicated educational resources	Not Available	Not Available	Not Available	Work in progress
Multi-Criteria Analysis (MCA) Tool	Not Available	Not Available	Not Available	Done
Dedicated learning management system	Not Available	Not Available	Not Available	Work in progress
Deliberation and consensus-building	Available	Available	Not Available	Work in progress
Accessibility features	Available	Available	Not Available	Work in progress

From this table, CLIMAS is a one-stop shop in climate assembly compared with the general tools required to run citizen engagement procedures and organise climate assembly. This platform integrates all the relevant, innovative tools developed in CLIMAS. All this makes the CAP in CLIMAS meet the state-of-the-art citizen assembly. Some of the main novelties of the portal are detailed below:

A methodology for citizen collaborative scenario building: the CLIMAS project developed transparent methods and practical guidelines to understand and apply scenario-building. The methodology draws on the 'Future Studies' field and elaborates on participatory 'future workshops' as a tool for engaging diverse stakeholders (Cairns et al., 2013). The 'future workshop' is a technique of envisioning the future and serves as a structured framework to ensure effective, inclusive, and meaningful engagement in anticipating and planning societal challenges. CLIMAS's future scenario-building tool facilitates inclusivity, encourages



collaboration, promotes creativity and innovation, addresses uncertainty and risks, and encourages long-term thinking (Iwaniec et al., 2020). This methodological guideline will be included in the CAP to facilitate the user with the guidelines and examples of the CLIMAS activity. A deliverable (D3.1: Methodology for citizen-collaborative future scenario building for a climate-resilient society) has been developed on this subject matter. Also, a deliverable (D3.4: Tool for scenario prioritisation based on citizen and expert values) has been developed in the context of scenario prioritisation.

Guidelines for Climate Assembly setting-up and facilitation: The CLIMAS project develops a comprehensive guideline for Climate Assembly setting-up and facilitation following a deliberative design process. The guidelines include two components: (1) a guide to organise and generate the framing of climate assemblies and its development and (2) a guide oriented to generate a facilitation methodology that, starting from the collaborative learning that is developed from the curriculum, will continue applying trade-off strategies and searching for common ground in the face of dilemmas related to the question and the topic analysed by the assembly. The guides are divided into chapters that are sequential and correlative. The guidelines are co-created, co-designed, tested, and calibrated in CLIMAS Ls and CAs. The guides will be included in this portal (made available to the public when the final version is developed at the end of the project) as an interactive document for the end users. A deliverable (D3.2: Methodological guidelines and manual for setting up and facilitating Climate Assemblies. Initial version) has been developed on this subject matter.

Knowledge and Evidence-Based Climate Assembly Agenda Setting tool: The CLIMAS project develops a novel tool to support climate assembly organisers in setting agendas for various candidate topics. ML approaches and AI techniques analyse mainstream media and social media data. This analysis and the climate data constitute the knowledge and agent-based system that plays a central role in agenda setting (Gilardi et al., 2020). This tool also provides guidelines on how this preliminary list of agendas can be prioritised by using expert reviews. These expert-level reviews will be based on various feasibility assessments, including technical and political considerations. Subsequently, the tool will support the rank and prioritise of the draft final list of agendas according to community standards. Once the ranking and prioritisation are completed, the climate assembly's final agenda will be set. This comprehensive approach ensures that the agenda-setting process is informed, inclusive, and aligned with community needs and standards (Report and Evaluation of the 2021 Global Assembly, 2023).

A methodological tool to enable Climate Assemblies outcomes on dynamic climate change adaptation plan: The CLIMAS project develops a methodological toolkit to follow up Climate Assembly (CA) outcomes on dynamic climate change adaptation plans and policy frameworks. The project highlights the critical need for a robust mechanism to ensure the effective implementation of recommendations by CAs. Key steps involve establishing governance bodies, effective communication with participants, facilitating deliberative sessions, and developing final policy recommendations (Ireland's Citizens' Assembly on Climate Change: Lessons for Deliberative Public Engagement and Communication, 2019). The emphasis is on the follow-up phase, which is crucial for ensuring that recommendations are adopted and implemented, thereby holding governments accountable. The tool recommends establishing clear commitments from political authorities and building broad political consensus for effective follow-up. The follow-up team's organisational structures should include dedicated follow-up teams, clear ownership of recommendations, and regular reporting mechanisms to ensure transparency and accountability. Furthermore, the project underlines the importance of systematic monitoring and evaluation. The tool proposes a periodic monitoring system, a scenario prioritisation system for different climate scenarios for



both short-term and long-term climate change adaptation plans, and the formation of an independent Accountability Board to ensure continuous oversight and stakeholder engagement. This structured approach aims to enhance the effectiveness of Climate Assemblies in driving robust climate policies, fostering citizen engagement, and ensuring the resilience and sustainability of national adaptation strategies (Introne et al., 2011; Sandover et al., 2021). The tool will be integrated with the CAP as an interactive guideline. A deliverable (D3.5: Tool to enable Climate Assemblies outcomes on dynamic climate change adaptation plan) has been developed on this subject matter.

Climate assembly monitoring and evaluation tool: The CA monitoring and evaluation tool aims to assist climate assembly executors in organising, monitoring, and evaluating the performance of a climate assembly before and during the sessions (*Global Assembly on the Climate and Ecological Crisis Global Assembly on the Climate and Ecological Crisis Evaluation Report, 2023*). This tool takes inspiration from the methodological framework of Deliverable D5.1 of Work Package 5 (WP5), reinforcing the principles of deliberative democracy. The tool enables users to build a team, assign responsibilities to team members, allocate resources and budgets for different activities, track progress through timesheets, monitor various CA processes by assigning different performance criteria, engage with participants and stakeholders, and conduct surveys. Additionally, it offers options for file upload and storing those files in a database. The architecture of this tool is built in a way that, despite the complexities of engaging with multiple stakeholders and effective communication, it provides continuous targeted communication among different stakeholders, participants, and organisers, ensuring deliberative democratic principles. This comprehensive approach offers effective resource management, stakeholder engagement, and performance assessment, providing a climate assembly's overall success.



4 Basic Features and Tools of the Climate Assembly Portal

Figure 4.1 shows an overview of the planned tools for the CAP. The following sections briefly explain the principles of the CAP's essential tools.

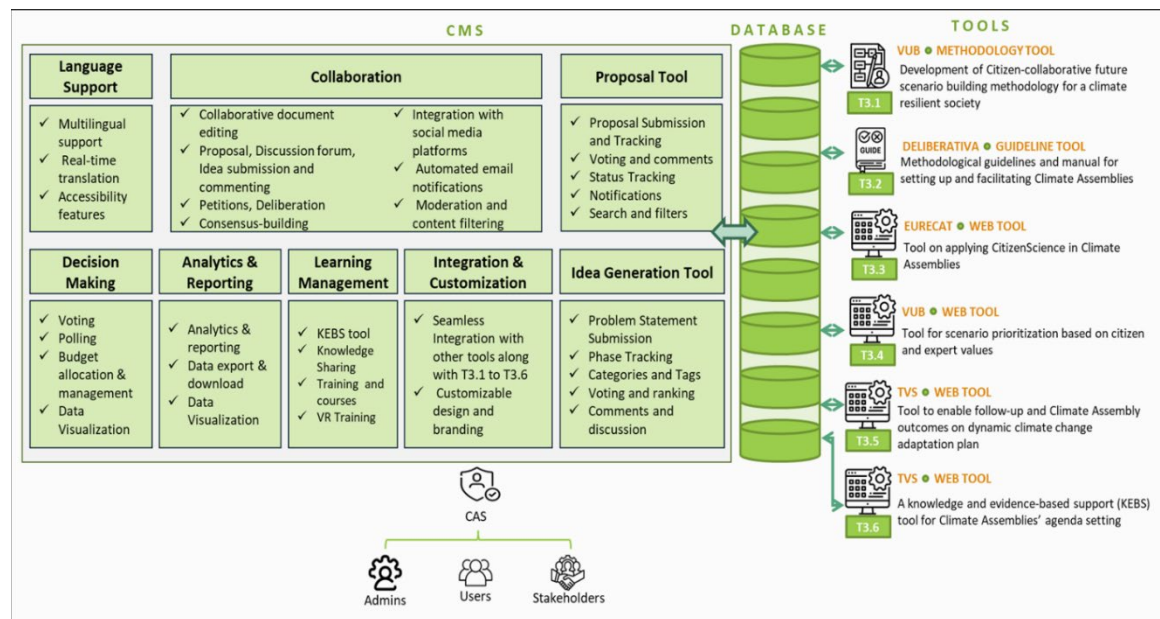


Figure 4.1: Features of CAP

4.1 Engagement Tools

The primary goal of the engagement tools within the CAP is to enhance and facilitate everyday people's deliberate and frequent participation in climate deliberations (Goda Perlaviciute & Squintani, 2020). These tools are designed to create an interactive and inclusive environment where citizens can contribute their insights, collaborate on solutions, and stay informed about the progress and outcomes of climate assemblies. Engagement tools include features like:

Online consultation: online consultation tools are integral to ensuring that a wide array of voices and opinions are heard in the climate assembly process (Knowledge Network On Climate Assemblies, 2024). These tools facilitate direct interaction between participants, experts, and policymakers, enabling a comprehensive understanding of public sentiment and ideas. Features include:

- *Surveys and questionnaires:* these are designed to gather initial input from participants on specific climate issues, allowing the assembly to identify key areas of concern and interest. Surveys can be both quantitative and qualitative, providing a mix of statistical data and personal insights.
- *Discussion forums:* interactive forums where participants can post questions, share ideas, and debate various topics. Moderated by experts, these forums ensure that discussions remain focused and constructive (*Global Assembly on the Climate and Ecological Crisis Global Assembly on the Climate and Ecological Crisis Evaluation Report, 2023*).

- *Virtual events*: These are live online events where participants can engage with experts and assembly members in real-time. These sessions often include Q&A segments, providing a platform for direct dialogue and immediate feedback.

Co-creation tools are designed to actively involve citizens in developing policies and solutions. By fostering a collaborative environment, these tools enable participants to contribute their knowledge and creativity to the assembly's work. Features include:

- *Collaborative workspaces* are digital spaces where participants can collaborate on projects, draft recommendations, and develop action plans. These workspaces often include document-sharing capabilities, collaborative editing tools, and project management features.
- *Submitting ideas*: platforms where participants can submit their ideas for addressing climate issues. The community then reviews, discusses, and refines these ideas, ensuring the best and most feasible solutions are developed.

Communication: effective communication tools are essential for keeping participants informed, engaged, and connected. These tools ensure that all relevant information is easily accessible and that participants can communicate efficiently with each other and with assembly organisers (Parsons, 2019). Features include:

- *Newsletters and updates*: regular email newsletters and updates that keep participants informed about the latest developments, upcoming events, and important deadlines. These communications help maintain engagement and ensure that participants are always up-to-date.
- *Messaging platforms*: integrated messaging systems that allow participants to communicate directly with each other and with assembly organisers. These platforms often include group chat features, private messaging, and notifications.
- *Social media integration*: tools that enable participants to share their experiences and insights on social media, helping to raise awareness and encourage broader public engagement. These integrations often include share buttons, hashtags, and social media feeds.

