CLIMAS

CLIMAte change citizens engagement toolbox for dealing with Societal resilience

Deliverable No. 4.3 - Report on Climate Change Citizens Engagements Toolbox Implementation

Tested toolbox: D3.1 Methodology for citizen-collaborative future scenario building for a climate resilient society, D3.4 Tool for scenario prioritization based on citizen and expert values and D3.6 Knowledge and evidence-based support tool for Climate Assemblies' agenda setting.

Issue date: 07/2025

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Project Acronym	CLIMAS
Grant Number	101094021
Deliverable Number	D4.3
Deliverable Title	Report on Climate Change Citizens' Engagement Toolbox Implementation
Responsible Partner	cambiaMO
Contractual Date of Delivery	31/07/2025
Actual Date of Delivery	31/07/2025
Type	Report
Dissemination Level	PU – Public

Disclosure Statement

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Version control sheet

Version	Date	Main modifications	Organisation
v0.1	25/03/2025	First draft	cambiaMO
V0.2	03/06/2025	Partner input	VILNIUS TECH, GENCAT, VUB, DEL, IFOK, UAEGEAN
v0.3	03/06/2025	Second draft	cambiaMO
v0.4	03/07/2025	Draft to Internal Reviewers	VILNIUS TECH, Green Liberty, Deliberativa
v0.5	15/07/2025	Final version with adjustments after peer review has been submitted for PC review	cambiaMO
v1.0	31/07/2025	PC review and final submission	VILNIUS TECH

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Acronym	**Definition**
LL	Living lab
CA	Climate Assembly
SWOT	Strengths, Weaknesses, Opportunities, and Threats
KEBS	Knowledge and Evidence-Based Support
CA1	Climate Assembly Catalonia
CA2	Climate Assembly Edermünde
CA3	Climate Assembly Riga
LL1	Ebro Delta Living Lab
LL2	Chios Living Lab
LL3	Vilnius Aukštamiestis Living LAB

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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. Recent climate change events, including flooding in Germany and Belgium across both Continental and Atlantic regions, as well as heat waves and water shortages in Mediterranean and Boreal regions, demonstrate that current actions by policymakers, experts, and stakeholders are insufficient, necessitating a comprehensive 360 ° citizens' engagement. 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 to better cope with the effects. Climate assemblies and Living labs are considered 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 together 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 science-based guidelines for policymakers on how to shift Climate Assemblies from technically based deliberations that belong to climate change experts to multi-stakeholders' deliberations based on solving the dilemmas from a bottom-up, more societal, and value-based perspective. CLIMAS outcomes will positively influence policy development and the awareness-raising process, and offer sustainable strategies to enhance the acceptance of citizens-led decisions by policymakers.

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Executive summary

CLIMAS D4.3 “Report on Climate change citizens engagements Toolbox implementation” presents a complete account of the testing and implementation of the CLIMAS participatory tools across diverse pilot sites. It builds on relevant theoretical and methodological frameworks to explore how co-creation processes and citizen engagement practices can strengthen climate resilience and contribute to more inclusive governance.

The report documents the testing, including the contextualisation, methodologies, and outcomes of three core participatory tools of the CLIMAS Toolbox: the Scenario Building tool, the Scenario Prioritisation tool, and the KEBS tool for evidence-based agenda setting. These tools were tested in two Living Labs (Chios and Vilnius) and three Climate Assemblies (Riga, Catalonia, and Edermünde) under the CLIMAS umbrella, allowing for a comparative understanding of their performance in different participatory formats.

Findings highlight the potential of these approaches to support transparent, citizen-informed climate decision-making. Scenario tools enabled participants to co-create and assess possible future pathways for climate resilience. However, their complexity suggests the need for simplification and modular adaptation to better suit deliberative contexts. The KEBS tool proved effective in supporting structured, evidence-based discussions. It contributed to the design of relevant agendas, though future iterations should place greater emphasis on deepening citizen input and strengthening feedback mechanisms to build trust and legitimacy.

Across all pilot sites, the results underscored the importance of inclusive design, skilled facilitation, and methodological flexibility. Effective implementation depended on adapting the tools to the specific socio-political context of each site and ensuring that citizen contributions were reflected in decision-making processes.

The deliverable concludes with a set of recommendations for tool refinement, broader replication, and strategic integration into EU climate governance. It is accompanied by annexes that include workshop agendas, scenario summaries, facilitation guides, and other practical resources to support future adoption and scale-up of the CLIMAS participatory approach.

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1. Introduction

The Climate Change Citizens Engagement Toolbox (CLIMAS Toolbox) was developed under the CLIMAS project as a co-designed framework to strengthen citizen participation in shaping climate resilience strategies across European regions and communities. The Toolbox comprises seven interrelated tools that support citizen-driven decision-making through inclusive and participatory approaches, co-created via an iterative design-thinking process involving diverse stakeholders.

In the context of CLIMAS, deliverable 4.3 (Report on Climate Change Citizens Engagement Toolbox Implementation) focuses on the testing and evaluation of three core tools essential to participatory climate governance:

D3.1 Methodology for Citizen-Collaborative Future Scenario Building.

D3.4 Tool for Scenario Prioritisation Based on Citizen and Expert Values.

D3.6 Knowledge and Evidence-Based Support (KEBS) Tool for Climate Assemblies' Agenda Setting.

These tools were tested in Chios Living Lab (LL2), Vilnius Living Lab (LL3), Catalonia Climate Assembly (CA1), Riga Climate Assembly (CA2), and Edermünde Climate Assembly (CA3), with methodologies adapted to each context and in full compliance with ethical standards and GDPR requirements. Since July 2023, cambiaMO has accompanied the testing process through biweekly stocktaking meetings on Climate Assemblies (CAs) and Living Labs (LLs), helping define the structure of roundtables and workshops and designing connections between activities. This coordination aimed to foster a more organic relationship between CLIMAS Climate Assemblies and Living Labs (Annex 1).

This deliverable also contributes to the refinement of forthcoming final versions of the tools (D3.9 Methodological Guidelines and Manual for Setting-up and Facilitating Climate Assemblies, D3.11 Tool for Scenario Prioritisation Based on Citizen and Expert Values, and D3.13 Knowledge and Evidence-Based Support Tool for Climate Assemblies' Agenda Setting). Moreover, it complements related WP4 deliverables:

D4.1 Report on Set-up and Facilitation of Climate Assemblies,

D4.2 Report on Applying Citizen Science Approach in Climate Assemblies and Living Labs,

D4.4 Report on Toolbox Calibration,

D4.5 Report on Toolbox Evaluation and Validation.

Figure 1 illustrates the interconnections between these deliverables (D4.1–D4.5), the tested tools, and their implementation across the CLIMAS Living Labs and Climate Assemblies, highlighting how each element contributes to the overall participatory framework of the project.

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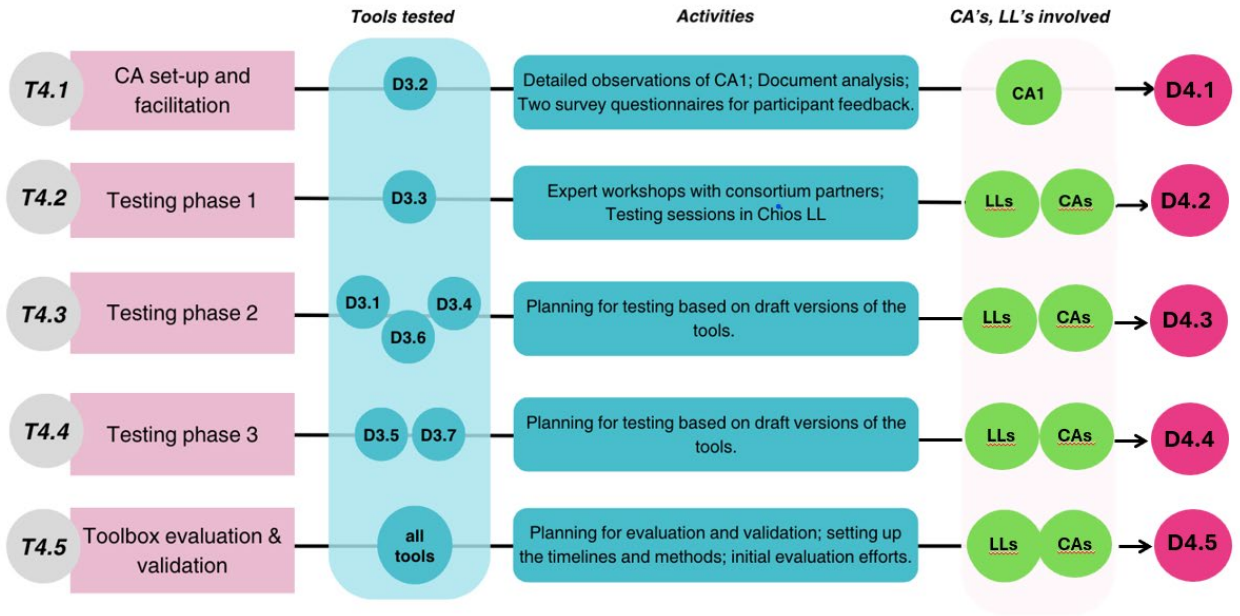

Figure 1. Interconnections between WP4 Deliverables (D4.1–D4.5), Tools tested, Living Labs, and Climate Assemblies

This deliverable is structured into eight core sections, providing a comprehensive account of the testing and implementation of the CLIMAS participatory tools across pilots.

Section 1: Introduction sets the scene by outlining the purpose of the deliverable and its connection to the broader CLIMAS project objectives.

Section 2: State of the Art presents the theoretical and methodological background that underpins the participatory approaches used, including key frameworks in climate governance and citizen engagement.

Section 3: CLIMAS Toolbox: Context and Testing Methodology details the co-creation process, the selection of pilots (Living Labs and Climate Assemblies), and the ethical and GDPR compliance measures applied during testing.

Section 4: Toolbox Testing Analysis provides a case-by-case review of how the tools were implemented in Vilnius, Chios, Riga, Catalonia, and Edermünde, including methodologies used and insights from participants.

Section 5: Scenario Building Testing Outcome analyses the results, challenges, and lessons learned from applying the Scenario Building tool.

Section 6Scenario Prioritisation Testing Outcome evaluates the Scenario Prioritisation tool, reflecting on its usability, integration, and contributions to participatory decision-making.

Section 7: KEBS Tool for Climate Assemblies' Agenda Setting Outcome assesses the KEBS tool's role in supporting evidence-based agenda setting and identifies areas for refinement.

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Section 8: Main Results and Recommendations synthesises the findings across tools and pilots and offers recommendations for future use, integration, and policy impact.

No deviations from the Grant Agreement have been identified in the implementation of the toolbox testing activities reported in this deliverable. All tasks and tools have been implemented as foreseen, with adjustments made only to accommodate specific local contexts, in line with the flexibility allowed under the project's design.

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2. Background

As shown in previous CLIMAS deliverables, such as D2.1 on "Map of citizen participation strategies adapted to different cultural, social, political, and environmental contexts", citizen engagement has emerged as a cornerstone of climate governance, playing a pivotal role in the formulation and implementation of policies. As climate change presents increasingly complex socio-political and environmental challenges, governments and institutions have recognised the necessity of integrating public participation into decision-making processes (Newig & Fritsch, 2009). This approach aligns with democratic theory, participatory governance, and deliberative democracy, emphasising the importance of inclusive decision-making to ensure that diverse societal perspectives shape climate policies and actions (Ross et al., 2021).

Climate resilience, defined as a society's capacity to anticipate, prepare for, and adapt to climate-related disruptions (Bahadur et al., 2013), relies heavily on citizen engagement. Beyond adaptation, resilience strategies must incorporate proactive and reactive approaches that sustain economic, social, and environmental stability. Collaborative scenario-building processes have been shown to enhance resilience by incorporating diverse perspectives and fostering inclusive decision-making (Nelson, 2011; Abeling, 2018). Participatory methods, such as Future Scenario Workshops, Living Labs, and Climate Assemblies, have been widely employed to encourage deliberative democracy and citizen-driven policy development (Alminde & Warming, 2020; Van den Ende et al., 2022).

A foundational model for understanding the levels of public participation is Arnstein's (1969) Ladder of Citizen Participation, which categorises engagement into different degrees, from nonparticipation and tokenistic consultation to active citizen participation and complete control over decision-making processes. Fung's (2006) Democracy Cube expands upon this model by providing a multidimensional assessment of participation, considering who is involved, how decisions are made, and the level of authority granted. These frameworks underscore the role of participatory mechanisms in fostering legitimacy, effectiveness, and equity in climate governance. Deliberative democracy, as emphasised by Dryzek (2002), asserts that citizen engagement must extend beyond passive consultation to actively involve the public in structured, informed, and inclusive deliberation. Participatory scenario-building techniques that involve diverse stakeholders in shaping climate policy contribute significantly to these goals by ensuring that decision-making processes reflect a broad spectrum of societal values and concerns (Troxler & Kuhnt, 2007; Milojević, 2021).

Empirical evidence underscores the effectiveness of participatory governance in climate policymaking. Notable initiatives such as the French Citizens' Convention on Climate (2020) and the Irish Citizens' Assembly on Climate Change (2017) have demonstrated how structured deliberations among randomly selected citizens can generate concrete policy recommendations that influence national legislation (Giraudet et al., 2022; Farrell et al., 2019). These cases illustrate how participatory governance can bridge the gap between expert knowledge and societal values, fostering policies that are both scientifically sound and socially legitimate. Furthermore, citizen

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engagement enhances climate resilience by fostering social learning, building trust, and promoting locally appropriate solutions (Ling et al., 2020). To maximise impact, engagement strategies must be adaptive, context-specific, and inclusive, ensuring that risk communication strengthens community preparedness and responses to climate challenges.

Scenario development techniques play a crucial role in climate resilience planning. Börjeson et al. (2006) classify scenarios into three types: predictive (forecasting future events based on current trends), explorative (examining alternative developments through external and strategic perspectives), and normative (defining desired futures and pathways to achieve them). Techniques such as Delphi methods, cross-impact analysis, and system dynamics modelling have been widely utilised, enabling decision-makers to assess multiple climate adaptation pathways (Meinert, 2014).

Multi-Criteria Decision-Making (MCDM) methodologies offer structured approaches for evaluating complex decision problems that involve multiple conflicting criteria (Mateo, 2012; Majumder & Majumder, 2015). Prominent MCDM methods include the Analytic Hierarchy Process (AHP), which decomposes decision problems into hierarchical structures to rank priorities (Saaty, 1980); the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), which identifies optimal solutions by comparing alternatives to an ideal solution (Hwang & Yoon, 1981); and the Preference Ranking Organisation Method for Enrichment Evaluation (PROMETHEE), which evaluates alternatives based on preference functions (Brans & Vincke, 1985). AHP has been widely used for scenario prioritisation due to its structured pairwise comparison framework, which minimises bias and enhances decision consistency (Goepel, 2013).

The agenda-setting process plays a crucial role in determining which climate change issues receive policy attention and how priorities are established (Cobb & Elder, 1983). Theories such as the Multiple Streams Framework (Kingdon, 1995) and Punctuated Equilibrium Theory (Baumgartner et al., 2018) provide valuable insights into how climate issues emerge on political agendas. Agenda-setting components include the problem stream, which identifies climate challenges based on scientific data and public perception; the policy stream, which develops feasible solutions through policy communities and expert deliberations; and the political stream, which involves the influence of national mood, advocacy coalitions, and institutional actors in prioritising climate policies.

Despite its advantages, participatory climate governance faces several challenges, as highlighted since the first setting the scene deliverables, such as the D2.2 on “Report on bottlenecks, barriers and drivers, reaching deliberation by solving value-based problems” and D2.3 for “Understanding the EU regions and local communities' capacity to engage citizens in deciding climate change actions”. Issues of representation and diversity remain critical, as ensuring the inclusion of marginalised voices in decision-making processes is essential for equitable climate policies (Newig & Fritsch, 2009). Cognitive, structural, and institutional barriers may hinder active engagement, limiting the capacity of participatory mechanisms to influence policy outcomes. The effectiveness of these processes largely depends on political will, the availability of adequate resources, and the institutionalisation of citizen input within policy frameworks. Without sustained integration into

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governance structures, participatory efforts risk becoming symbolic rather than transformative, reducing their long-term impact (Falanga & Ferrão, 2021).

Climate Assemblies have emerged as effective forums for structured citizen deliberation on climate policy. Empirical studies highlight that such assemblies enhance democratic legitimacy and policy acceptance by integrating diverse stakeholder perspectives (Van den Ende et al., 2022). Key success factors include deliberative democracy mechanisms (Dobos, 2013), knowledge and evidence-based support (IPCC, 2021), and scenario prioritisation tools such as AHP for ranking climate action strategies based on citizen and expert input (Temuçin, 2021).

Building on these national experiences, Climate Assemblies at the global level represent a growing effort to bridge the gap between local realities and international climate governance. By creating spaces where frontline communities, Indigenous Peoples, women and gender diverse persons, youth, and environmental defenders can deliberate and articulate their priorities, these assemblies challenge the structural exclusion embedded in existing multilateral processes. The outcomes of local and regional assemblies are brought to the global stage, offering a direct counterpoint to elite-driven negotiations and ensuring that demands for climate justice — including reparations, finance justice, and protection of defenders — are not sidelined but central to the international agenda.

During the three years of the project, the CLIMAS Toolbox testing has gone beyond EU-based Climate Assemblies and engaged in the international climate governance space through side events at UN Climate Change Conferences (COP27, COP28, and COP29) and the SB58, SB60, and SB62 intersessionals in Bonn. While Action for Climate Empowerment (ACE) calls for more inclusive participation, existing mechanisms remain insufficient, fragmented and inaccessible for many. At a time when climate justice demands systemic transformation — not token inclusion — a new architecture for active participation is urgently needed (Di Ciommo, F., 2024). The Global Climate Assembly (GCA) emerges in response to this injustice. It is a locally rooted, regionally coordinated, globally presented process led by frontline communities and environmental defenders. It aims not only to strengthen demands for participation but also to reshape the substance of what is negotiated, from just transition and loss and damage to reparations, adaptation, rights, and finance (Cintrón-Rodríguez & Di Ciommo, 2024).

In conclusion, this review highlights the theoretical foundations and methodological approaches underpinning climate change citizen engagement, scenario-building, and multi-criteria decision-making for scenario prioritisation. Implementing the Climate Change Citizens Engagement Toolbox requires integrating participatory scenario workshops, robust decision-support tools, and inclusive policy frameworks to foster climate resilience and adaptive governance. Future research should focus on enhancing digital engagement platforms, refining scenario prioritisation methodologies, and evaluating the long-term impact of citizen-led climate initiatives. This deliverable presents the testing of the co-designed CLIMAS tools.

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3. CLIMAS Toolbox: Context and Testing Methodology

3.1 Context

The methodology employed in the CLIMAS project follows a structured, multi-phase framework based on the principles of design thinking (Figure 1). This evaluation approach ensures methodological rigour, cross-contextual applicability, and iterative refinement.

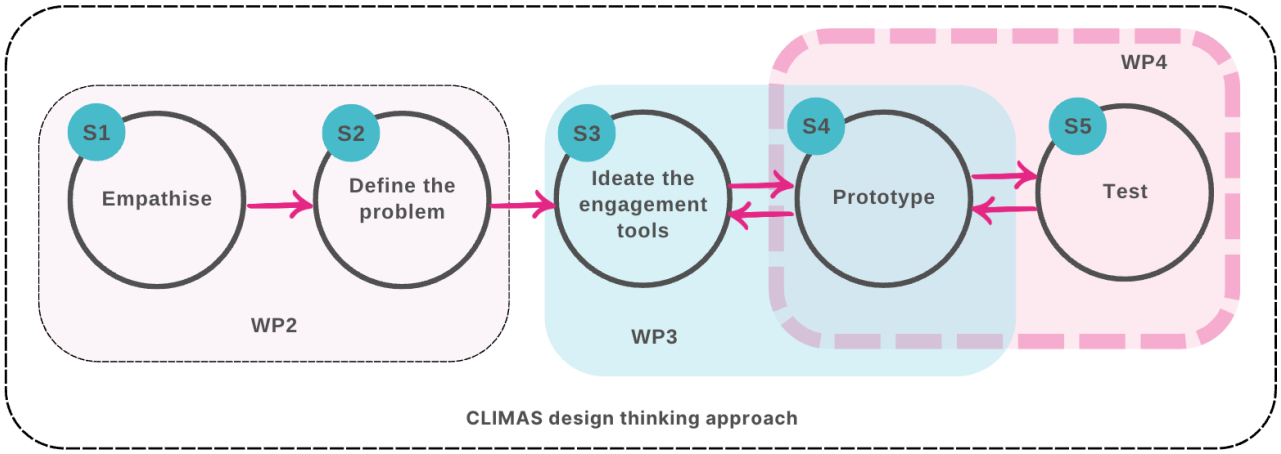

Figure 2. CLIMAS methodology

During the emphasis and problem definition stages (CLIMAS WP2), requirements of the stakeholders, together with barriers and drivers of the deliberative process, were defined (reported in D2.1, D2.2 and D2.3). This was followed by intense co-creation and prototyping efforts undertaken in CLIMAS WP3. Unlike conventional research and development projects, where experts conceptualise tools and later validate them by users, the CLIMAS project adopts a co-creation and testing methodology deeply rooted in participatory and iterative design. This approach ensures that the tools are not only scientifically robust but also context-sensitive and aligned with the needs and capacities of local communities, grassroots, and citizens.

Co-creation in CLIMAS involved the direct participation of diverse stakeholders—including citizens, policymakers, local authorities, and civil society organisations—throughout the entire development lifecycle. Instead of limiting participation to end-stage feedback, stakeholders were engaged from the outset: identifying adaptation needs (WP2), prioritising user values (D3.4), and co-defining tool structures and use cases through Living Labs and iterative workshops (D3.1, D3.2, D3.3). Each of the seven tools underwent localised testing in different formats. For instance, the Scenario Building Methodology (D3.1) was co-designed and tested in Vilnius and Chios, where citizens actively envisioned resilient futures. The Citizen Science Tool (D3.3) was tested in real-world settings such as CLIMAS living labs and Climate Assemblies, public events and the ECSA 2024 conference, combining data gathering with local experiential knowledge. The KEBS tool (D3.6) and Scenario

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Prioritisation Tool (D3.4) were further validated with both expert panels and citizen groups to ensure a balanced integration of evidence and public values.

This extensive co-design and testing strategy distinguishes CLIMAS by embedding inclusivity and adaptability at the core of its methodological framework. It allowed the team to identify usability challenges early, incorporate feedback dynamically, and ultimately deliver tools that can be implemented across varied socio-political and governance contexts. As a result, the 7 CLIMAS tools were co-designed together with a diverse range of stakeholders. The process of co-creation and initial versions of the tools are detailed in D3.1, D3.2, D3.3, D3.4, D3.5, D3.6 and D3.7. The following Table 1 This deliverable provides brief descriptions of the tools under investigation.