Dynamic information tools ensure that participants can access real-time, accurate, and comprehensive information throughout the assembly process. These tools help participants stay informed and make well-informed contributions. Features include:

- *Live data feeds* provide real-time data on climate-related metrics, such as carbon emissions, energy consumption, and weather patterns. They provide participants with up-to-date information to inform their discussions and recommendations (Rolnick et al., 2023).
- *Interactive dashboards*: visual dashboards that display key data and metrics in an easily understandable format. These dashboards often include charts, graphs, and maps, allowing participants to explore and analyse data dynamically.
- *Resource libraries*: extensive libraries of documents, videos, articles, and other educational materials. These resources provide participants with the background information they need to understand complex climate issues and engage in informed deliberations.

The CAP empowers citizens to build a sustainable and resilient future through online consultation, co-creation, effective communication, and dynamic information.

4.2 Management & Decision Tools

The primary objective of the engagement and decision-making tools within the CAP is to involve citizens comprehensively in the management and decision-making phases of climate assemblies (*CITIZENS' CLIMATE ASSEMBLIES Understanding Public Deliberation for Climate Policy*, 2021). These tools are designed to facilitate structured input, effective user management, robust data analytics, and efficient data management, ensuring that citizen contributions are impactful and well-integrated into the decision-making processes. The detailed features of these tools are below:

Input management tools are crucial for collecting, organising, and analysing the diverse range of inputs from participants. These tools ensure all contributions are considered and incorporated into the assembly's deliberations and outcomes. Features include:

- *Survey and polling systems*: advanced systems for conducting surveys and polls that gather quantitative and qualitative data from participants. These tools can gauge public opinion on specific issues, prioritise topics for discussion, and collect feedback on proposed policies.
- *Comment and annotation platforms* allow participants to comment on documents, annotate specific sections, and suggest edits. This feature promotes collaborative refinement of policy drafts and ensures that all perspectives are considered.
- *Idea submission and voting*: tools for participants to submit their ideas and solutions for climate-related challenges. The community can vote on submitted ideas, helping to identify the most popular and feasible options for further development.

User Management tools are essential for organising and coordinating participants' activities, ensuring smooth and efficient operations throughout the assembly process. Features include:

- *User registration and profiling* are systems for registering participants and creating user profiles. These profiles can include information on participants' backgrounds, areas of expertise, and interests, helping to facilitate targeted engagement and collaboration.
- *Role and permission management*: these tools assign roles and permissions to participants based on their involvement in the assembly. This ensures that users access information and functionalities appropriately, enhancing security and efficiency.
- *Communication and coordination*: Integrated communication tools, such as messaging systems, email notifications, and calendar integrations, facilitate coordination among participants and organisers. These tools help keep everyone informed and aligned with the assembly's activities and timelines.

Dashboard and analytics tools provide real-time insights into the assembly's activities, participant engagement, and the impact of various initiatives. These tools help organisers and participants make data-driven decisions and monitor progress effectively. Features include:



- *Interactive dashboards*: customisable dashboards that display real-time key metrics and performance indicators. These dashboards can include visualisations such as charts, graphs, and heatmaps, providing a comprehensive overview of the assembly's status and outcomes.
- *Engagement analytics*: these are tools for tracking participant engagement, including metrics on participation rates, activity levels, and interaction patterns. These insights help identify high- and low-engagement areas, enabling targeted interventions to boost participation.
- *Impact assessment*: analytical tools for evaluating the impact of the assembly's recommendations and decisions. This includes tracking the implementation of policies, measuring their effectiveness, and gathering feedback from affected communities.

Data management tools are critical for handling the vast amounts of information generated during the assembly process. These tools ensure data is stored securely, organised effectively, and accessible to authorised users. Features include:

- *Data collection and storage*: systems for collecting and securely storing data from various sources, including surveys, polls, discussions, and external databases. These systems ensure data integrity and compliance with privacy regulations.
- *Data integration and interoperability*: Tools for integrating data from different sources and formats enable comprehensive analysis and reporting. These tools support interoperability with other platforms and systems, enhancing data accessibility and utility.

It has advanced visualisation tools that transform raw data into actionable insights. These tools generate reports and visualisations communicating complex information clearly and effectively, aiding decision-making and stakeholder communication. The engagement and decision-making tools within the CAO{ are designed to empower citizens to play a central role in climate assemblies' management and decision-making processes (Knowledge Network On Climate Assemblies, 2024). By leveraging sophisticated input management, user management, dashboard and analytics, and data management features, the portal ensures that citizen contributions are well-organized, impactful, and integral to shaping climate policies.



5 Development of CAP

As detailed in the CLIMAS GA, the Citizen Assembly Platform (CAP) is being developed based on the existing Citizen Tone platform (www.citizentone.com), facilitating citizen engagement. Both the Citizen Tone and CAP are built using the Odoo platform (<https://www.odoo.com/>), an open-source ERP and CRM system. The CAP is now live at <https://citizen-assembly.com/>. Odoo provides a user-friendly interface, enabling efficient navigation for citizens and authorities. Its selection as a CMS platform is supported by the capabilities of its built-in Website Builder module, which simplifies installation, offers seamless integration with Odoo's extensive application ecosystem and provides robust tools for content management, SEO, and language translation. The Odoo community version is fully open-source, granting access to essential modules, while some premium features are available for purchase. An Odoo marketplace exists, where companies and individuals offer paid modules tailored to specific needs. Notably, the open-source community version of Odoo is accessible on GitHub, allowing users to build custom modules as required.

5.1 Architecture

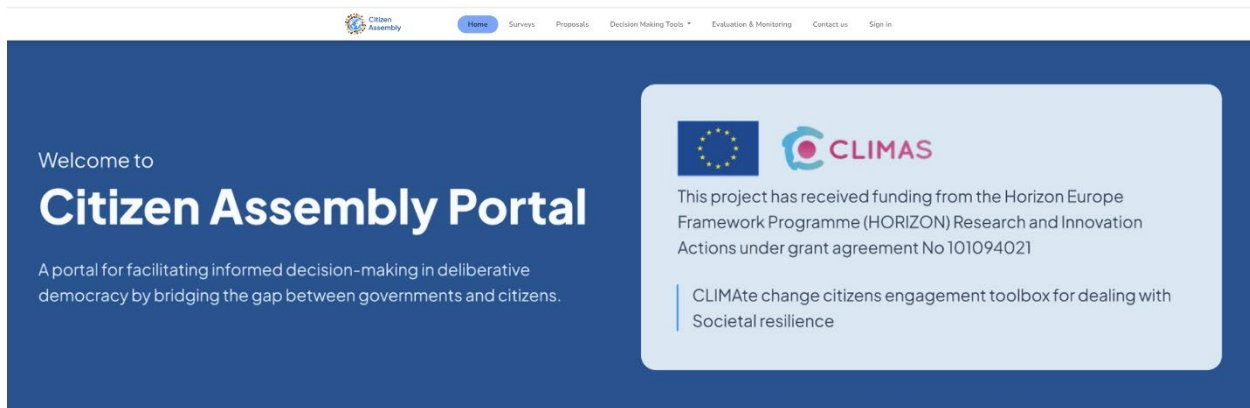


Figure 5.1: Citizen Assembly Portal homepage featuring a welcome message, project funding information from Horizon Europe, and main innovation areas.

The platform leverages a three-tier architecture, ensuring that the platform is both scalable and flexible, allowing it to meet diverse user needs while maintaining high performance and ease of use:

- **Presentation layer** is responsible for the user interface and user experience. It includes (1) a web interface built with Odoo's templating engine (QWeb) and JavaScript for dynamic content and (2) a mobile interface with a responsive design to ensure compatibility with mobile devices.
- **The application layer** contains business logic and workflows. Odoo's application layer is a core component of its framework and is responsible for handling the business logic and processes of the software. This layer sits between the data storage (database) and the presentation (user interface) layers, acting as the intermediary that manages how data is processed and presented to users. It utilises Odoo's modular approach, with critical modules developed for (1) User management, (2) multi-company management, and (3) Website Management. The page also

highlights key features such as Activity Planning and Timesheet, Dashboard and Analytics, Public Engagement, Data Management, User Management, and Online Consultation.

- **Data layer:** PostgreSQL, Odoo's database management system, manages the data layer, which handles data storage, retrieval, and management.

5.2 Authentication System

The platform employs a robust authentication system to ensure secure access for users and administrators.

5.2.1 User Authentication

User authentication is managed through Odoo's built-in authentication mechanism, which supports:

- Username & password authentication
- Two-factor authentication (2FA) for enhanced security.

5.2.2 Access Control

Access control is enforced through user roles and permissions, ensuring the users have access only to the functionalities relevant to their roles.

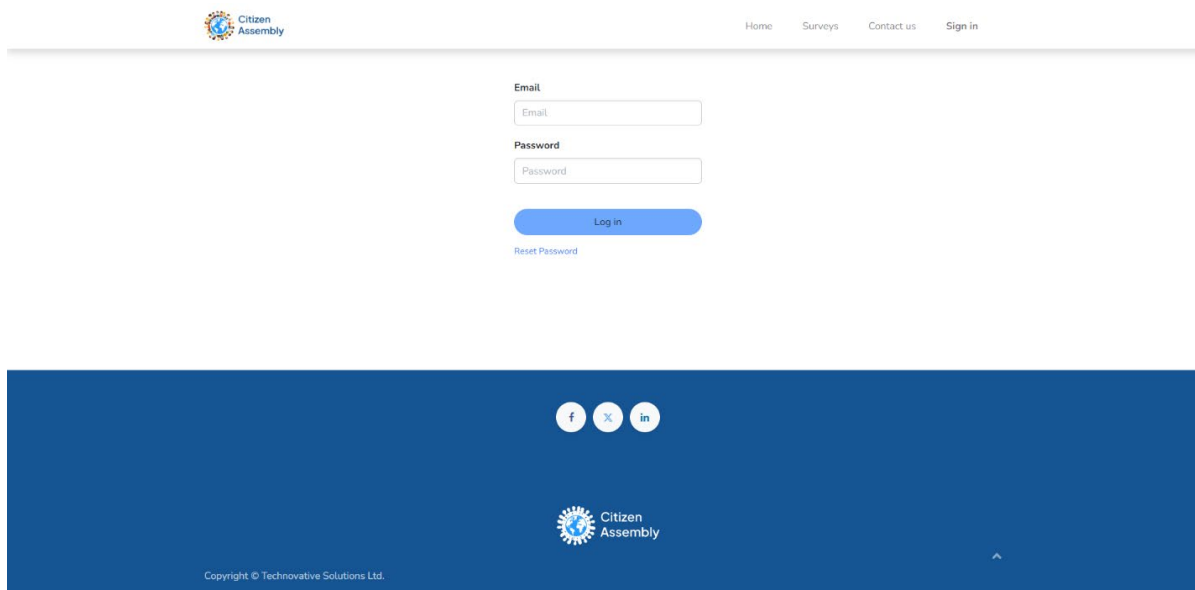


Figure 5.2: Interface to log in.

This interface includes fields for entering an email, name, and password and confirming the password, with a 'Sign up' button and a link for existing users to sign in.

5.3 Database Design

Odoo uses PostgreSQL, a relational database. The database design follows best practices for normalisation and efficient data management. Odoo primarily follows a code-first approach for database management.



In this approach, the database schema is generated and managed through the code (Python models in the case of Odo) rather than being designed directly and then generating code to match it.