Table 1. CLIMAS tools

Title	Related deliverable	Brief description	Co-creation and testing activities in LLs
Scenario Building Methodology	D3.1	The methodology was designed to engage diverse stakeholders in envisioning alternative futures for climate resilience. The process is based on the Future Studies framework and participatory workshops held in two pilot cities: Vilnius (Lithuania) and Chios (Greece). The methodology fosters a structured dialogue that allows participants to analyse key trends, uncertainties, and challenges related to climate change, resulting in the co-creation of multiple possible future pathways. A critical component of this approach is the identification of key drivers, which involves analysing critical social, environmental, and economic factors influencing climate change. These drivers are then used as the foundation for scenario generation, where participants apply structured methodologies such as Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis and morphological boxes to create and visualise different future trajectories. Once scenarios are developed, the final phase is scenario refinement, where expert input is used to assess the plausibility, feasibility, and strategic implications of each scenario. This participatory and iterative process ensures that the generated scenarios are comprehensive, realistic, and actionable.	In Vilnius, the workshops were hosted at Technarium Makerspace, involving local citizens, climate experts, and municipal representatives. In Chios, the sessions were held at the premises of the University of the Aegean, engaging civil society organisations, students, and public sector actors. Each location adapted the methodology to its regional context, incorporating locally relevant drivers and dynamics.
Scenario prioritization	D3.4	Following the scenario-building phase, the Scenario Prioritisation tool is applied to systematically rank scenarios, ensuring that the most impactful and viable options receive priority	The co-creation and testing activities were conducted in Vilnius and Chios, where stakeholders—ranging from

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		consideration. This component employs a Multi-Criteria Decision Making (MCDM) model using the Analytic Hierarchy Process (AHP) to assess scenarios based on multiple dimensions, including relevance, feasibility, impact, and stakeholder preferences. The prioritisation process begins with the distribution of stakeholder surveys, which collect quantitative and qualitative data on scenario preferences from both experts and citizens. The AHP framework then applies mathematical weighting techniques to these responses, allowing for an objective scenario ranking that highlights the most promising climate resilience pathways. By structuring decision-making around systematic evaluation criteria, this approach ensures that the prioritisation process is transparent, inclusive, and scientifically sound. Additionally, the tool integrates a sensitivity analysis component, which assesses how changes in input weights influence prioritisation outcomes, thereby enhancing the robustness and adaptability of the results.	local authorities and civil society to climate experts—were engaged through tailored surveys and deliberative sessions. In Vilnius, participants contributed via in-person workshops held at municipal and university facilities, while in Chios, engagement was primarily organised through local government offices and civil society organisations. These sessions facilitated data collection for the scenario prioritisation process using the Analytic Hierarchy Process (AHP) and allowed direct discussion of local climate adaptation challenges.
Agenda setting	D3.6	The Agenda Setting component, also known as the Knowledge and Evidence-Based Support (KEBS) Tool, is designed to assist Climate Assembly organisers in defining policy agendas based on a combination of expert insights, data analytics, and public engagement. The KEBS tool aggregates data from diverse sources, including scientific literature, media analysis, and expert opinions, to identify the most pressing climate-related issues. A key feature of the KEBS tool is its use of AI and machine learning techniques to extract relevant topics from large datasets, including climate change policies implementation, newspapers, academic literature, and local knowledge, ensuring that agenda-setting is grounded in evidence and emerging trends. The tool also incorporates public and expert consultations, using interactive platforms to collect feedback and refine agenda items based on multi-stakeholder input. Once an agenda is drafted, the tool applies a technical, economic, and political feasibility assessment to ensure that the final recommendations align with policy constraints and governance capabilities. By combining advanced data analytics with participatory methodologies, the KEBS tool enhances the legitimacy, effectiveness, and inclusivity of climate policy deliberations (D3.9).	The KEBS tool was co-created in the LLs of Vilnius and Chios. In Vilnius, the engagement was facilitated via a combination of interactive workshops and digital platforms to validate agenda topics with municipal experts and civil society actors. In Chios, the co-creation process relied more heavily on in-person consultations involving local policymakers, youth representatives, and environmental NGOs. These sessions allowed iterative feedback loops, aligning data-driven outputs with lived experiences and regional priorities for climate change adaptation.

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3.2 Testing Methodology

This section details the core functions of each component and outlines the testing methodology used to validate the toolbox, including research design, tools implementation, ethical considerations, and GDPR compliance. By integrating these elements, the toolbox ensures a systematic, inclusive, and scientifically robust approach to climate governance analysis that aligns with deliberative principles and policy frameworks. The overall process was divided into three main phases:

Phase 1: Co-Design of a Common Testing Framework

This phase involved the collaborative development of a unified testing protocol. Design-thinking methods such as World Café sessions were used among project partners to co-create shared testing criteria, define relevant stakeholder groups, and align methodological approaches. The objective was to establish a flexible but consistent evaluation structure suitable for deployment across multiple socio-political contexts.

Phase 2: Real-World Implementation in Five European Regions

The toolbox was implemented in five diverse territories (Table 2), each providing a unique context for participatory climate governance:

Vilnius Living Lab (Lithuania): A co-creation site for the Scenario Building and testing Scenario Prioritisation tools, contributing to participatory urban climate adaptation strategies through scenario-based methodologies.

Chios Living Lab (Greece): Participated in the co-creation of the Scenario Building and testing Scenario Prioritisation tools, addressing local climate-related challenges.

Riga Climate Assembly (Latvia): A testing case for the KEBS tool (Agenda Setting), where citizen science approaches were integrated into a formal assembly structure to strengthen participatory climate decision-making in biodiversity restoration and adaptation to climate change.

Catalonia Climate Assembly (Spain): A *testing* environment that focused on institutionalising the toolbox, primarily through the Agenda Setting, and the integration of citizen recommendations into regional adaptation planning.

Edermünde Climate Assembly (Germany): — tested Scenario Building and the KEBS tool (Agenda Setting)—to evaluate CLIMAS co-designed methods in small-municipality governance, particularly in land use and climate adaptation contexts.

This phase assessed the practical applicability of the toolbox across varying governance cultures, institutional settings, and levels of civic participation.

Table 2. Overview of testing activities

	Vilnius	Chios	Riga	Catalonia	Edermünde
Scenario building					x

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Scenario prioritisation	x	x			
KEBS tool (Agenda Setting)			x	x	x

Phase 3: Iterative Feedback Collection and Tool Refinement

Following implementation, structured feedback was gathered from citizens, facilitators, and policy actors involved in LLs and CAs. Revisions to the toolbox were made accordingly, enhancing usability, improving methodological flexibility, and reinforcing its capacity as a decision-support tool for participatory climate policy design.

Living Labs and Climate Assemblies in CLIMAS

The selection of the five locations —Vilnius LL, Chios LL, Catalonia (CA1), Edermünde (CA2), and Riga (CA3)—was done during the CLIMAS proposal phases (Figure 3). They were chosen based on three key criteria: the presence of active civic engagement processes, institutional openness to participatory governance, and the diversity of environmental and climate-related challenges they face.

- Vilnius (Lithuania): An urban environment with a progressive approach to sustainability and climate adaptation. The Living Lab in Vilnius provided a space for integrating citizen-led scenario-building into the municipality's climate strategy and tested the Scenario Prioritisation tool.
- Chios (Greece): A coastal island context where sustainable tourism, shipping, agriculture, and environmental protection intersect. The Living Lab in Chios enabled the co-creation of the Future Scenario Building tool, addressing local and/or global climate resilience, and also the Scenario Prioritisation Tool for scenario ranking based on citizen and expert values. Also, Chios LL was involved in the testing of applying Scenario Prioritisation and the Citizen Science tool.
- Catalonia (Spain): A region with established institutional frameworks for citizen involvement in climate policymaking. The Climate Assembly *tested* the integration of expert knowledge and citizen input in shaping evidence-based adaptation strategies.
- Edermünde (Germany): A small municipality where the assembly *tested* participatory tools for land use and climate adaptation, with an emphasis on community-driven visioning and prioritisation.
- Riga (Latvia): The capital city served as a *testing ground* for implementing citizen science in a formal urban assembly setting, aiming to strengthen participatory structures in local climate governance.

These regions, cities, islands and small municipalities around Europe collectively provided a representative spectrum of institutional arrangements, civic participation cultures, and geographic-

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climatic conditions, allowing for a comprehensive validation and refinement of the Climate Engagement Toolbox.

Figure 3. CLIMAS climate regions

3.3 Ethical Considerations

Ethical integrity and inclusive engagement are foundational principles in the CLIMAS project. As detailed in *Deliverable 1.3 – Ethics and gender-sensitive and equality monitoring report*, all participatory activities were conducted under rigorous ethical standards. Standardised informed consent procedures were applied and adapted to each method of data collection—surveys, interviews, and workshops—to ensure participants clearly understood the study's objectives, procedures, and data usage.

The project placed a strong emphasis on engaging marginalised and vulnerable groups, aligning with CLIMAS's commitment to inclusive Living Labs and Climate Assemblies. Efforts were made to ensure accessibility across age groups, literacy levels, and cultural backgrounds, with participatory formats designed to reflect values such as equity, dignity, and respect.

Transparency was ensured throughout the research process, with methodological tools, decisions, and results made publicly available where appropriate. Oversight mechanisms—including continuous monitoring and local ethical approvals where necessary—were established to ensure alignment with international research standards. Rather than treating ethics as static compliance, CLIMAS adopted a dynamic, reflective approach, integrating ethical reflection into the co-creation and implementation of the CLIMAS Toolbox (D 1.3, Ethics and gender-sensitive and equality monitoring reports v2.0).

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3.4 GDPR Compliance

The project fully complies with the General Data Protection Regulation (GDPR), with robust data protection measures implemented across all case studies. All personal data collected was anonymised, securely stored, and processed exclusively for research purposes.

Access to data was restricted to authorised personnel, and a data governance framework was established to ensure the responsible handling, retention, and disposal of sensitive information. These protocols were consistently applied across all regions to maintain participant privacy and safeguard research integrity.

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4. Toolbox Testing Analysis

4.1 Living Lab Vilnius

The Vilnius Living Lab workshops, held in October 2023 (Annexes 2 and 3), served as a crucial ground for co-creating key CLIMAS methodologies and tools aimed at prioritising climate-resilient future scenarios. The activities were designed to explore how participatory processes can inform local climate adaptation pathways while providing real-life feedback on the tools developed under Work Package 3 of the CLIMAS project.

A total of 12 participants took part in the prioritisation of future scenarios workshops. The group reflected a diverse cross-section of stakeholders, including representatives from academia, local government, NGOs, business sectors, and civic communities. This diversity ensured that the testing captured multiple perspectives relevant to climate adaptation challenges in Vilnius. The workshops were hosted in collaboration with local partners and coordinated by VILNIUS TECH, with the support of other CLIMAS consortium members.

The workshops were structured around two main phases. The first phase focused on the scenario-building process, where participants collectively developed alternative future scenarios for Vilnius (Figure 4) using participatory foresight techniques such as the breakout sessions. Breakout sessions refer to small group discussions within the workshop, where participants work in focused teams to explore key drivers, generate ideas, and co-create scenario components before sharing outcomes in plenary. This phase applied tools such as brainstorming sessions, STEEP factor analysis (Szpilko et al., 2020), and the construction of morphological tables to generate coherent scenario narratives. Examples of scenarios developed include: (1) Innovation in communication, focused on developing new tools and citizens' assemblies to enhance climate change awareness and responsiveness; (2) Local campaigns, where municipalities organise community-based initiatives with tangible actions to foster engagement; (3) Climate friendly Lithuania, which builds a national identity around climate neutrality through political decisions, urban greening, and community initiatives; and (4) Green Vilnius, envisioning the city as a smart, climate-neutral urban space with digital monitoring systems and equitable green transport solutions. The second phase centred on Scenario Prioritisation, where participants engaged with a multi-criteria decision-making process to evaluate and rank the developed scenarios based on shared values and priorities.

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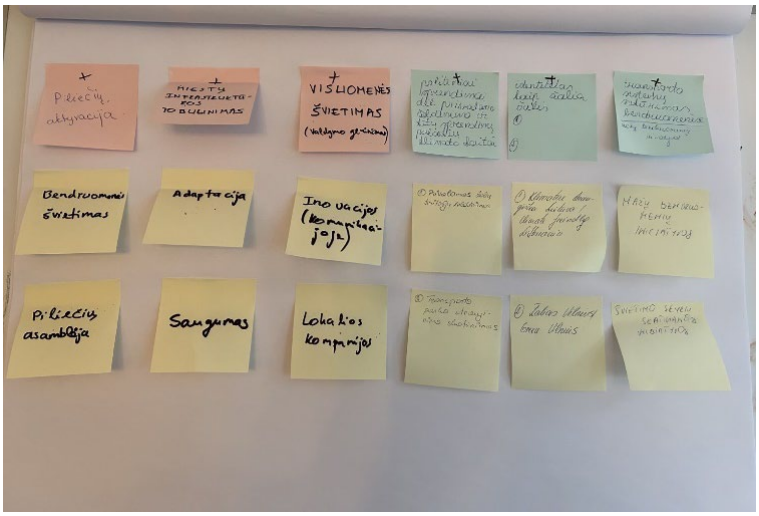

Figure 4. Future scenario workshop

The Vilnius testing was designed not only to assess the technical robustness of the tools (Tool 3.2 for scenario building and Tool 3.4 for prioritisation) but also to examine how well they supported inclusive participation, knowledge co-creation, and value-driven decision making. To this end, semi-structured interviews were conducted at the end of the workshops to gather detailed participant feedback on the methods, tools, and facilitation approach.

Throughout the activities, particular attention was given to inclusivity, accessibility of materials, and time management. The sessions were adapted dynamically to address emerging challenges, such as the need for clearer facilitation in complex methodological steps and for balancing participation across different stakeholder groups. These results provide valuable insights for refining the CLIMAS tools and ensuring their suitability for future applications across diverse European contexts.

4.2 Living Lab Chios

The Chios Living Lab played a pivotal role in testing and refining the CLIMAS scenario building and prioritisation tools as part of the project's broader ambition to co-create pathways towards climate-resilient societies. Specifically, it co-created and iteratively improved the Scenario Building Tool (T3.1) and tested the Scenario Prioritisation Tool (T3.4), contributing to the development of a replicable methodology for participatory climate adaptation planning. The Living Lab activities focused on addressing local climate resilience challenges through co-creation and multi-stakeholder engagement, bringing together 18 participants, including citizens, public authorities, professionals, and academia.

These challenges included:

Forest protection and wildfire management, combining traditional techniques like controlled burning with modern monitoring tools such as drones and satellite imagery to prevent fires and enhance carbon sequestration.

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Sustainable water management, through measures such as the revival of traditional rainwater collection systems (*fountains*), water-saving campaigns, maintenance of supply networks, and reuse of treated wastewater for irrigation.

Sustainable tourism under climate change pressures, including managing carrying capacity, reducing environmental footprints of hotels, promoting fishing tourism, and extending the tourist season beyond peak summer to adapt to hotter conditions.

Climate-resilient agriculture, with digital tools (e.g., sensors and high-resolution mapping) enabling precision farming and reduced environmental footprint, while supporting local farmers with training and incentives.

Social inclusion in sustainability efforts, ensuring that vulnerable communities benefit from climate adaptation measures and that citizen-led movements can drive policy changes towards sustainability

The Chios process unfolded across three phases between November 2023 and May 2025. The first phase centred on the co-creation of five future scenarios for Chios during the workshop on 29 November 2023. Participants applied participatory foresight methods combining group brainstorming, STEEP factor identification, morphological analysis (Belaziz et al., 2000), and narrative development (Krauß, 2020). This structured, step-by-step approach was found to balance creativity with clarity, supporting participants—including those less familiar with scenario methods—in generating meaningful and coherent scenarios. The resulting scenarios included: (1) a high-level climate response combining traditional knowledge with innovation, focusing on forest protection, water management, and the prioritisation of vulnerable communities; (2) the digitalisation and use of artificial intelligence to achieve sustainable agriculture with reduced environmental impact; (3) sustainable tourism adapted to climate change, integrating local traditions, reducing environmental footprints, and shifting the tourism season; (4) top-down environmental policies supported by emerging technologies and state-led initiatives; and (5) a society on the path to sustainability, driven by grassroots movements promoting lifestyle changes, social inclusion, and environmental legislation.

In the second phase, held in April 2024, participants evaluated and prioritised the scenarios using a multi-criteria decision-making approach. They applied both criteria developed in Chios and additional ones introduced through cross-pilot learning with the Vilnius Living Lab. The prioritisation process, supported by digital surveys based on the Analytic Hierarchy Process (AHP) and accessible via QR codes, tested the usability and relevance of Tool T3.4. While participants appreciated the comprehensive criteria, some found the large number challenging, indicating opportunities to streamline and better balance methodological depth with user-friendliness.

The final phase took place on 21 May 2025 (Annex 5) (Annexes 4 to 8), when participants re-evaluated the expert-revised scenarios using a consolidated set of 12 criteria. This process integrated feedback from previous phases as well as expert input, including SWOT analysis (Suh, 2014), which helped strengthen scenario plausibility and alignment with local realities, such as the

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politically sensitive issue of antimony mining. The combination of digital tools and facilitated discussions enabled inclusive reflection on scenario feasibility and desirability.

Valuable insights from the Chios Living Lab highlighted both strengths and areas for refinement. The structured methodology fostered creativity and collaboration, while diverse participation enriched the process and enhanced the legitimacy of outcomes. The integration of expert input alongside participatory approaches improved the plausibility and relevance of scenarios. However, the experience underscored the need to fine-tune the balance between methodological rigour and accessibility, simplify complex evaluation frameworks, and ensure that local socio-political contexts are systematically embedded in scenario assessments. The process also pointed to the importance of clear communication, well-prepared venues, and the complementary use of digital and printed materials in supporting effective engagement. Finally, institutional measures, such as supporting participants' time availability, could further strengthen inclusiveness and impact.

The Chios Living Lab ultimately contributed to the refinement of CLIMAS tools T3.1 and T3.4, offering critical lessons for strengthening the link between participatory scenario work and actionable climate policy pathways.

4.3 Climate Assembly Riga

The Riga Climate Assembly, held in September 2024 (Figure 6), served as a comprehensive testing ground for several key CLIMAS methodologies and tools, including citizen science, the KEBS Tool for Agenda Setting, and inclusive facilitation practices (Annex 9). The Assembly focused on pressing urban climate adaptation themes such as heatwaves, rainwater management, biodiversity, and equitable access to green spaces, to inform the Riga City Greening Plan for 2027–2031.

The Assembly engaged 35 participants, whom the Public Opinion Research Centre SKDS selected from the national web panel. The selection process ensured representativeness in terms of nationality, gender, and age (18 to 75 years; Table 3), education, occupation, political affiliation, and income levels, aligned with data from the Population Register of Latvia. The composition of the Assembly can therefore be considered representative of Riga's mini-public within the geographical boundaries of the city.

Table 3. Age groups and their segments

Age	%
18 - 24	8,57
25 - 34	17,14
35 - 44	25,7
45 - 54	14,29
55 - 63	20
64 - 75	14,29

Gender balance was maintained, with recruitment targeting 45.7% men and 53.3% women, and participants reflected the city's socio-economic diversity. It is also important to note that one

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participant was a wheelchair user. Regarding nationalities, the composition strongly reflected Riga's actual population diversity: 42.88% of participants were Latvians, while 57.12% represented other nationalities, including Russians (the majority), Ukrainians, Belarusians, Jews, and Poles (Table 4).

Table 4. Nationalities

Nationality	%
Latvians	42,88
Other	57,12

The Assembly achieved an average attendance rate of 95% across its sessions. All 35 participants, randomly selected to represent a cross-section of Riga's citizens, engaged in structured deliberation processes informed by expert input. In terms of educational background, 60% had completed higher education, 14% secondary education, 23% professional education, and 3% elementary education.

The CLIMAS methodology guided the deliberation process and began with agenda setting by a working group composed of representatives from Green Liberty, Riga City Council experts, and external specialists. The overarching theme of climate adaptation was broken down into four subtopics:

- Reduction of the urban heat island effect
- Rainwater and flood management
- Increased urban biodiversity
- Equitable access to green spaces

Participants explored these topics through a mix of expert panels, group work, and citizen science activities (e.g., biodiversity observations via DabasDati.lv). They also visited community gardens and public innovation sites across different venues in Riga. The KEBS Tool supported participants in shaping and refining the agenda, aligning deliberations with local priorities.

A distinctive feature of the Riga Assembly was its emphasis on three interrelated dilemmas, which structured the entire process:

- Green infrastructure vs. housing affordability
- How can the city expand its green footprint without displacing residents or increasing housing costs?
- Citizen engagement vs. expert-led planning
- How can participatory processes meaningfully inform technically complex urban decisions?
- Innovation vs. long-term maintenance of nature-based solutions
- Who is responsible for maintaining green infrastructure over time, and how can it be sustained?

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Rather than resolving these tensions, the Assembly used them as a foundation for collective reasoning. Through deliberation, participants developed a shared vision and structured 41 recommendations (Annex 10) around three guiding principles, aimed at responding to these dilemmas with actionable proposals.

Principle 1: Expand green infrastructure without compromising housing equity

Participants recognised the importance of greening Riga to enhance climate resilience, reduce heat island effects, and improve public health. At the same time, they emphasised that this must not compromise housing affordability or force the displacement of vulnerable populations. Greening strategies should be embedded within the existing urban fabric.

Key recommendations included:

- Converting underused or degraded plots into micro-gardens, pocket parks, or community-managed green areas (e.g., Recommendations #9, #11, #32).
- Prioritising greening initiatives in densely built neighbourhoods lacking accessible green space (e.g., Recommendation #37).
- Integrating nature-based solutions, such as green roofs and permeable surfaces, into renovation projects—particularly housing blocks and public transport stops (e.g., Recommendation #19).
- Encouraging revitalisation over new development by streamlining permits for greening and requalification projects (e.g., Recommendation #32).

Principle 2: Combine citizen participation with expert knowledge for effective climate adaptation

The Assembly strongly valued public involvement but also acknowledged the complexity of issues such as flood mitigation and biodiversity mapping. Citizens called for mechanisms that ensure meaningful and structured participation, integrated with technical expertise.

Key recommendations included:

- Launching an online consultation and participation platform where residents can contribute ideas, identify problem areas, and monitor planning processes (e.g., Recommendations #5, #6).
- Holding biennial Citizens' Assemblies or public reviews to monitor implementation and update the Greening Plan (e.g., Recommendation #7).
- Promoting participatory mapping and local competitions to identify greening opportunities (e.g., Recommendation #23).
- Creating handbooks and guides to empower residents to take small-scale greening actions in private and shared spaces (e.g., Recommendations #2, #8).

Principle 3: Ensure long-term maintenance and sustainability of green solutions

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Participants welcomed nature-based solutions but raised concerns about future upkeep. Proposals were developed to embed sustainability into planning and financing processes, leveraging community engagement and municipal support.

Key recommendations included:

- Establishing partnerships with local schools, NGOs, and businesses to co-manage green spaces and lead maintenance campaigns (e.g., Recommendations #13, #9).
- Developing co-financing schemes and micro-grants to support local associations in implementing greening projects (e.g., Recommendations #28, #30).
- Offering non-monetary incentives such as public recognition or cultural vouchers for citizens involved in greening efforts (e.g., Recommendations #10, #12).
- Creating a municipal "greening shop" or coordination unit to assist residents and streamline responsibilities (e.g., Recommendations #1, #2).