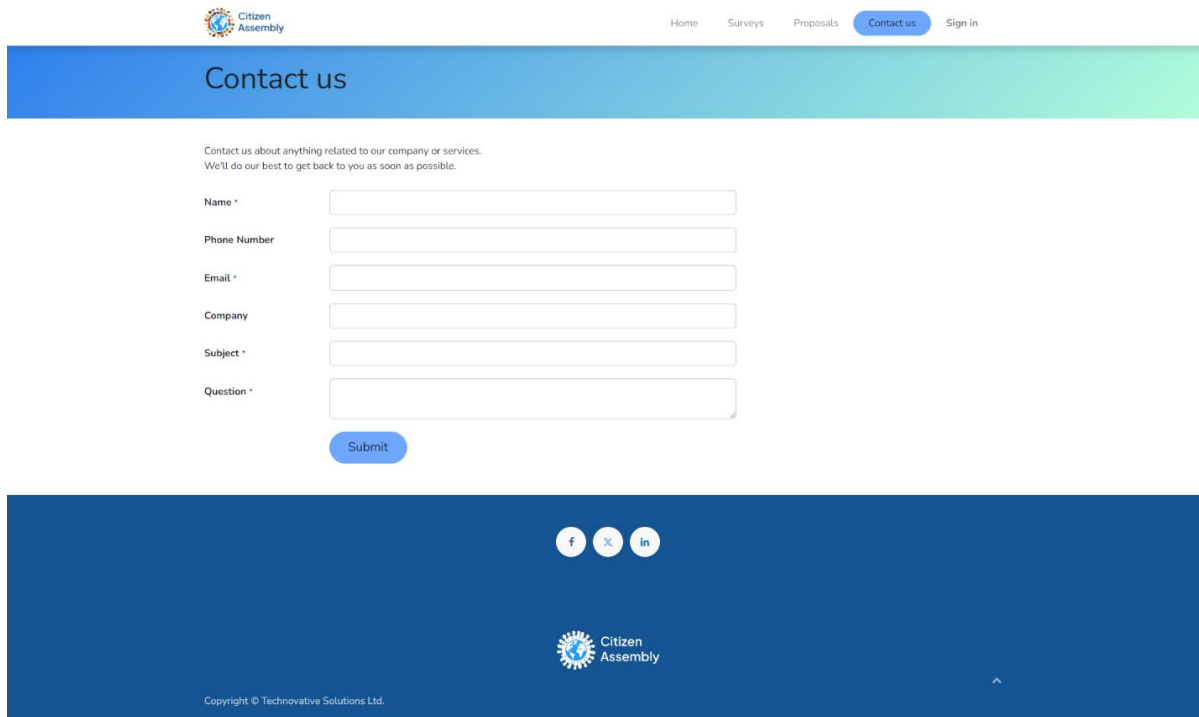


Figure 5.3: Contact Us includes a form with fields for Name, Phone Number, Email, Company, Subject, and Question, with a 'Submit' button.

The top navigation bar provides links to Home, Surveys, Proposals, Contact Us, and Sign In. The bottom of the page displays social media icons and copyright information.

5.4 CAP Feature – Survey

Surveys are invaluable tools for collecting feedback, gauging customer satisfaction, and identifying areas for improvement. They allow organisations to gather insights and opinions, facilitating informed decision-making. Surveys can be conducted quickly and efficiently, providing quantitative data and making them a practical choice for businesses and researchers.

This CAP integrated the survey module developed by TVS into the Citizen Tone platform under another EU project, C2IMPRESS (<https://citizentone.com/survey-list>). Some aspects were further modified for CAP.

Objectives of the survey module:

- To enable the exploration of new topics by asking questions and gathering feedback on specific areas of interest.
- To identify new opportunities for growth, assess market demand for new products or services, and understand emerging trends and preferences.
- To guide businesses in making strategic decisions that align with market needs.

- To ensure citizen satisfaction, product development, marketing effectiveness, and employee engagement.
- To improve decision-making and operational efficiency. Survey data lead to better-informed decisions, ultimately contributing to enhanced performance and sustained growth.

Survey module Features:

- In the survey module, there are multiple-choice answer questions
- There is also a choice multiple-answer question feature
- One can give answers to the questions with both short description and long descriptions
- It ensures users direct comments
- With the proper questionnaire, users can express their opinion
- The main feature of this tool is that it ensures direct feedback from users, which will be helpful for the progress of any product.

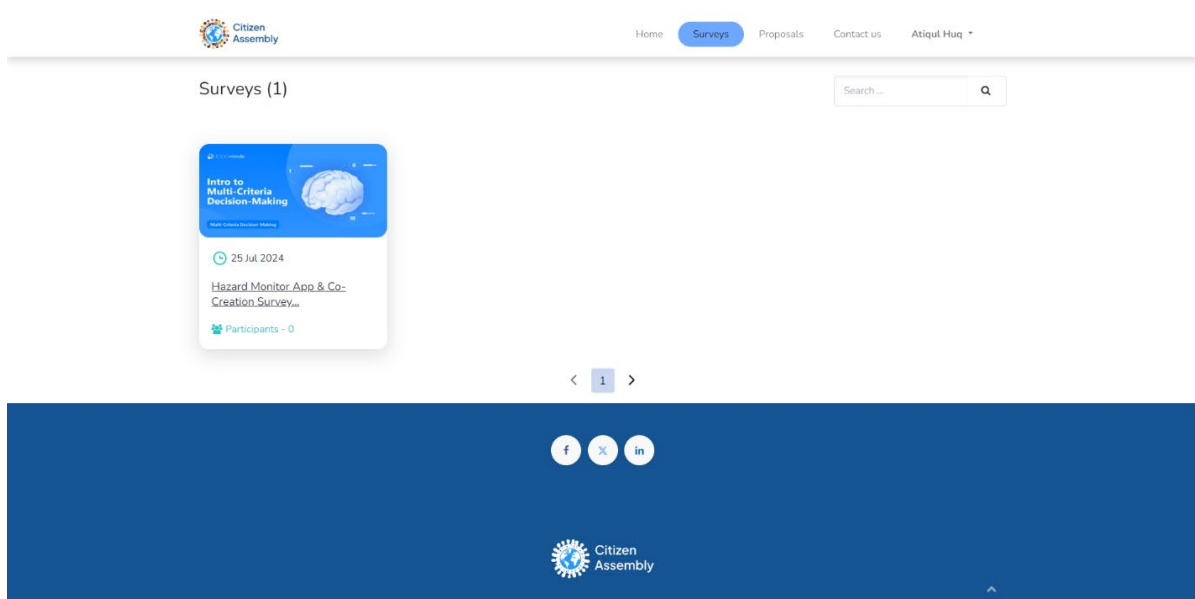


Figure 5.4 A screenshot of the survey module's first page.

This page shows all surveys developed under this platform. The particular case can be accessed only by the person who defined the survey.

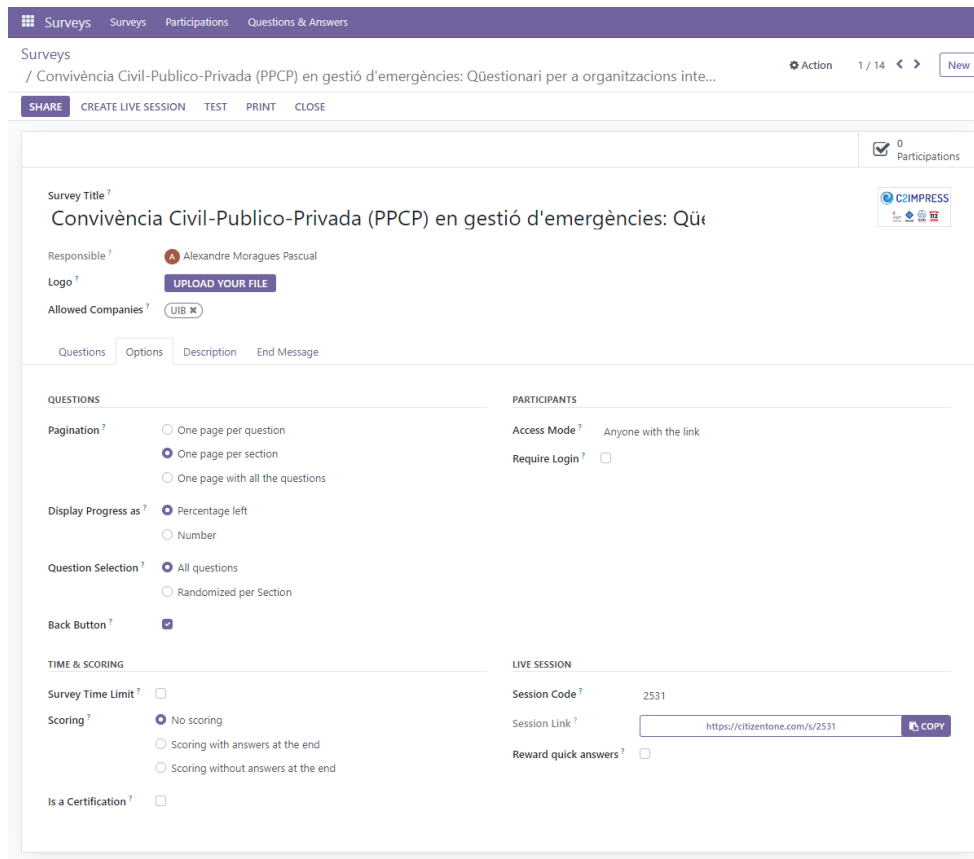


Figure 5.5 A screenshot showing some features of the survey module.

Hazard Monitor App & Co-Creation Survey

Quantitative Questions

On a scale of 1 to 10, how well do you understand the concept of this app?

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>
5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>
9	<input type="radio"/>	10	<input type="radio"/>				

On a scale of 1 to 10, how familiar are you with alternative similar solutions?

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>
5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>
9	<input type="radio"/>	10	<input type="radio"/>				

On a scale of 1 to 10, how impactful the concept would be according to you?

1	<input type="radio"/>	2	<input type="radio"/>	3	<input type="radio"/>	4	<input type="radio"/>
5	<input type="radio"/>	6	<input type="radio"/>	7	<input type="radio"/>	8	<input type="radio"/>
9	<input type="radio"/>	10	<input type="radio"/>				

Figure 5.6 A screenshot showing how the quantitative questions can be prepared in the survey module.

5.5 CAP Feature – Proposal

We have integrated “Proposal” features previously developed by TVS for the Citizen Tone platform. This tool allows citizens or stakeholders to propose ideas to authorities or start a discussion on any important issue. Other Cap users can comment and discuss the matter.

Tool Features:

- Users can access proposals in user phases
- User participates and provides feedback on different proposals
- Users can provide likes, dislikes and comments on any proposals
- Problem describes using rich text

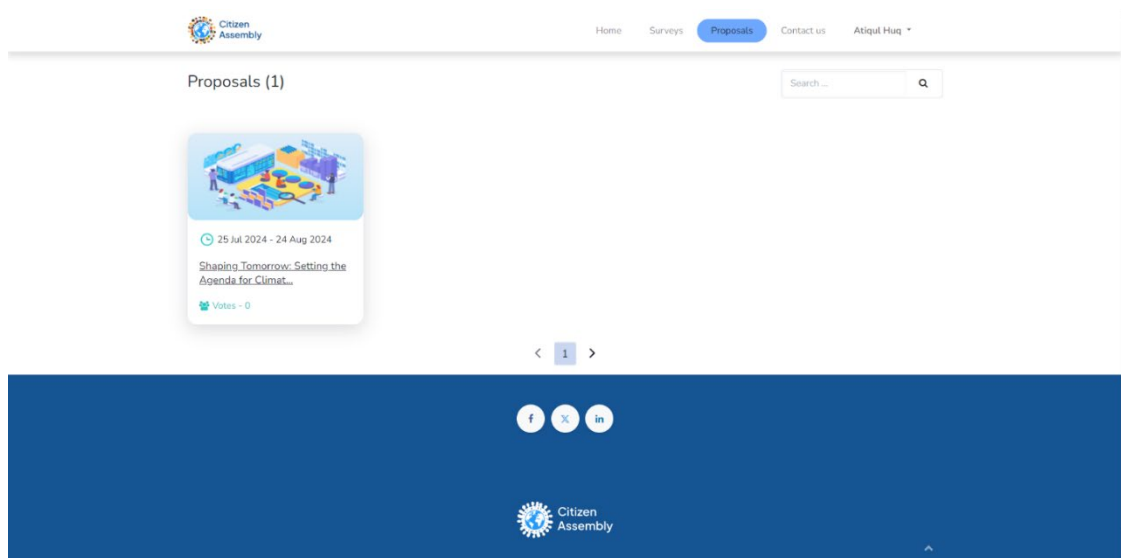


Figure 5.7 is a screenshot of proposal features showing one active proposal, 'Shaping Tomorrow: Setting the Agenda for Climate,' as an example.