While the Assembly generated concrete proposals, it also served as a space for civic learning and collective reflection. Participants moved beyond idealistic solutions to grapple with the trade-offs involved in climate adaptation. The recommendations were officially submitted to the Mayor of Riga and were well received. In April 2025, a public event was held to update citizens on the initial follow-up steps. The Riga City Council committed to incorporating the proposals into the Greening Plan 2027–2031 and established an institutional feedback mechanism to keep participants informed.

The Assembly also demonstrated the value of trained facilitation, especially in a linguistically and socio-economically diverse context. Facilitators received extensive training, and sessions were designed to ensure inclusive group dynamics. Latvian was the main working language, with simultaneous interpretation provided when needed. The Pole Dialogu Foundation observed and confirmed the inclusivity of the process.

Going forward, future Assemblies in Riga should focus on improving the efficiency and accessibility of deliberative formats, especially for participants unfamiliar with such processes. Strengthening communication between institutions and citizens will be key to ensuring long-term engagement and trust.

4.4 Citizens' Assembly for Climate of Catalonia

The Citizens 'Assembly for Climate of Catalonia (Figure 7) undertook a significant effort to innovate across various aspects of its methodological design related to the CLIMAS project, following a thorough analysis of other deliberative processes and case studies. The Catalonia Climate Assembly (Annexe 11) was composed of 100 participants selected through a stratified lottery to ensure representativeness across key demographic dimensions. The gender distribution was 51.2% women (51 participants), 48.8% men (49 participants), with a target of 2% for other gender identities (2 participants were expressed). The age distribution included 17.9% aged 16–29 (18 participants),

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24.8% aged 30–44 (25 participants), 27.4% aged 45–59 (27 participants), and 30% aged 60 or over (30 participants). Regarding nationality, 83.7% (84 participants) were Spanish nationals, 3.9% (4 participants) held EU nationalities, and 12.4% (12 participants) were from non-EU countries. Geographically, rural residents were over-represented (33 participants, 33% compared to 8.7% in the general population), large city residents were under-represented (34 participants, 34% compared to 62.8%), and 33 participants (33%) came from medium-sized cities (actual 28.5%). In terms of education, 17.7% (18 participants) had no formal or only primary education, 50.6% (51 participants) completed secondary education, and 31.8% (32 participants) held higher education qualifications. The socio-economic index of participants was distributed as 38.6% low (39 participants), 49.3% medium (49 participants), and 12% high (12 participants).

One of its key innovations was the development of an agenda-setting process focusing on specific political dilemmas related to climate change. Rather than initiating a general debate on climate change as a whole, the Assembly aimed to address more targeted and complex challenges. These challenges required participating citizens to consider trade-offs and the diverse interests at stake, meaning that solutions could not rely solely on technical approaches.

Figure 5. Climate Assembly in Catalonia

This work contributed to the development and further testing of several CLIMAS methodological tools, including the "Methodological guidelines and manual for setting up and facilitating Citizens' Assemblies (T3.2) and the Knowledge and evidence support tool for citizens' assembly agenda setting (T3.6). Two significant contributions were the establishment of criteria for defining the agenda-setting process and the design and implementation of a work plan for defining the agenda of the CA.

To develop the agenda for the Citizens 'Assembly for Climate of Catalonia, a working group was established with selected experts from the Public Administration of the Government of Catalonia, covering various policy areas related to climate change. This process was guided by the methodological design and criteria defined by the Citizen Participation team of the Public Administration of the Government of Catalonia (partner of the CLIMAS consortium). The process unfolded as follows:

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Definition of the initial approach

"In order to reduce the extent of climate change and its impacts, it is both necessary and urgent to cut greenhouse gas emissions and implement adaptation measures drastically. However, reducing these emissions and adapting to this new scenario entails introducing changes that may significantly impact the socio-economic model and/or lifestyle"

Identification of policy areas related to climate change

- The Government established the following policy areas as options for the agenda
- Water
- Transportation/Mobility
- Energy
- Agrifood [i]sector

Establishment of a working group for the definition of political dilemma options for each of the policy areas.

The group was composed of selected experts from the Public Administration of the Government of Catalonia, along with the coordinating team of the Citizens' Assembly from the Government of Catalonia, a member of the CLIMAS consortium.

Definition and prioritisation of political dilemma options with the following criteria:

- Political dilemmas and questions should involve trade-offs
- Oriented to value/political choices- not only technical solutions
- Specific but broad enough for deliberation
- Linked to specific policies
- Impact- both on climate change and public policies- relevance and public interest
- Simple language
- The working group, using these criteria, defined and prioritised 8 different political dilemma options

Final political dilemmas selection

The political dilemma options were presented to the oversight group of the Citizens 'Assembly for Climate of Catalonia (See D3.2 Methodological guidelines and manual for setting up and facilitating

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Climate Assemblies. Initial version, 2023). This group was composed of external and independent experts in climate change and deliberative democracy, along with representatives from civil society. After evaluating the potential policy areas, the oversight group selected the two political dilemmas (within the energy and agrifood sectors) and the questions that would ultimately be presented to the Citizens' Assembly.

Energy Political Dilemma – Citizens' Assembly for Climate of Catalonia

***Dilemma**: To build a sustainable energy model that helps reduce emissions and address the impacts of climate change, the use of renewable energy is necessary. Achieving this would bring significant benefits, but it also requires the construction of numerous facilities, which can have other impacts on the land and communities.*

***Question**: What criteria should be applied to decide or prioritise the deployment of renewable energy infrastructure and its location, considering both its benefits and its impacts and costs on the territory?*

The work carried out was positively evaluated, while also offering valuable lessons and insights, including the following:

1. It was considered advisable, where possible, to involve external experts in the early stages of the agenda-setting process.
2. The impact criteria used in defining the Agenda (and throughout all phases of the Citizens' Assembly) should be strengthened in order to maximise outcomes of the recommendations elaborated by the citizens during the climate assembly.
3. The specificity criteria should be reinforced to focus the deliberation better.
4. Efforts should be made to balance, as much as possible, the potential for impact on policies with citizens' interests when defining the Assembly's agenda. When timeframes and resources allow, citizen participation could also be opened to contribute to the agenda-setting process.

Following this experience and the other case studies, CLIMAS has continued to develop and refine its methodological tools. With regard to the *Methodological Guidelines and manual for setting up and facilitating Citizens' Assemblies* (T3.2), the lessons learned have been incorporated into a new methodological approach for agenda setting (Figure 6), aimed at maximising the policy impacts of Citizens' Assembly outcomes (see D3.2).

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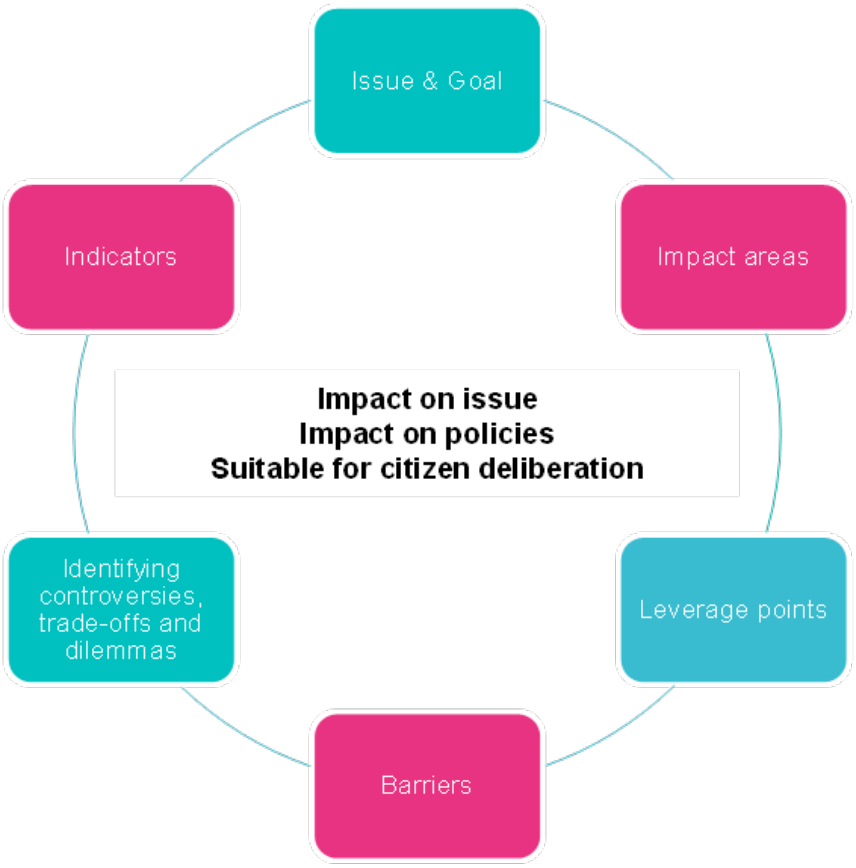

Figure 6. Agenda setting. GENCAT adaptation of the CLIMAS methodology for agenda setting.

The Public Administration has participated in the development and refinement of the tested methodology. It is currently adapting and applying for future climate assemblies in other policy areas, including water, mobility, land use, and other relevant sectors. The testing of this agenda-setting process will:

Maximise the potential impact on the issue.

The methodology first seeks to identify the most relevant problems within a given policy area. Then it focuses on those areas and lines of action that could lead to significant changes in addressing the issue.

Maximise the potential impact on public policies.

To achieve this, it analyses possible barriers or constraints such as regulatory frameworks, institutional competencies, or existing political decisions.

Ensure suitability for citizen deliberation.

This involves identifying the presence of controversies, trade-offs, or conflicting interests that make the issue appropriate for deliberative processes and not only for technical or expert domains.

The process to apply this methodology is developed as follows:

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Conducting interviews

Interviews are carried out with a panel of both internal and external experts in order to 1) identify the main issue within a policy area, 2) the impact areas, leverage points, and barriers, and finally to 3) assess the suitability of the issue for citizen deliberation, including the presence of controversies, trade-offs, and conflicting interests.

Drafting options for political dilemmas options

After analysing the interview results, a draft is developed outlining political dilemmas and questions for deliberation, based on the following criteria:

Expert's review

The panel of experts reviews the draft and makes amendments

Selection of data

Relevant data and indicators are identified to substantiate the selected dilemmas and questions, providing evidence for deliberation.

Final validation

The final selection of political dilemmas and questions is validated in collaboration with institutional authorities and the oversight group.

The results obtained so far point to the following conclusions:

The agenda-setting process has been strengthened by focusing on areas with greater potential impact on both the issue and public policies.

The methodology enables a more precise identification of issues suitable for citizen deliberation, while also helping to discard those which, despite their relevance, may not be appropriate for a deliberative process.

It involves both internal and external experts from the outset of the agenda-setting process, thereby increasing its legitimacy.

Looking ahead, it is important to recognise that this methodology will require further development to enable a thorough assessment of its outcomes. Additionally, continued exploration of ways to involve citizens' interests in the agenda-setting process—where feasible—may enhance the legitimacy and relevance of the resulting agenda.

Finally, it is important to emphasise that the ultimate impact of the methodology on climate policy outcomes hinges on strong political commitment. Therefore, formal validation by public authorities is essential, as the methodology addresses controversial issues, entails trade-offs, and touches upon competing interests.

Following the recommendations provided by the citizens during the climate assembly, the Public Administration of the Government of Catalonia (Gencat) has taken a leading role in promoting citizen engagement initiatives. The summary of the CLIMAS adaptation meeting held in March 2025

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underscored the region's efforts to integrate participatory mechanisms, such as Climate Assemblies, into public administration structures, balancing institutional mandates with citizen engagement.