The interface includes a search bar, navigation options, and social media links.

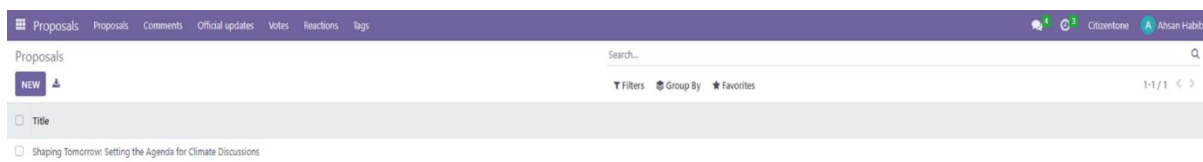


Figure 5.8 The interface includes options to create a new proposal, filter, group, and favourite proposals.

The top navigation bar provides access to Proposals, Comments, Official updates, Votes, Reactions, and Tags. User information is visible in the upper right corner. This window is for the user who creates the proposal for future discussion. An administrator-level access is required.

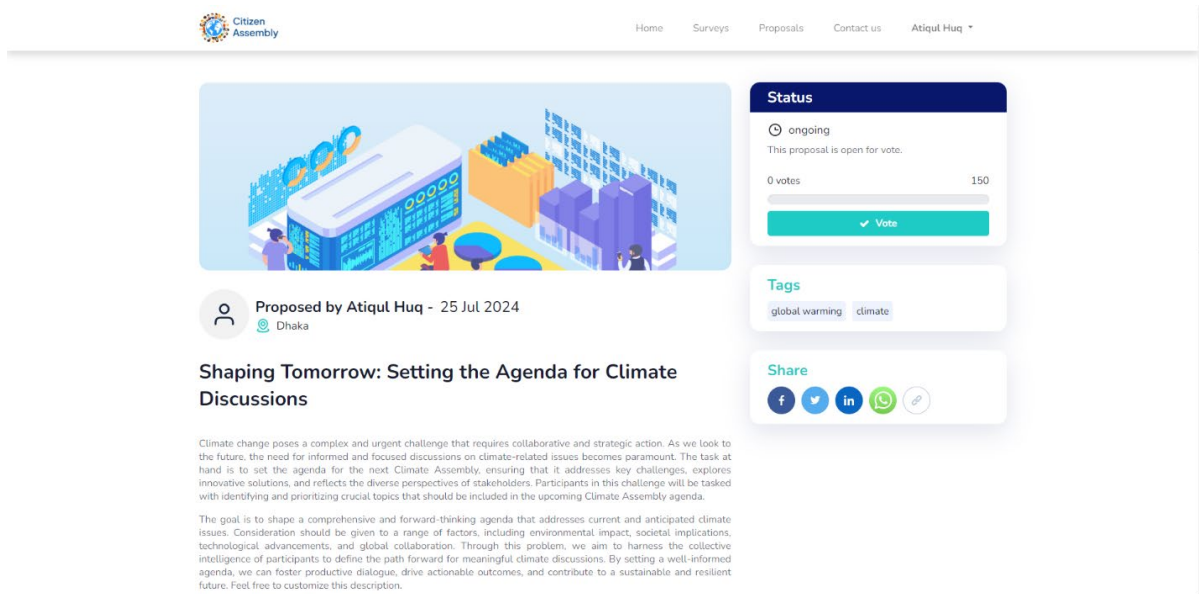


Figure 5.9 An example of proposal features showing one active proposal titled 'Shaping Tomorrow: Setting the Agenda for Climate'.

The interface includes a description of the issue, status monitoring features, and a voting possibility. It can be shared on social media.

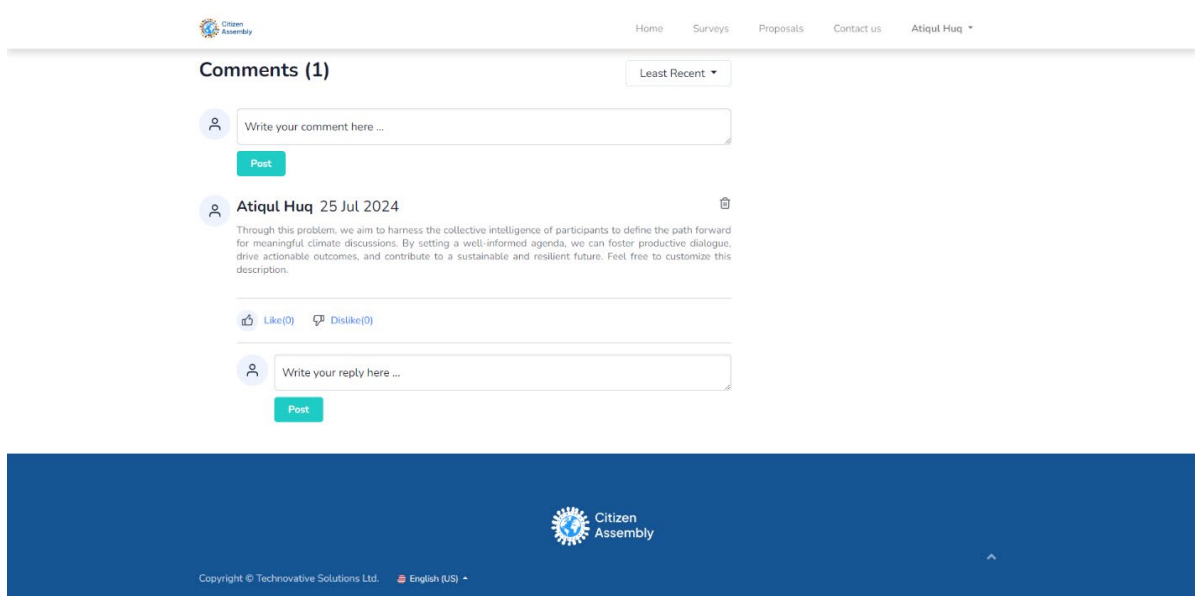


Figure 5.10 The possibility of comments and discussion by other CAP users.

5.6 Decision-Making Tools

We have developed a Multi-Criterion Analysis tool and integrated it with an external tool—integrated DPSIR and PESTLE Analysis. Sections 5.6.1 and 5.6.2 provide a basic description of this.



5.6.1 Multi-Criteria Analysis Tool (MCA) for Scenario Prioritisation

CLIMAS deliverable 3.4 (*Tool for scenario prioritisation based on citizen and expert values. Initial version*) explains the background theory of MCA, where VUB discussed the Analytical Hierarchy Procedure (AHP) and its relevance to the prioritisation. The prioritisation is based on citizens' and experts' scenarios, criteria, and expert values (weighting). Please see D3.4 for a detailed background.

Based on the methodology, we have developed an interactive tool to rank or prioritise the scenarios using the AHP method. This tool is open to everyone.



Figure 5.11: Multi-Criteria Analysis (MCA) tool landing page explaining its purpose and methodology.

This cover page highlights the tool's ability to evaluate multiple alternatives or scenarios against predetermined criteria, helping decision-makers assess various options comprehensively. Critical steps in conducting MCA, such as identifying the decision problem and defining evaluation criteria, are outlined.

MCA Tool:

To perform the prioritisation, a user will execute the following steps:

STEP 1: Identify the decision problem. Clearly define the decision problem and the objectives or goals you want to achieve.

STEP 2: Define evaluation criteria and hierarchy definition. Identify the criteria or factors that are relevant to the decision problem. These criteria should be measurable and specific and represent the objectives or concerns of the decision-makers. The tool allows the user to select criteria saved in the database. New criteria can be used. The tool also allows us to develop the hierarchy by grouping the criteria and displaying the final hierarchy.

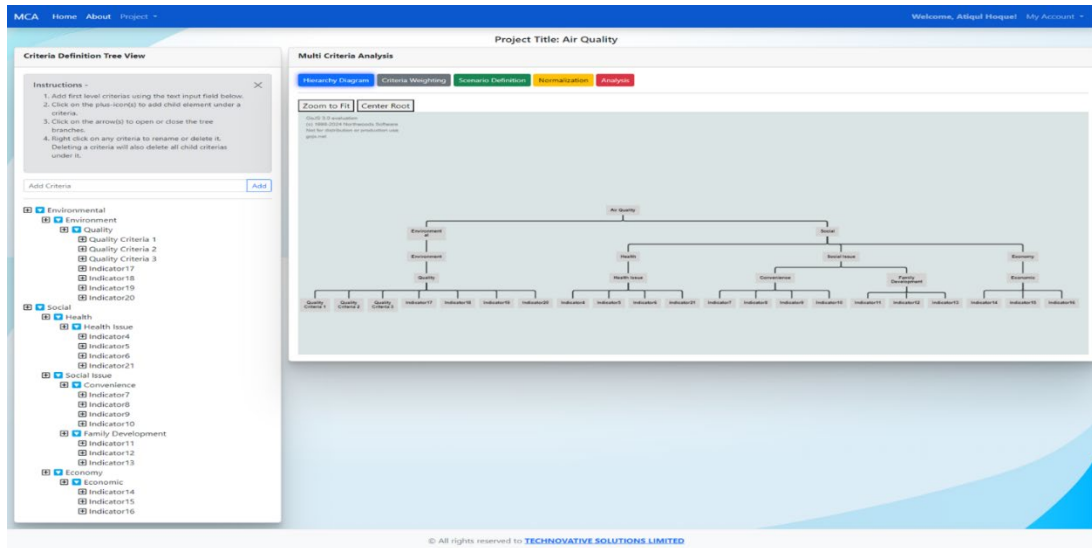


Figure 5.12 An example of an MCA project.

This figure is an example of an MCA project. It shows a criteria definition tree view on the left and a hierarchy diagram on the right. The tree view includes environmental, social, and economic criteria, with various sub-criteria and indicators. The hierarchy diagram visually represents the structure and relationships between the criteria and sub-criteria.

STEP 3: Scenario definition. At this stage, the tool allows the definition of the scenarios and the provision of a description in a text box.

STEP 4: Criteria Values under each scenario. Using the tool, the user will assign values for each criterion at the bottom level of the hierarchy. If the values are not quantified, one can use the pair-wise comparison (under development at this stage) to estimate the values.