4.5 Climate Assembly Edermünde

The Citizens' Climate Assembly of Edermünde was organised between September and November 2024 as part of the CLIMAS Horizon Europe project. Its main objective was to provide the major of Edermünde citizens a deliberative tool for understanding the preference of the citizens in respect to the land use (e.g., agricultural vs residential uses); this local citizen assembly provide the opportunity to test and adapt participatory methodologies that could support inclusive, impactful, and replicable climate assemblies.

The Edermünde Climate Assembly brought together 30 participants, plus 4 replacements, randomly drawn from 1,241 invitations sent to residents aged 16 or over. The response rate was 7% (86 registrations). The final group included 15 women and 16 men, with no participants under the age of 25, resulting in a predominance of older citizens. Selection criteria included neighbourhood, age, citizenship, gender, education level, employment status, and attitudes towards climate change (based on Eurobarometer data). While gender balance was achieved, the assembly lacked representation of younger age groups, with only three participants in the age range between 26 and 35 years old (Figure 7). Attendance slightly decreased throughout the sessions: 28 participants attended the first, 26 the second, and 23 the final session.

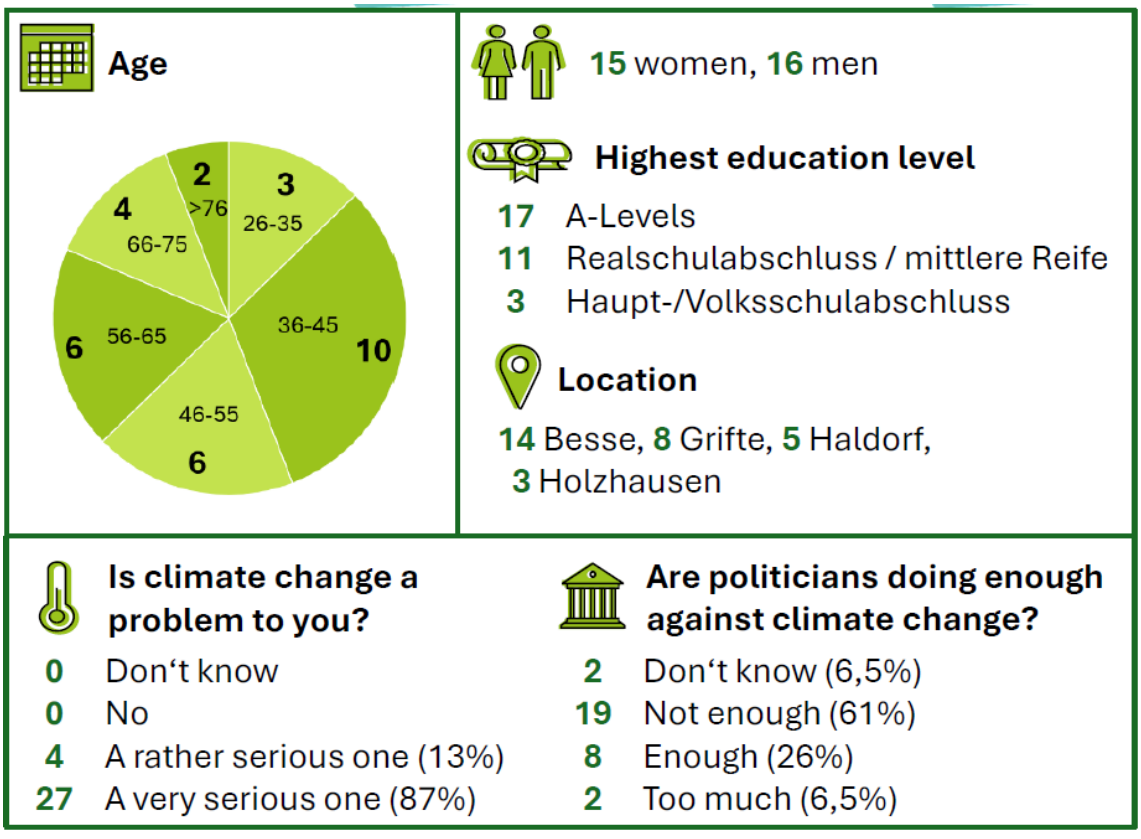

Figure 7. Participants distribution

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The assembly was convened to address a complex dilemma: how to balance the competing demands of climate adaptation, biodiversity conservation, agricultural use, and the need for residential and commercial development, in the context of climate change and its impacts on Edermünde. This fundamental tension framed the deliberation question: How should future land use in the municipality of Edermünde be organised, given climate change and climate impact adaptation?

Through this process, the assembly produced four principles and 16 recommendations that form a coherent response to this dilemma:

Principle 1: Establish climate as a decision-making criterion for land use.

This principle recognises that climate protection and adaptation must become core criteria in land use planning. Participants addressed key tensions, such as the short-term economic costs of climate action versus long-term resilience benefits. Recommendations included:

Introducing a "climate check" for all new land use decisions, tailored with input from independent experts.

Developing a comprehensive water management strategy that prepares for both droughts and extreme rainfall, including upgrading drainage systems and promoting regenerative agriculture.

Mandating rainwater utilisation in new buildings and municipal facilities, including kindergartens and community centres.

Modernising energy, water and sewage infrastructure in coordination with utilities, to avoid inefficiencies and enable climate-compatible technologies.

Appointing a climate protection manager to coordinate municipal climate strategies, serve as a contact for residents, and facilitate access to funding.

Fully implement and transparently monitor the existing municipal action plan on climate protection.

Principle 2: Edermünde should become greener – strengthen climate adaptation, biodiversity and quality of life.

This principle addresses the trade-off between upfront investments in greening and long-term ecosystem and societal benefits. The assembly stressed the importance of green infrastructure for cooling, infiltration, biodiversity, and public well-being. Recommendations included:

Positioning Edermünde as a green pioneer, with the municipality proactively planting trees, creating demonstration sites, and enforcing greening regulations.

Supporting residents in sustainable garden design, including banning gravel gardens, reducing impervious surfaces, and promoting biodiversity-enhancing plantings.

Requiring climate-adaptive landscaping in commercial properties, including incentives and stricter standards for new developments.

Principle 3: Net-zero standard – unseal as much as possible, seal as little as possible.

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This principle emerged from the recognition that soil sealing for housing or industry undermines climate resilience. The assembly proposed a "net-zero" approach, whereby every sealed area is offset by unsealing elsewhere. This principle also confronted the tension between economic growth and environmental integrity. Recommendations included:

Prioritising redensification and reuse of existing developed areas, avoiding new land designation except in specific town centre cases.

Preserving high-quality agricultural land and enhancing biodiversity-rich areas.

Linking new business developments to sustainability criteria, including rooftop greening, biodiversity offsets (e.g., funding for hedgerows, agroforestry, retention basins), and alignment with the upcoming EU Corporate Sustainability Reporting Directive.

Principle 4: Land development through dialogue: We, the citizens, help shape it!

To foster trust and overcome potential resistance, this principle promotes inclusive, transparent participation in land use planning. The assembly acknowledged that early engagement reduces conflict and enhances legitimacy. Recommendations included:

Ensuring regular, accessible communication about upcoming land use projects and participation opportunities, including public events and digital channels.

Organising structured dialogues on shared land use, such as combining agriculture and biodiversity goals (e.g., flowering meadows along field edges).

Promoting community greening initiatives, such as tree sponsorships, birth trees, and school-based actions.

Providing low-threshold online platforms for commenting and voting on proposals, with commitments to transparency and feedback.

Supporting new housing and community models, including home-sharing, intergenerational living, and repurposing vacant properties, facilitated by a municipal advice centre.

These principles and recommendations contributed directly to the CLIMAS goal of developing a toolbox for the design and implementation of citizens' assemblies that address climate challenges while fostering societal resilience.

The assembly tested the scenario-building methodology developed within CLIMAS (linked to tools T3.1 and T3.2), with a strong emphasis on visioning as an entry point for deliberation. The collective visioning exercise was framed as a guided reflection on life in 2045, the year by which climate neutrality is legally targeted. Participants were invited into a relaxed atmosphere and guided—almost in the form of a meditative reflection—to imagine walking through their municipality in 2045. They were encouraged to activate their senses (sight, sound, smell) and consider how their surroundings might look, feel, and even smell in a climate-neutral future.

Each participant had 15 minutes of individual reflection time to write down or sketch three positive changes they envisioned for their community. They then shared and discussed these visions in pairs

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to foster exchange. The visions were displayed on moderation walls, forming the basis for clustering by facilitators, who grouped similar ideas into six key land use types: agriculture, nature protection, leisure areas, urban living spaces, business areas, and mobility.

On the second day, these clusters were validated and enriched through plenary discussion. Small groups were formed, each assigned to one land use type. Using pre-prepared canvases, participants individually identified two to five priorities for their assigned land use type, exchanged views in pairs, and consolidated ideas at the group level. They also identified drivers and barriers—social, technological, economic, ecological, and political—that could affect achieving these priorities, supported by icons representing these dimensions.

The exercise concluded with World Café rotations: participants engaged with different land use types beyond their initial group, ensuring cross-fertilisation of ideas. The process culminated in a plenary session where group ambassadors shared outcomes, and participants applied sticky dots to highlight the most important proposed actions and measures, laying the groundwork for further deliberation and development of recommendations. Sticky-dot voting was used to visualise collective priorities in an accessible manner (Figure 7).

Figure 8. Sticky-dot voting

Throughout the process, the assembly applied core principles of the CLIMAS agenda-setting methodology (T3.6), though without the formal digital tool. Instead, the agenda-setting was shaped through deliberative workshops and a steering process involving the municipality, political parties, and an external knowledge advisory board, which defined the main question and three sub-questions addressing trade-offs between climate adaptation, housing, and land use.

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Valuable insights from the testing highlighted both strengths and areas for refinement. The adapted visioning-based scenario-building approach proved highly effective for engaging participants and encouraging future-oriented, creative thinking. The phased progression from individual reflection to group clustering and discussion fostered inclusiveness and collective ownership of ideas. However, the lack of structured transition from visions to concrete scenarios or action pathways limited the ability to explore trade-offs or build coherent, actionable scenarios systematically. Participants prioritised objectives within land use types rather than prioritising scenarios, which made it harder to link visions with clear policy options.

Moreover, while the visioning exercise served as a powerful initial step, there was recognition that stronger integration of the vision throughout the process could have helped ground recommendations more clearly in participants' long-term aspirations. Facilitators suggested that further use of visualisation techniques, or more structured creative tools, might support this aim. Similarly, stakeholders and facilitators reflected that focusing on fewer, deeper dilemmas could have enabled more robust exploration of trade-offs and stronger, more operational recommendations. The experience also underscored the importance of supporting facilitators with training on handling complex deliberative dynamics and providing more explicit guidance on connecting citizen visions to actionable, policy-relevant outcomes.

The final phase of the process involved a formal presentation of the outcomes to both the municipal council and the public between December 2024 and January 2025. Beyond the results themselves, the process highlighted the adaptability of the CLIMAS methodologies. It revealed areas for improvement, especially in enhancing the connection between collective visioning, deliberative work, and the development of policy proposals.

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5. Scenario Building Testing Outcomes

5.1. Approach to Testing

The testing focused on evaluating the relevance, usability, and integration potential of the Scenario Building Tool (SBT) within Climate Assemblies. The objective was to assess whether the tool could effectively support assemblies in identifying key drivers, challenges, and future visions, while respecting their participatory and deliberative nature. The emphasis was placed on understanding how the tool could be adapted to complement the formats and workflows commonly used in citizen deliberation processes.