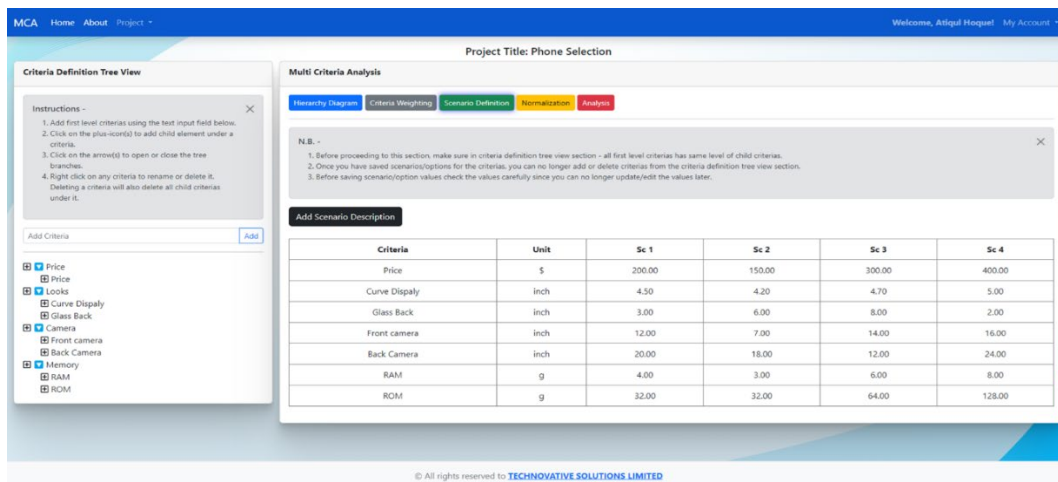


Figure 5.13: A screenshot of an exemplary MCA project.



It displays a criteria definition tree view on the left and a scenario definition table on the right. The user can provide values directly.

STEP 5 Normalisation of criteria values: The tool offers normalisation of the values to make all the values dimensionless. If a pairwise comparison is made, normalisation is not required. If different criteria are measured, normalisation needs to be done. At this stage of development, this tool provides four normalisation methods: linear max, linear min, linear (max-min), and Vector normalisation. In the future, we will include more methods if required.

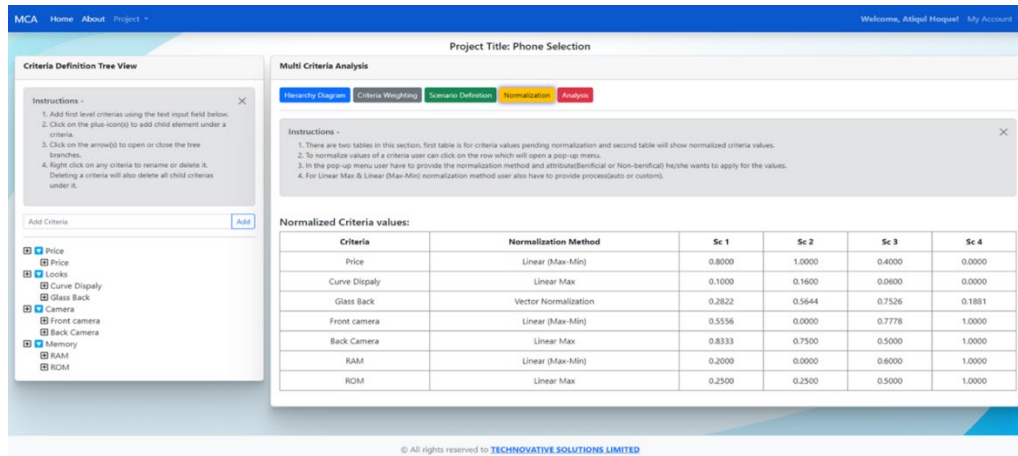


Figure 5.14: An example of normalisation functions.

The normalised values table includes criteria across four scenarios using different normalisation methods.

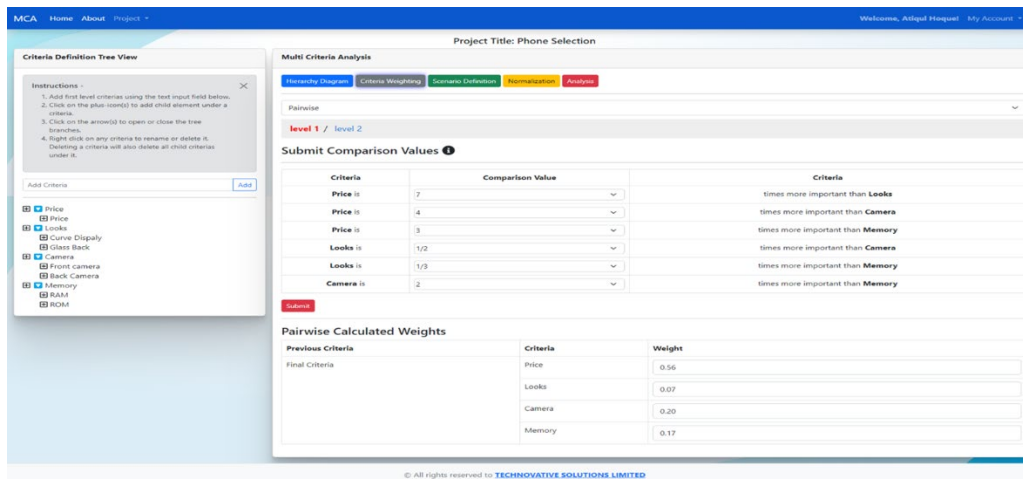


Figure 5.15 A comparison of values submitted for normalisation functions.

6. **Weight the Criteria:** Assign weights or importance values to each criterion to reflect their relative significance in decision-making. We have developed two weighting methods: direct weighting and pairwise comparison. Direct weighting allows the user to provide the weights directly, and pairwise comparison enables a method to estimate the weights (see D3.4).

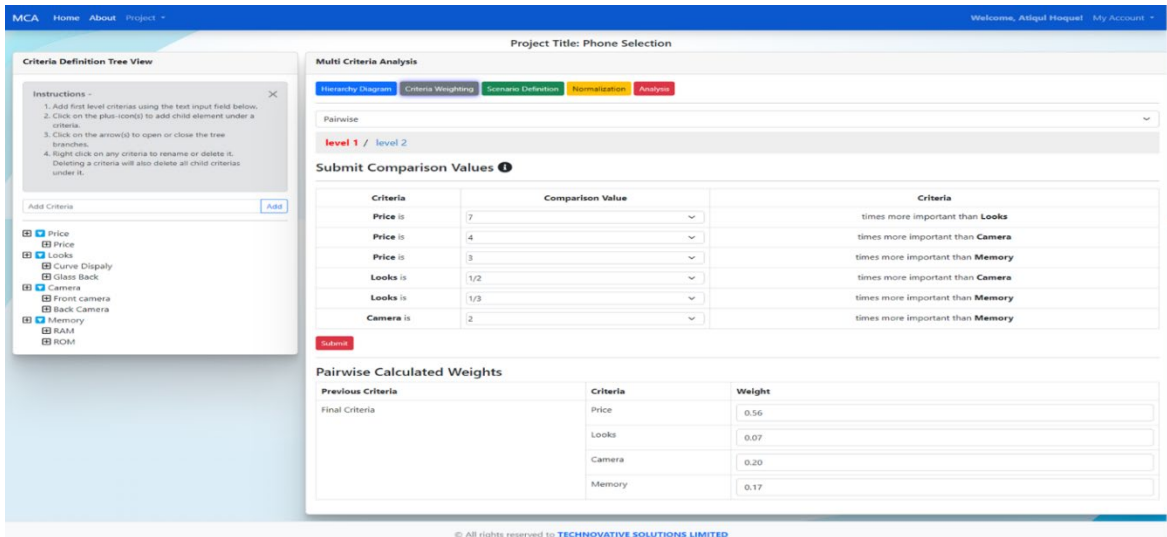


Figure 5.16: An example of using a multi-criteria analysis tool for displaying pair-wise comparisons on the right.

STEP 7: Overlay and ranking. We have developed a weighted linear method to overlay the criteria and rank according to the overlaid score.

STEP 8: Results visualisation. The tool offers results visualisation in tabular and chart format at each hierarchy level.

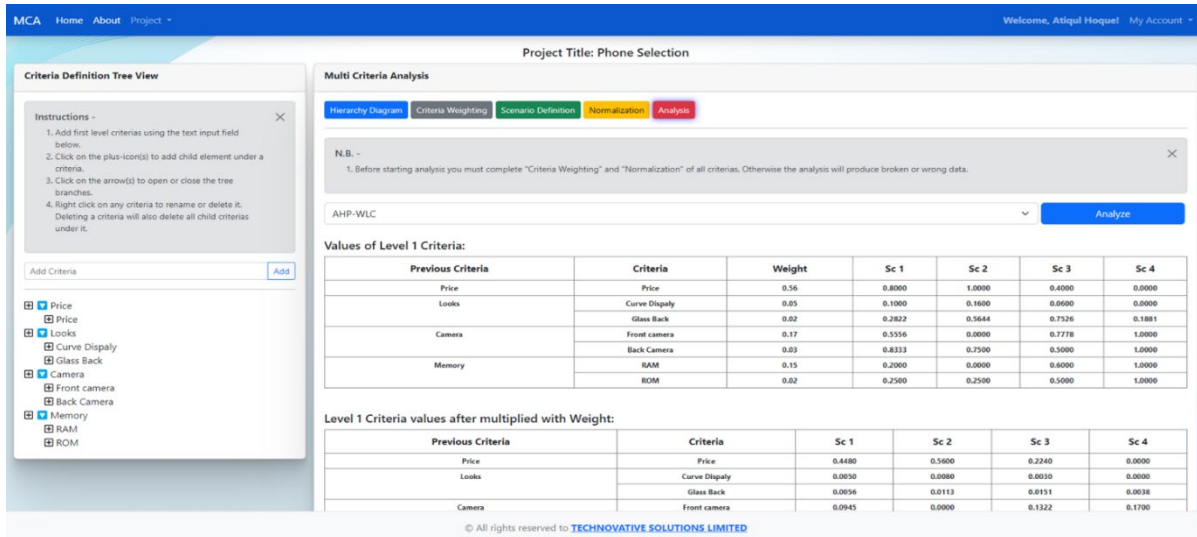


Figure 5.17: The analysis section.

The analysis section includes values of level 1 criteria with weights and scenario-specific scores for each criterion. The calculated values are displayed for the scenarios.

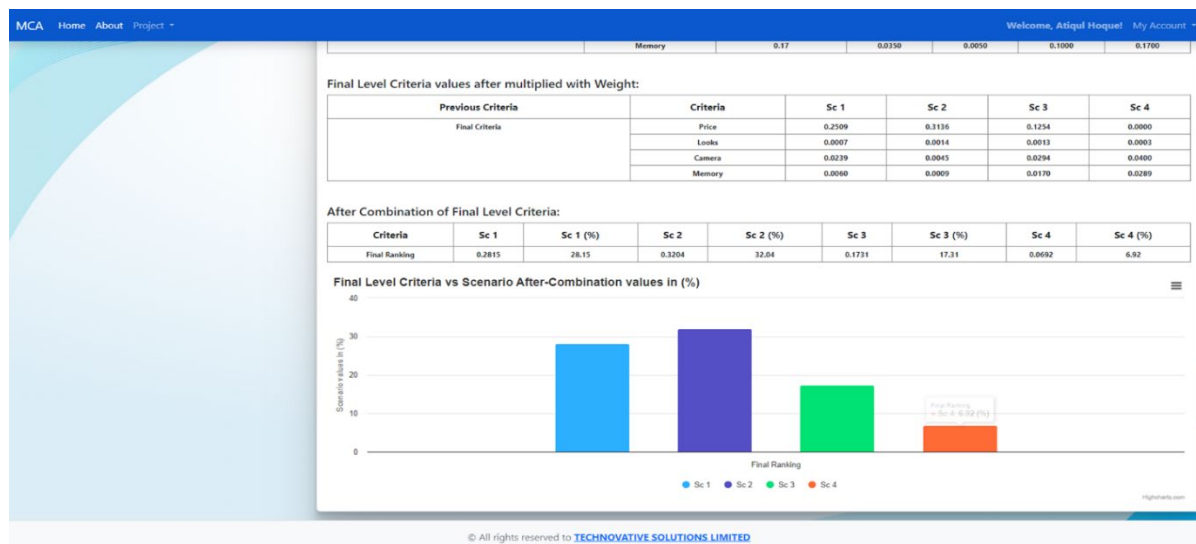


Figure 5.18: The screenshot displays the final level criteria values.