5.2. Definition of Testing Activities in Climate Assemblies

In the context of Climate Assemblies, the Scenario Building Tool was tested through an applied and adaptive approach rather than as a stand-alone activity. The tool was not implemented in its original, structured format. Instead, elements of the tool were informally introduced, assessed, and discussed during the assembly planning and facilitation process. Feedback was gathered through direct observation and post-implementation evaluation, focusing on tool usability, alignment with assembly objectives, and perceived value in supporting citizen engagement.

Testing activities took place during the first quarter of 2025 in a real-life Climate Assembly setting of Edermünde, with participation from organisers and facilitators. The testing aimed to reflect the tool's adaptability to time-constrained, participatory environments where inclusiveness, clarity, and interaction are key principles.

5.3. Challenges, Lessons Learned, and Integration into Final Deliverables

The testing process yielded several valuable insights regarding the implementation of the Scenario Building Tool in Climate Assemblies:

- **Alignment with Deliberative Formats**: The structured nature of the Scenario Building Tool was not fully compatible with the flexible and discussion-driven format of Climate Assemblies. Assemblies typically prioritise value-based dialogue, co-creation, and consensus-building, which may require a more adaptive and intuitive version of the tool.
- **Complexity and Accessibility**: The tool was considered conceptually sound but operationally complex. The scientific framing and methodological components, such as the morphological analysis, were perceived as challenging to apply within the limited time and diverse participant profiles of Climate Assemblies. There is a clear need to simplify language, structure, and user interfaces to ensure accessibility for a broad audience.
- **Role of Facilitation**: Effective deployment of the tool in deliberative settings depends strongly on the presence of well-trained facilitators. These facilitators must be familiar with both the

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structure of the tool and the participatory methodologies of citizen assemblies. Their role is essential in bridging the gap between the tool's methodological requirements and the assembly's inclusive dynamics.

- **Strategic Use as a Pre-Assembly Activity**: One of the key lessons learned was that the tool may be more effectively deployed as a preparatory activity rather than embedded within the core agenda of the assembly. Using the tool ahead of the assembly to map critical challenges, key drivers, and strategic dilemmas can enrich subsequent deliberations without overloading the agenda.
- **Recommendations for Future Use**: To ensure the tool's relevance and usability in Climate Assemblies, future iterations should include:
  - Modular and simplified versions adapted to the deliberative context.
  - Facilitation guidelines and training resources.
  - Scalable formats suited to different group sizes and time constraints.
  - Flexible integration strategies, including pre-assembly and post-assembly applications.

In summary, while the Scenario Building Tool offers significant potential for strategic thinking and agenda-setting, its successful use in Climate Assemblies requires targeted simplifications, facilitation support, and a flexible implementation strategy that respects the participatory nature of these processes.

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6. Scenario Prioritisation Testing Outcomes

6.1 Approach to Testing

In Living Labs, the Scenario Prioritisation Tool was tested in workshops where participants applied an Analytic Hierarchy Process (AHP) – based framework to compare and rank scenarios. The focus was on evaluating the clarity of the criteria, the usability of the digital tool, and how participants navigated multi-criteria assessments in practical settings. The testing also explored how external political and social factors influenced participant decision-making.

The testing focused on evaluating the capacity of the Scenario Prioritisation Tool to support structured reflection and ranking of future pathways in Climate Assemblies. Specifically, the aim was to test whether the tool could facilitate prioritisation of policy options, critical dilemmas, and desirable outcomes while complementing the deliberative nature of assemblies. The key aspects under examination included usability, clarity of criteria, integration with group facilitation processes, and the overall relevance of prioritised scenarios to the assembly's policy engagement objectives—definition of Testing Activities in Living Labs.

In the Living Labs, prioritisation activities included presenting participants with refined scenarios, applying consolidated sets of evaluation criteria (co-developed across Labs), and using digital questionnaires for individual ranking. These activities were supported by printed materials and facilitated discussions, followed by interviews to collect feedback on tool functionality, clarity of criteria, and overall experience.

6.2 Challenges, Lessons Learned, and Integration into Final Deliverables

The testing of the Scenario Prioritisation Tool in the Living Labs revealed several important findings:

- **Need for Adaptation to Facilitate Deliberation**: While the tool was recognised as having strategic value, its structure was considered more suitable for analytical exercises than for deliberative formats. Assemblies rely heavily on discussion and consensus-building, which requires prioritisation tools to be adaptable, transparent, and easy to facilitate in real-time.
- **Facilitation-Centric Implementation**: The effective use of the tool depends on facilitation methods that allow participants to identify and evaluate key scenarios or dilemmas collectively. Its integration requires facilitators to translate prioritisation frameworks into interactive processes that support open dialogue and group consensus.
- **Strategic Use to Support Policy Dialogue**: The prioritisation of scenarios was acknowledged as a valuable step to inform subsequent discussions with policymakers. The tool can help filter and structure key insights generated during the assembly, translating them into a strategic format for external engagement.
- **Recommendation for Modular Use**: It was suggested that the tool be adapted into smaller, modular components that can be introduced at different stages of the assembly, rather than as

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a single, linear process. For example, scenario prioritisation may be more effective when introduced after key themes have been explored and when participants are already familiar with underlying drivers and dilemmas.

As a result of these insights, future versions of the Scenario prioritisation tool will integrate:

- Simplified prioritisation templates aligned with deliberative practices.
- Facilitation guidelines that translate technical criteria into inclusive dialogue.
- Flexible modes of implementation, including end-of-process scenario synthesis.
- Recommendations for using the tool to support external communication with decision-makers.

While the Scenario Prioritisation Tool has high potential as a bridge between deliberative outputs and policy engagement, its practical use in Climate Assemblies depends on simplification, facilitator guidance, and integration strategies that align with the assemblies' participatory ethos.

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7. KEBS tool (Agenda Setting) Testing Outcomes

7.1 Approach to Testing

The testing of the Knowledge and Evidence-Based Support (KEBS) Tool for Climate Assemblies' Agenda Setting aimed to assess its effectiveness in supporting the early-stage definition of Climate Assembly themes, dilemmas, and priorities. Specifically, the objective was to evaluate the tool's ability to facilitate transparent, inclusive, and systematic identification of key topics for deliberation, ensuring alignment with societal relevance, policy urgency, and citizens' values. The focus was on usability, clarity of process, integration with institutional structures, and capacity to balance inputs from civil society, experts, and public authorities.

7.2 Definition of Testing Activities in Climate Assemblies

The KEBS tool was tested in three Climate Assembly contexts: Catalonia (Spain), Edermünde (Germany), and Riga (Latvia). The testing took place between November 2023 and March 2025, involving assembly organisers, oversight groups, and facilitators. The application of the tool varied across cases:

- In Catalonia, although a structured agenda-setting process was initially foreseen to define the topics of the Climate Assembly, the final agenda was selected directly by the oversight group without fully integrating the outcomes of preliminary participatory or methodological discussions. In practice, this meant that the process bypassed earlier efforts to define dilemmas and priorities collaboratively, revealing a gap between the initial intention of co-created agenda setting and the final top-down selection. This highlights the need for clearer procedural safeguards to ensure that participatory inputs meaningfully shape institutional decisions.
- In Riga, the tool was adjusted to the local context, blending expert input and stakeholder consultation. Despite institutional constraints, the tool facilitated alignment between scientific framing and citizen values, guiding the selection of greening-related themes.
- In Edermünde, elements of the KEBS methodology were applied informally to support the framing of discussion topics. The tool helped to structure early reflections on local climate challenges.

Across all cases, feedback was collected through post-assembly interviews and discussions with organisers, focusing on the tool's clarity, adaptability, and contribution to procedural transparency.

7.3 Challenges, Lessons Learned, and Integration into Final Deliverables

The real-life testing of the KEBS tool for agenda setting in Climate Assemblies yielded the following key insights:

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- **Balancing Expert Input and Citizen Participation**: A recurring challenge was the integration of expert knowledge with citizen perspectives in a way that maintains both procedural legitimacy and policy relevance. While the tool provides a straightforward process to structure inputs and prioritise topics, its practical use requires coordination with advisory or oversight bodies and early communication with policymakers.
- **Institutional and Political Constraints**: The cases demonstrated that while the tool offers methodological rigour, its influence on agenda-setting decisions may be limited if there is insufficient political commitment or institutional support. In some instances, final topics were selected outside of the recommended process, highlighting the need for clearer protocols and alignment with decision-making structures.
- **Need for Simplification and Accessibility**: Participants noted that the tool, in its current form, could be overly technical or lengthy for citizen-facing processes. There is a strong need to simplify consent forms, background materials, and supporting documentation to make the tool more accessible to both organisers and participants.
- **Importance of Representativeness and Inclusion**: Ensuring diverse representation during agenda setting was identified as a critical factor. Challenges included language barriers, engagement of marginalised communities, and the need for inclusive facilitation. The tool should support mechanisms for inclusive outreach and account for regional differences in experience and capacity.
- **Recommendations for Improved Use**:
  - **Clearer Decision Pathways**: The process should include defined stages for expert validation, stakeholder consultation, and citizen review.
  - **Pre-Testing and Demonstration**: Introducing the tool through workshops or pilot sessions with institutional partners can help familiarise users with the process and clarify expectations.
  - **Flexible Application Models**: Offering both full and simplified versions of the tool would enhance its adaptability to different scales of assemblies and levels of experience.

As a result of these insights, the final version of this deliverable will integrate improved process flowcharts, simplified user guides, and institutional engagement templates. Additionally, guidance will be developed to support balanced co-creation between public institutions, civil society, and citizens during agenda setting. This will help strengthen the legitimacy and inclusiveness of the climate assembly process.

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8. Main Results and Recommendations

This section brings together the overarching conclusions and recommendations from the testing of the Scenario Building (Section. 4), Scenario Prioritisation (Section 5), and KEBS Tool (Section 6) within the CLIMAS project. The collective insights aim to guide future use and refinement of these participatory tools in climate deliberation contexts.

8.1 Key Conclusions

The KEBS Tool successfully supported evidence-informed agenda setting by aligning public concerns, expert input, and institutional priorities. However, its integration into deliberative timelines and accessibility to non-experts remains a challenge.

The Scenario Building methodology fostered creative and inclusive engagement, supporting future-oriented civic dialogue across diverse settings. When contextually adapted and effectively facilitated, it enabled the co-creation of citizen-driven visions aligned with climate resilience goals.

The Scenario Prioritisation Tool translated citizen preferences into structured decision-making inputs. Despite challenges with complexity and abstraction, the tool enhanced transparency, engagement, and understanding of policy trade-offs.

8.2 Shared Challenges

Throughout the implementation of the participatory tools in the CLIMAS project, several recurring challenges emerged across different contexts. These shared difficulties highlight structural and procedural barriers to inclusive engagement:

- Participants across all tools struggled with abstract language, cognitive load, and technical complexity.
- Digital literacy gaps impacted the usability of digital tools, emphasising the need for alternative analogies.
- Disconnection between citizen visions and institutional planning processes affected the uptake and perceived impact of outcomes.

However, during the CLIMAS project testing, these challenges were addressed across the Citizen Assemblies (CAs) and Living Labs (LLs) through visual facilitation, multilingual support, simplified consent protocols, and structured integration with local planning cycles.

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8.3 Recommendations for Future Use

KEBS Tool

- Embed KEBS earlier in the process by integrating it into the pre-deliberation phase, so that it helps shape the agenda from the outset, rather than being used only to validate priorities identified elsewhere.
- Foster collaboration between people and technology by creating structured moments of interaction where experts, citizens, and facilitators jointly review and interpret the outputs of the KEBS tool, ensuring that its recommendations are both comprehensible and contextually relevant.
- Improve the tool's user interface by incorporating multilingual options, intuitive navigation, and visual aids (e.g., diagrams, icons, colour-coded categories) that guide users through the data interpretation process – a strategy referred to as *visual scaffolding*.
- Ensure transparency and accountability by clearly documenting and communicating how KEBS-generated insights are used to influence final decisions or, if applicable, why specific suggestions are not taken forward in the agenda-setting phase.