This screenshot displays the final level criteria values after applying weights, the combined values for each scenario, and a bar chart comparing the final ranking of scenarios. The diagram shows the percentage scores for scenarios Sc 1, Sc 2, Sc 3, and Sc 4. In the next version of the MCA, we will include more overlay methods and sensitivity analysis.

5.6.2 Integrated DPSIR and PESTLE Analysis Tool

The CAP integrates the Integrated DPSIR and PESTLE Analysis Tool, developed by another EU-funded project, C2IMPRESS. DPSIR and PESTLE can be characterised in the following ways:

- DPSIR:** The DPSIR approach can be used to evaluate and manage the causal chain analysis. The procedure entails determining the response of specific drivers, pressure or impacts by considering five critical factors: (1) **Drivers:** These are the social, economic, and political factors that drive human activities and influence the state of the environment; (2) **Pressure:** Time restraints, resources, and workload are just a few examples of the pressures that could either affect or generate the hazard; (3) **State:** The situations and elements, such as environmental factors or physical limits, that may contribute to the hazard; (4) **Impact:** The potential adverse effects of the risk, such as harm, loss, or damage; and (5) **Response:** The actions that can be taken to avoid, lessen, or address the risk. DPSIR can assist in identifying and prioritising the risks related to a situation by analysing these variables. By assessing these variables, DPSIR may assist in identifying and prioritising the risks connected to a specific hazard and creating efficient plans to control and reduce those risks. DPSIR is a well-known and commonly utilised risk assessment methodology that may be employed in various fields and circumstances.
- PESTLE analysis** is a popular tool for assessing the external macro-environmental elements that could affect the performance and operations of a business or organisation. The framework looks at several outside elements, such as (1) **Political factors**, which are laws, policies, and regulations that the government may enact that could have an impact on business or industry; (2) **Economic factors**, which

include aspects of the economy that could affect a business or industry, such as inflation, interest rates, and economic growth; (3) **Social factors**: social and cultural trends, demographics, and consumer attitudes and habits are factors that may impact a firm or industry; (4) **Technological factors**: technological developments and innovations that might have an impact on a business or sector are included here; (5) **Legal factors**: laws and regulations that have an impact on the business or industry are included in the legal factors and (6) **Environmental factors**: these include those that could impact a firm or industry, such as climate change, sustainability, and natural disasters. PESTLE analysis may assist organisations in identifying opportunities and dangers and developing strategies to traverse the external environment successfully. PESTLE analysis is a popular and adaptable framework that may be utilised in various fields and circumstances.

The DPSIR and PESTLE Analysis Tool provide an interactive user interface for performing the activities. It always includes result analysis graphics for better visualisation. Some of the screenshots are given in the annex. The tool offers a knowledge base that contains different examples using the DPSIR and PESTLE approaches. One can export outputs in various formats. Some features of the tool are outlined below:

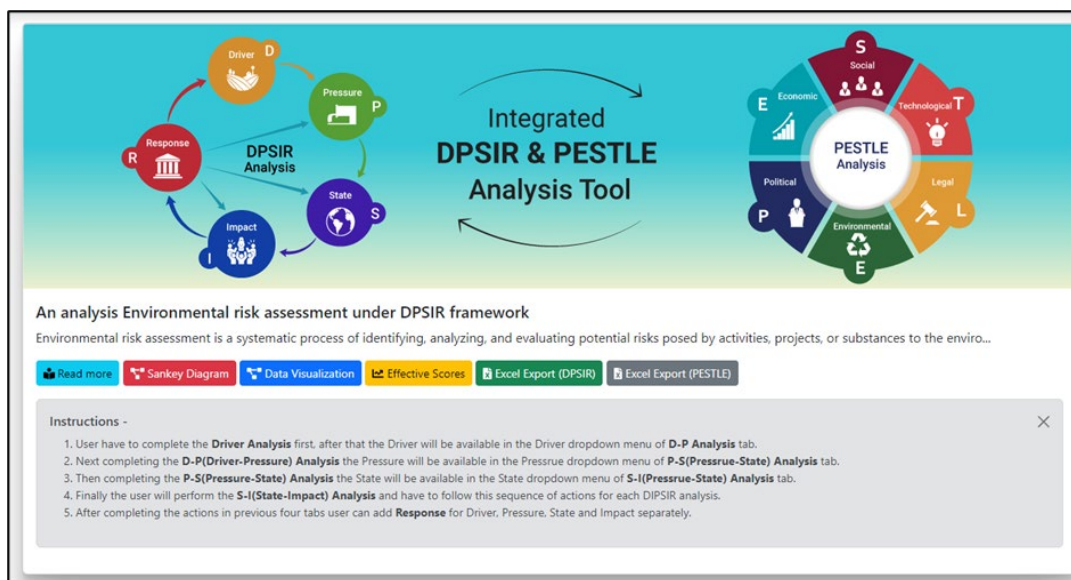
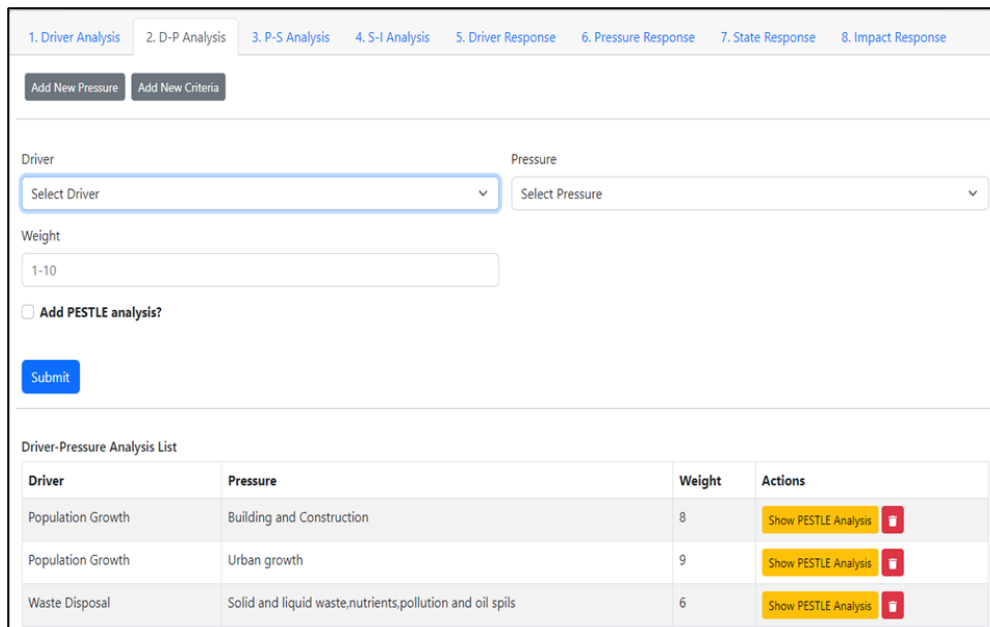


Figure 5.19: Features after login to the project.

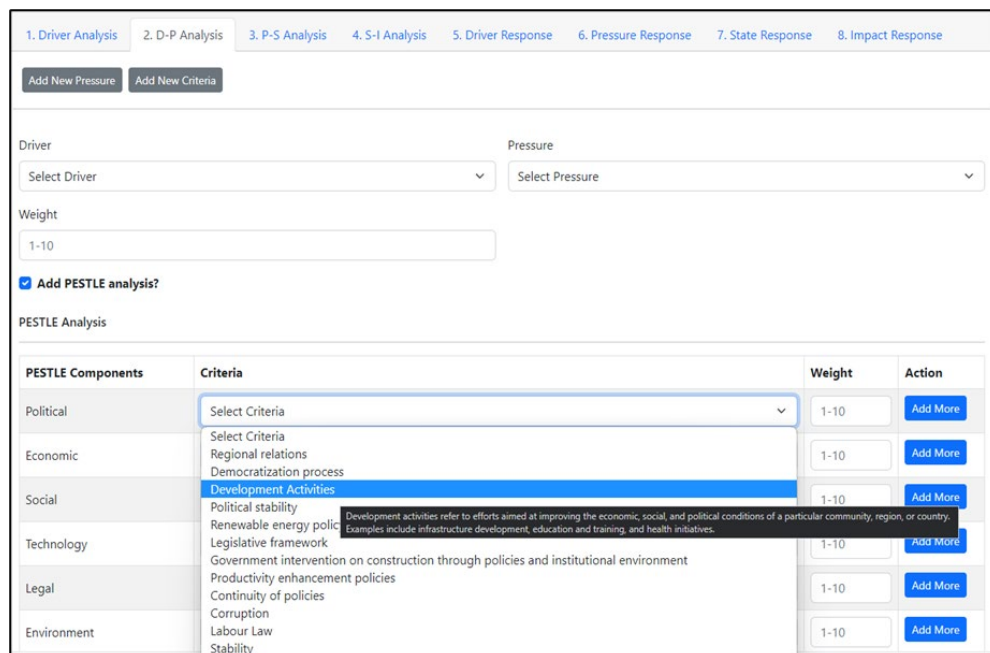
After logging in to the project, the tool shows relevant analysis features. The features are: Read more, Sankey Diagram, Data Visualisation, Effective score, and Excel Export for DPSIR and DPSIR.



Driver	Pressure	Weight	Actions
Population Growth	Building and Construction	8	Show PESTLE Analysis
Population Growth	Urban growth	9	Show PESTLE Analysis
Waste Disposal	Solid and liquid waste,nutrients,pollution and oil spills	6	Show PESTLE Analysis

Figure 5.20: The interface allows the user to select a driver and corresponding pressure.

This interface allows the user to select a driver and corresponding pressure, assign a weight, and add a PESTLE analysis optionally. Below the input fields is a 'Driver-Pressure Analysis List' displaying drivers such as 'Population Growth' and 'Waste Disposal' with their associated pressures, weights, and options to show PESTLE analysis or delete entries.



PESTLE Components	Criteria	Weight	Action
Political	Select Criteria	1-10	Add More
Economic	Select Criteria Regional relations Democratization process	1-10	Add More
Social	Development Activities Political stability	1-10	Add More
Technology	Renewable energy polic Legislative framework Government intervention on construction through policies and institutional environment	1-10	Add More
Legal	Productivity enhancement policies Continuity of policies Corruption	1-10	Add More
Environment	Labour Law Stability	1-10	Add More

Figure 5.21: The PESTLE analysis section.

The PESTLE analysis section lists Political, Economic, Social, technological, Legal, and Environmental components. A dropdown menu allows users to select specific criteria for each element. Users can assign weights and add more criteria for each PESTLE component.

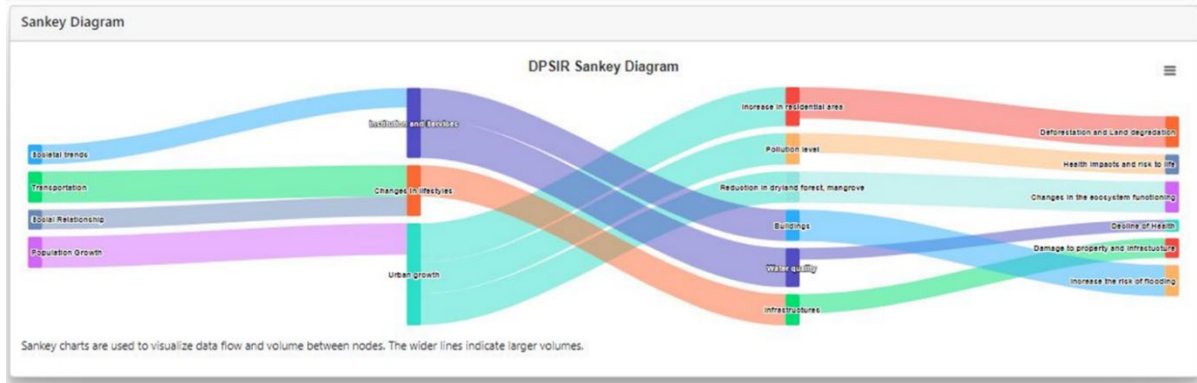


Figure 5.22: Sankey Diagram.

Sankey Diagram visualises data flow and volume between nodes. The diagram shows connections from various drivers, such as ‘Population Growth’, ‘Transportation’, and ‘Urban growth’, to pressures, states, impacts, and responses. More comprehensive lines indicate larger volumes of data flow, illustrating relationships and the magnitude of each connection.

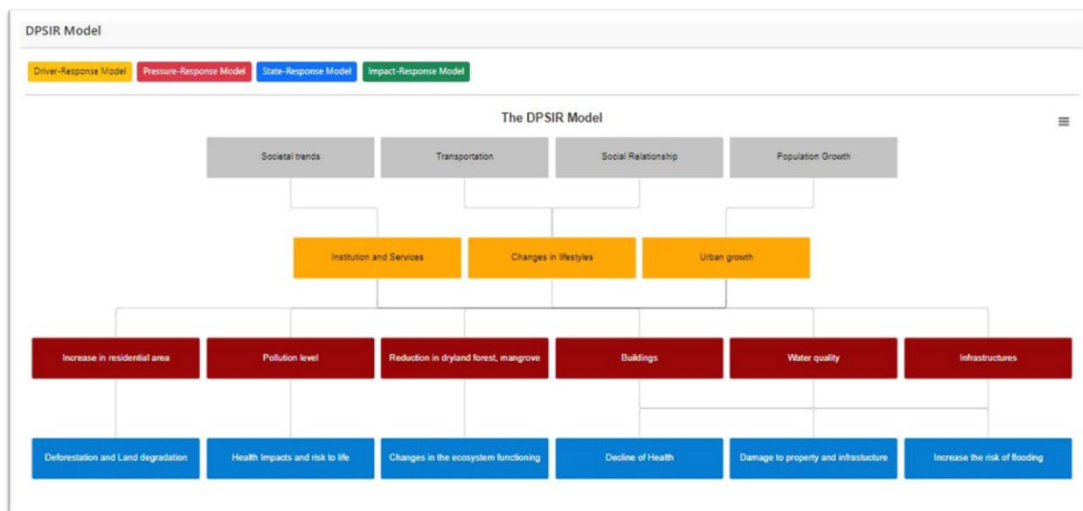


Figure 5.23: Model showing how each element connects within the DPSIR framework.



Figure 5.24: Driver effective scores with chart and equation.

It Displays a formula for calculating the Driver Effective Score and a table listing drivers and their effective scores. A bar chart visualises these scores for comparison, and there is an option to export the data to PDF.

5.7 Citizen Science Tools

The Citizen Assembly Portal will integrate the citizen science tool that EURECAT has developed under the scope of T3.3. EURECAT will provide an API, and TVS will integrate with the portal. An initial version has been tested. When EURECAT finalises the tool, it will be deployed in the portal. The details of the citizen science tool can be seen in D3.3.

Citizen Assembly

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#1 Marine LitterWatch

Project description

Marine LitterWatch is a citizen science project developed by the European Environmental Agency (EEA) to tackle the problem of marine litter.

Objective

The main objective of the project is filling data gaps on marine litter for EU marine environmental policy (the Marine Strategy Framework Directive) involving citizens in its collection and monitoring.

What does it consist of?

To combat the plastic litter problem, communities collect litter from beaches and send data on the items found to the EEA.

Requirements

- Participants should be familiar with the diversity of marine litter items. Even so, the project applications inform on the typologies of litter items.
- Digital tools, like mobile app or access to the website to submit the survey with the observations are recommended
- Gloves, boots, and bags to collect the litter are recommended.

Language

English

Place

Global

Developed by

European Environmental Agency

#environmental health

#marine litter

Inclusivity and accessibility of the tools and materials

- Citizen's involvement
- Equitable use
- Flexibility in use
- Simple and intuitive Use
- Clear content
- Perceptible Information
- Tolerance for Error
- Low Physical Effort
- Size and Space for Approach and Use
- Social, spatial and economic inclusiveness
- Security and protection of data

How can the project and its related activities contribute to climate action?

Preserving and enhancing marine resilience, especially in combating climate change and human impacts. However, the lack of long-term data often undermines confidence in resilience assessments. Integrating climate change and marine litter into resilience frameworks enables more effective actions to be implemented (B. Inoué et al., 2023)

What activities can be conducted within the climate assembly?

- [Framing or Organization phase] Detecting ongoing citizen science activities within the community by identify organizations, researchers, or communities engaged in relevant actions, such as MLW (Marine Litter Watch), to include them in the regular programme.
- [Framing or Organization phase] Addressing citizen concerns through the identification of existing citizen science projects, like MLW, to pinpoint areas most impacted by litter, thus addressing community concerns effectively.
- [Learning Phase] Invite citizen scientist testimonials and deployment of citizen science actions from the project into deliberative democracy processes. It can inspire, empower, engage and foster participation in the assembly while enriching knowledge and experience uptake in a bottom-up manner.
- [Learning Phase] Facilitate knowledge sharing through presentations of previous research, citizen science workshops, testimonials, or collective actions, such as litter sampling or data collection during the assembly.
 - Engaging a core group of (citizen) scientists from MLW to share knowledge and experiences with assembly participants.
 - Engaging a core group of citizen climate assemblies for performing MLW action to share bottom-up and experiential knowledge with the rest of the assembly participants.
- [Learning Phase] Offer visual representations of data collected through MLW to enhance understanding and accessibility of citizen science findings and perform an activity around the visuals.
- [Learning Phase] Integrating citizen science projects into public spaces during climate assemblies. Encourage public institutions like libraries, schools or civic centres to organise citizen science projects like MLW related to the climate topics discussed in the assembly and incorporate their insights into the assembly.
- [Recommendations Phase] Utilising outcomes of citizen science projects for policymaking and expert guidance. Incorporate recommendations from projects like MLW, which are based on evidence collected by citizen scientists, into policy decisions and expert assessments.
- [Follow-up phase] Establishing citizen observatories to monitor the effectiveness of public measures. Enable citizens to monitor the impact of public measures, such as litter control efforts on coastlines, through citizen observatories previously established or created ad hoc in the last phase of the assembly.
- [Follow-up phase] Providing updates on policy implementation based on evidence and monitoring changes in litter levels. Inform assembly participants about policy implementation progress and register changes in litter levels to assess the effectiveness of implemented measures, particularly in coastal areas.

Who can use it?

[Organizers] [Experts] [Civil society] [Citizens]

Links of interest

From source to sea – The untold story of marine litter (EEA)

Outlook and Recommendations (EEA)

Similar projects

Marine Conservation Society

References

Lincoln, S., Anderson, B., Brethornewh, G. N., Chowdhury, P., Engelhard, G. H., Harrod, O., & Townhill, B. L. (2022). Marine litter and climate change: inextricably connected threats to the world's oceans. *Science of The Total Environment*, 837, 155709.

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Figure 5.25: The initial version of the citizen science tool.

EURECAT provided an API that is integrated into the CAP. The tool will be finalised in the second reporting period.



5.8 Climate Assembly Evaluation and Monitoring Tool

The Climate Assembly (CA) monitoring and evaluation tool aims to assist CA organisers in organising, monitoring, and evaluating the performance of a CA. This tool takes inspiration from the methodological framework of Deliverable D5.1 of Work Package 5 (WP5), reinforcing the principles of deliberative democracy. The main objective of this tool is to monitor and evaluate different phases and segments of a CA through surveys, interviews, and report reviews, as well as help CA commissioners and organisers make informed decisions. While navigating the tool, the user can have access to the following features:

- **Admin login/sign up:** users can sign in or sign up for a new ID in our platform. To use this tool, users must have admin rights to perform activities. It is not for general citizens. With admin login credentials, one can participate as a team member or team lead.
- **Assembly information or project creation:** the user can create a new CA as a project and then fill in the descriptions, such as the assembly title, short description, location, commissioner names, date, etc.

A demo example of using the evaluation and monitoring tool of a CA includes details such as the assembly title, public summary, executive summary, location, commissioners, and start and end date). The 'Relevant Authorities' section lists assembly participants with their contact information and roles. The page is in view mode with an option to add new entries.

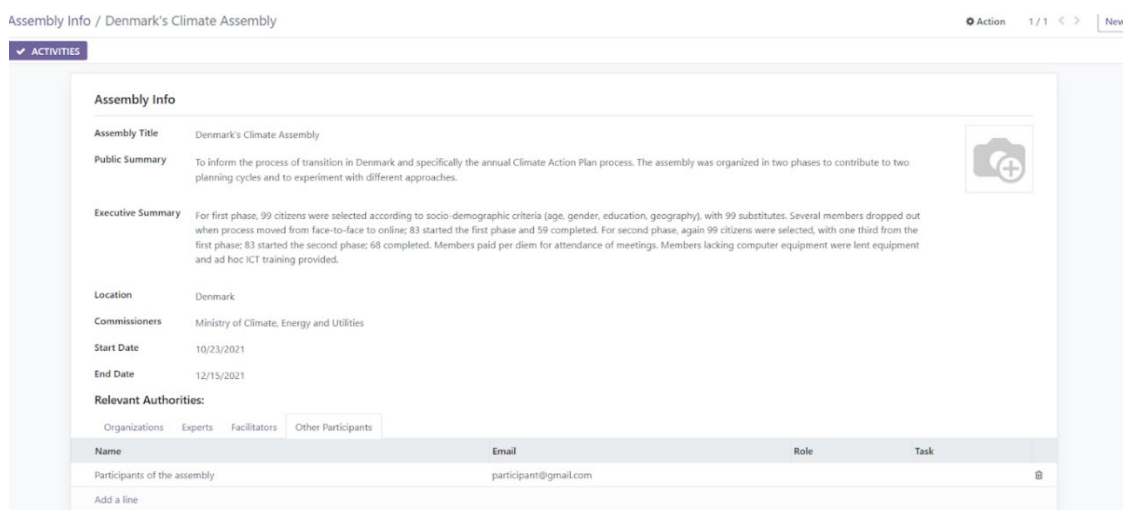


Figure 5.27: A demo example of using the evaluation and monitoring tool of a CA.

- **Organizational Planning**



Create Organizations

Name Demo Name

Email demo@demo.com

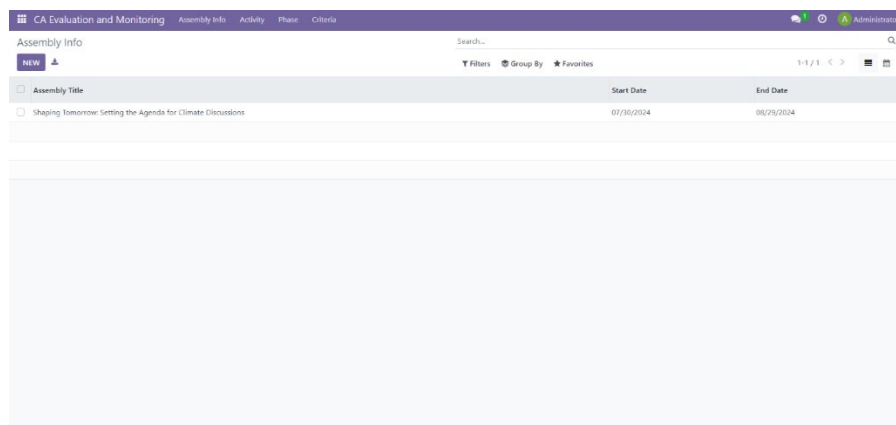
Address demo address

Website demo.com

Role demo manager

Figure 5.28: Screenshot of the user interface allowing users to build the team.

- **Team building:** users can also add their team members’ information such as names, positions, emails, etc. Using this team-building module, information regarding organisations, experts, participants, fascinators, and other stakeholders can be added and stored. Users can add as many members as they want, and this information will later be used to perform various tasks.
- **Activity definitions, budget allocation, ca phases and evaluation features:** after adding the team members, admins/users can define activities, allocate budgets for these activities, and include timesheets, which can later be used to track the project progress. Different phases of CA, such as the input phase, activities phase, output phase, and impacts, can be evaluated using this tool. Criteria and the questionnaires for surveys can be defined using this tool. Users will also have access to pre-define repetitive questionnaires and surveys through this tool, which can later be used for future CAs to lessen the work. Interviews and data reviews can also be conducted using this activity module tool. These surveys. Interviews or data reviews can be directly sent to the relevant persons (i.e. participants, experts, facilitators, stakeholders, etc.) using the previously saved information from the team building module.



Assembly Title	Start Date	End Date
Shaping Tomorrow: Setting the Agenda for Climate Discussions	07/16/2024	08/29/2024

Figure 5.29: Assembly Info provides the information created during the life cycle.

The 'Assembly Info' section contains a list of assemblies by the specific user. Options to create a new entry, filter, group, and favourites are available.

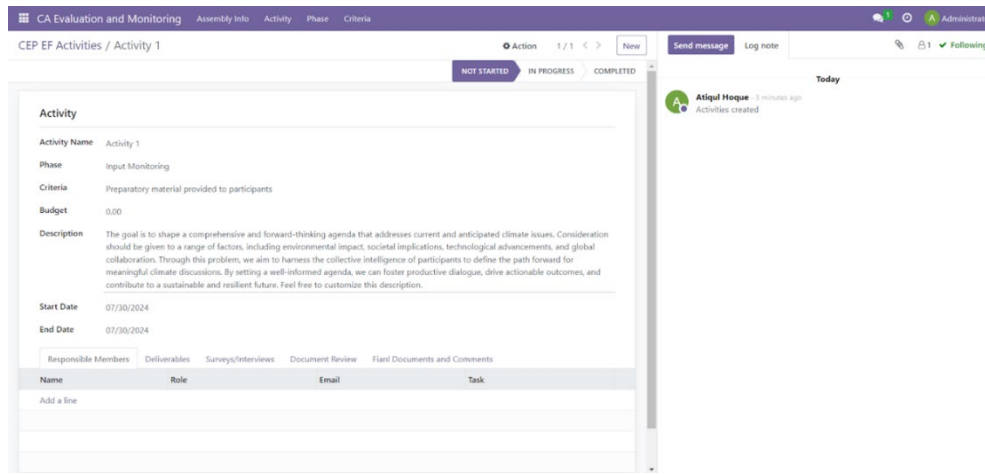


Figure 5.30: CA Evaluation and Monitoring.

The activity is in the 'Input Monitoring' phase, and the criteria include 'Preparatory material provided to participants.' It describes shaping a comprehensive agenda for climate issues, starts and end dates, a budget, fields for responsible members, deliverables, surveys/interviews, documents, and comments. One can send notifications to the team members (right-hand menu).

- **Data Storage, Sharing and Management:** Users can also store their relevant files in this tool through each section's included data storage module for reference.

Create Final Documents and Comments

Name

Email

Comments

Final Document

Figure 5.31: Screenshot of the user interface allowing users to upload and share files with the team.

The architecture of this tool is built so that, despite the complexities of engaging with multiple stakeholders and effective communication, it provides continuous targeted communication among different stakeholders, participants, and organisers, ensuring deliberative democratic principles.

6 Conclusions and steps forward

Our focus will be on several key tasks in the upcoming reporting period. First, we will integrate the final versions of all CLIMAS tools developed in WP3, which have been tested and validated in WP4. We will also explore the integration of relevant open-source tools and complete the outstanding general features outlined in Table 3.1. Additionally, we will develop comprehensive user manuals for each tool to ensure that end users are well-guided. This will include incorporating methodological tools designed for collaborative future scenario building to foster a climate-resilient society. Before final submission, we will develop a guideline tool to facilitate the climate assembly process. The final version will also encompass scenario-building tools (T3.1), prioritisation tools, citizen science toolkits (T3.5), and tools for monitoring and following up on CA recommendations, as well as the Agenda-setting tool (T3.6). According to the CLIMAS proposal, the final deliverable will be ready by M34, with all tools validated and finalised beforehand (Deliverable D3.14 – Report on the Climate Assembly Portal Launching, Final Version). This report will present the final version of the tool, incorporating amendments following the WP4 testing phase. It will include the methodology design, a description of the multilingual CAP—complete with databases from various citizen science activities (T3.1-T3.6), a collection of articles, a list of events, and other related information, as well as links to relevant databases and websites. A user manual for the portal will also be provided.



7 References

- Cairns, G., Angus, K., Hastings, G., & Caraher, M. (2013). Systematic reviews of the evidence on the nature, extent and effects of food marketing to children. A retrospective summary. *Appetite*, 62, 209–215. <https://doi.org/10.1016/j.appet.2012.04.017>
- Cherry, C., Capstick, S., Demski, C., Mellier, C., Stone, L., & Verfuert, C. (2021). Citizens' climate assemblies: Understanding public deliberation for climate policy. -ORCA. *Cardiff.ac.uk*. <https://orca.cardiff.ac.uk/id/eprint/145771/1/CITIZENS-CLIMATE-ASSEMBLIES-CAST-July-2021.pdf>
- CITIZENS' CLIMATE ASSEMBLIES Understanding public deliberation for climate policy*. (2021). <https://cast.ac.uk/wp-content/uploads/2021/07/CITIZENS-CLIMATE-ASSEMBLIES-CAST-July-2021.pdf>
- Climate Assembly UK. (2020). *Climate Assembly UK*. <https://www.climateassembly.uk/>
- Gilardi, F., Shipan, C. R., & Wüest, B. (2020). Policy Diffusion: The Issue-Definition Stage. *American Journal of Political Science*, 65(1), 21–35. <https://doi.org/10.1111/ajps.12521>
- Global Assembly on the Climate and Ecological Crisis Global Assembly on the Climate and Ecological Crisis Evaluation Report*. (2023). [https://researchsystem.canberra.edu.au/ws/portalfiles/portal/82182314/Global Assembly Evaluation Report.pdf](https://researchsystem.canberra.edu.au/ws/portalfiles/portal/82182314/Global_Assembly_Evaluation_Report.pdf)
- Goda Perlaviciute, & Squintani, L. (2020). Public Participation in Climate Policy Making: Toward Reconciling Public Preferences and Legal Frameworks. *One Earth*, 2(4), 341–348. <https://doi.org/10.1016/j.oneear.2020.03.009>
- Introne, J., Laubacher, R., Olson, G., & Malone, T. (2011). The Climate CoLab: Large-scale model-based collaborative planning. *DSpace@MIT (Massachusetts Institute of Technology)*. <https://doi.org/10.1109/cts.2011.5928663>
- Ireland's Citizens' Assembly on Climate Change: Lessons for Deliberative Public Engagement and Communication. (2019). *Environmental Communication*. <https://doi.org/10.1080//17524032.2019.1708429>
- Iwaniec, D. M., Cook, E. M., Davidson, M. J., Berbés-Blázquez, M., Georgescu, M., E. Scott Krayenhoff, Middel, A., Sampson, D. A., & Grimm, N. B. (2020). The co-production of sustainable future scenarios. *Landscape and Urban Planning*, 197, 103744–103744. <https://doi.org/10.1016/j.landurbplan.2020.103744>
- Kording, Konrad P, Gomes, C., Ng, A. Y., Hassabis, D., Platt, J. C., & Creutzig, F. (2019). *Tackling Climate Change with Machine Learning*. ArXiv.org. <https://arxiv.org/abs/1906.05433>
- KNOCA - Knowledge Network on Climate Assemblies. (2024). *KNOCA*. <https://www.knoca.eu/>
- Lorrae van Kerkhoff, & Lebel, L. (2006). Linking knowledge and action for sustainable development. *Annual Review of Environment and Resources*, 31(1), 445–477. <https://doi.org/10.1146/annurev.energy.31.102405.170850>



Parsons, A. (June 27, 2019). *Digital Tools for Citizens Assemblies*. MySociety Research. <https://research.mysociety.org/publications/digital-tools-citizens-assemblies>

Perlaviciute, G., & Squintani, L. (2020). Public Participation in Climate Policy Making: Toward Reconciling Public Preferences and Legal Frameworks. *One Earth*, 2(4), 341–348. <https://doi.org/10.1016/j.oneear.2020.03.009>

Report and Evaluation of the 2021 Global Assembly on the Climate and Ecological Crisis. (2021). Global Assembly. <https://globalassembly.org/report>

Rolnick, D., Donti, P. L., Kaack, L. H., Kochanski, K., Lacoste, A., Sankaran, K., Ross, A. S., Milojevic-Dupont, N., Jaques, N., Waldman-Brown, A., Luccioni, A. S., Maharaj, T., Sherwin, E. D., Mukkavilli, S. K., Kording, K. P., Gomes, C. P., Ng, A. Y., Hassabis, D., Platt, J. C., & Creutzig, F. (2023). Tackling Climate Change with Machine Learning. *ACM Computing Surveys*, 55(2), 1–96. <https://doi.org/10.1145/3485128>

Sandover, R., Moseley, A., & Devine-Wright, P. (2021). Contrasting Views of Citizens' Assemblies: Stakeholder Perceptions of Public Deliberation on Climate Change. *Politics and Governance*, 9(2), 76–86. <https://doi.org/10.17645/pag.v9i2.4019>

The path to net zero. (2019). Climate Assembly UK. <https://www.climateassembly.uk/report/read/index.html>

Voice, P. (2021). People's Voice on Climate. *People's Voice on Climate*. <https://www.peoplesvoiceonclimate.org/>