Scenario Building

- Develop modular, adaptable templates with tiered complexity.
- Use visual storytelling tools (e.g., infographics, timelines) to reduce abstraction and improve comprehension.
- Ensure early expert involvement in scenario design, without compromising citizen ownership.
- Combine citizen science activities to ground scenario building in local empirical insights.

Scenario Prioritisation

- Simplify Analytic Hierarchy Process (AHP) implementation through guided templates, visual aids, and shorter surveys.
- Offer facilitator training to support participants with the cognitive and technical aspects of decision-making.
- Integrate the tool into hybrid workshop formats, ensuring continuity with Scenario Building processes.
- Explore interactive dashboards and mobile-friendly interfaces to widen accessibility.

8.4 Strategic Integration

Although the CAP brings together all the tools within a unified digital infrastructure, future participatory processes should focus on ensuring their effective methodological integration during real-life implementation. This involves applying Scenario Building, Scenario Prioritisation and Knowledge-Based Systems in a coordinated and sequential manner, allowing each tool to build upon the outcomes of the previous ones. Such integration would strengthen the coherence of the

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participatory pipeline and enhance the overall impact on agenda setting, deliberation and policy formulation:

- Coherent workflows from data-driven agenda setting to citizen visioning and prioritisation.
- Enhanced participant engagement through consistent formats and visual support, such as graphic reporting.
- Stronger alignment between public input, scientific evidence, and policy cycles.

The Climate Assemblies (CAs) and Living Labs (LLs) collectively validated this integrated approach. Across diverse contexts, they demonstrated that when citizen science, deliberative tools, and local policy planning are coordinated through inclusive facilitation, clear mandates, and structured follow-up, participatory climate governance becomes more actionable and credible.

The CLIMAS experience shows that, when well-orchestrated, these tools can effectively anchor climate action in citizen agency, local relevance, and evidence-based strategy. Insights and lessons learned from their testing will directly feed into the refinement of the final versions of the tools (D3.9, D3.11, D3.13), the calibration and validation activities in WP4 (D4.4, D4.5), and the formulation of policy recommendations in WP5, ensuring their strategic integration into future climate resilience efforts.

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Annex 1 – CA-LL Pair Meetings to organise the testing activities

Date	Objective
July 2023	Facilitate a shared understanding of the concepts and methodologies related to Living Labs and pilots within CLIMAS, advance the definition and allocation of co-creation and testing tools (WP3-WP4), and agree on next steps for coordinating Living Labs and Climate Assemblies, including the planning of regular meetings and the development of a standard glossary of key terms.
September 2023	Initiate regular exchanges between the CLIMAS Climate Assembly (CA) and Living Lab (LL) pairs, provide updates on the status and timeline of activities, review involvement in CLIMAS work packages and tasks, explore potential synergies, and agree on the frequency of coordination meetings to ensure smooth communication and project monitoring.
October 2023	Address concrete challenges emerging in the organisation of the Climate Assemblies and Living Labs, particularly regarding the design of content provision, selection and engagement of experts, development of inclusive facilitation methods, and ways to enhance stakeholder participation. The meeting focused on exchanging lessons learned, identifying areas for methodological improvement, planning the involvement of citizens and civil society, and discussing the structure of co-creation activities and their potential impact on policy influence.
November 2023	Plan and coordinate the testing of specific CLIMAS tools within the Climate Assemblies (CAs) and Living Labs (LLs), focusing on selecting appropriate methodologies (such as scenario building and citizen science), preparing agendas, and ensuring alignment with local needs and policy contexts. The meetings aimed to address logistical and organisational aspects (e.g., observer roles, facilitation protocols, language accessibility), reflect on lessons learned from recent assemblies (like Tallinn CA), and explore strategies for stakeholder engagement, budget feasibility, and content development to support inclusive and impactful deliberative processes.
December 2023	Review and reflect on the first testing experiences of CLIMAS tools (such as scenario building and citizen science) in the Climate Assemblies and Living Labs, assess the alignment of tested methodologies with local needs and climate adaptation goals, and plan next steps for improving stakeholder involvement, facilitation approaches, and documentation processes. The meeting also focused on preparing for upcoming sessions, discussing governance, resource allocation, and strategies for ensuring the practical implementation and follow-up of assembly recommendations.
January 2024	Reflect on the progress and challenges encountered in the final stages of the Catalonia Climate Assembly, particularly regarding managing deliberation dynamics, inclusivity in participation, and the formulation of concrete recommendations. The meeting also aimed to plan the

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	potential testing of the citizen science tool with assembly participants, discuss strategies for engaging diverse profiles in future co-creation workshops, and coordinate efforts between the Climate Assembly and Living Lab to maximise synergies in inclusivity, accessibility, and content development.
February 2024	Coordinate the upcoming testing phases of specific CLIMAS tools (including scenario building, scenario prioritisation, and citizen science), plan the design and logistics of these activities, and explore opportunities to link Climate Assembly outputs with Living Lab actions. The meetings focused on managing citizen expectations regarding recommendations, adapting guidelines for smaller assemblies, ensuring inclusivity in participant selection for testing, and defining strategies for stakeholder engagement, co-creation sessions, and the iterative development of the CLIMAS toolbox.
March 2024	Advance the planning and coordination of the testing and co-creation of the CLIMAS tools, with a particular focus on the citizen science toolkit, scenario-building, and prioritisation tools. Discussions aimed to align tool testing with the local political and policy contexts (e.g., National Adaptation Plans), refine the design of low-fidelity prototypes, define participant recruitment strategies (including the involvement of organisers, core groups, and delegates), and identify variables for evaluating inclusivity, accessibility, and political impact. The meetings also sought to strengthen collaboration between Climate Assemblies and Living Labs in preparation for upcoming workshops and evaluation phases.
April 2024	Align the planning and preparation for the testing of the CLIMAS tools — particularly the scenario-building tool, citizen science toolkit, and facilitation methodologies — with the specific contexts of the upcoming Climate Assemblies and Living Labs. The discussions focused on adapting tools to local conditions (e.g., National Adaptation Plans, local policy priorities), defining agenda-setting approaches, refining low-fidelity prototypes, and clarifying participant recruitment strategies. The meetings also aimed to coordinate timelines, ensure the integration of lessons learned from recent deliverables (e.g., D4.1), and explore ways to connect methodological guidance with small-scale assemblies.
May 2024	Deepen the integration of scenario-building, citizen science, and facilitation tools into the preparation of Climate Assemblies (CAs) and Living Labs (LLs), with particular attention to supporting agenda-setting processes, participant recruitment strategies, and communication plans. The discussions focused on linking scenarios to policy dilemmas, ensuring methodological consistency while adapting to local contexts (e.g., languages, political conditions), and enhancing inclusivity and diversity from the early stages. The meetings also addressed the coordination of facilitator training, the design of Q&A and engagement activities, and the documentation of lessons learned to inform future assemblies.
June 2024	Coordinate the final preparatory steps for the Climate Assemblies (CAs) in Riga and Edermünde and advance the design of monitoring, evaluation, and impact assessment frameworks. Discussions focused on refining facilitator training plans, clarifying the recruitment and

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	stratification processes to ensure diversity, preparing supporting materials (e.g., concept notes, governance models, and timelines), and defining how to integrate CLIMAS tools (such as scenario-building and citizen science) into assembly processes. The meeting also addressed the need to link assembly outcomes to policymaking impact and to ensure transparency and replicability of the assemblies.
July 2024	Focus on defining targeted proposals for integrating citizen science into the upcoming Climate Assemblies in Riga and Edermünde, and set the groundwork for testing in the Catalonia assembly at a later stage. The discussion aimed to clarify the roles of citizen science and citizen participation teams, identify suitable case studies and existing data sources, and propose co-creation steps to adapt citizen science tools to different local contexts and dilemmas. The meeting also explored strategies to ensure that outputs are broadly applicable beyond individual case studies and to plan the involvement of experts and operational details for testing.
September 2024	Provide detailed updates on the progress of the Climate Assemblies in Riga and Edermünde, focusing on the implementation of citizen science activities, scenario-building exercises, and the facilitation formats used. The meeting aimed to reflect on challenges encountered, particularly regarding inclusivity, translation, participant engagement, and the balance between expert input and citizen participation. It also sought to coordinate upcoming field trips, monitoring and evaluation plans, and to explore methodological adjustments to simplify processes and enhance impact in small-scale assemblies.
October 2024	Review the overall progress of the Climate Assemblies in Riga and Edermünde, focusing on the use and testing of specific CLIMAS tools such as citizen science, scenario-building, agenda setting, and methodological guidelines. The meeting aimed to align ongoing testing activities with the upcoming deliverables and theory of change (ToC), plan the organisation of the WP4 session at the Barcelona event, and coordinate preparations for the second External Advisory Board (EAB) meeting. Special attention was given to integrating lessons learned for climate change adaptation and ensuring methodological coherence across pilots.

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Annex 2 – Vilnius Workshop Meeting Invitation

INVITATION

We are writing in order to invite You to participate in the "Future Scenario-Building" workshop held in Vilnius on October 8, 2023, organized by **VILNIUS TECH** in collaboration with **Vilniaus Planas**.

The key aim of the workshop was to co-create and analyze alternative visions of the futures of climate resilience in societies that can inform policy-making and social innovation. In the context of future research, the focus is on long-term developments and images of the future with a time horizon of between 10 and 30 years.

Venue: Hotel Artis, Totorių g. 23, Vilnius, 01120 Vilniaus m. sav.

Starting Time: 11:00

We look forward to hearing from you.

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Annex 3 – Vilnius Future Scenario Building: Piloting Activity Final Report

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Annex 4 – Chios Workshop Meeting Invitation

ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΙΓΑΙΟΥ

INVITATION

Following your participation in the "Future Scenario-Building" Workshop held in Chios on November 29, 2023, during which you contributed to the development of scenarios for a resilient future in response to the challenges posed by climate change, we would like to invite you to a follow-up workshop. This workshop aims to discuss and evaluate the final version of the generated scenarios in Chios Living Lab, as shaped by expert input and feedback.

The workshop will take place on Wednesday, May 21, 2025, at the Department of Shipping, Trade and Transport, University of the Aegean, in Room "Korais B" (Ground Floor), from 18:00 to 19:30.

Sincerely,

Professor Amalia Polydoropoulou
Department of Shipping, Trade and Transport, University of the Aegean
CLIMAS Project Scientific Coordinator for UoAegean,
Coordinator of Chios Living Lab

Contact Information: D. Bontozis, tel. +30 6947910544

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Annex 5 – Chios Workshop Meeting Agenda

ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΙΓΑΙΟΥ

CHIOS LIVING LAB MEETING
EVALUATION OF FUTURE SCENARIOS FOR A CLIMATE-RESILIENT SOCIETY

VENUE: School of Business, Department of Shipping, Trade and Transport (Korai 2A, Chios, Ground Floor)
DATE: May 21, 2025
DURATION: 1 hour and 40 minutes (18:00 – 19:40)
ORGANIZED BY: University of the Aegean

MEETING AGENDA

SESSION	TOPIC	DURATION
ARRIVAL	Participant registration	18:00 (10 minutes)
WELCOME & AGENDA OVERVIEW	• Welcome remarks • Agenda overview	18:10 – 18:20 (10 minutes)
PRESENTATION OF FINAL SCENARIOS	• Presentation of scenarios • Presentation of evaluation criteria • Q&A session	18:20 – 18:35 (15 minutes)
QUESTIONNAIRE COMPLETION	• Explanation of the process • Completion of the questionnaire	18:35 – 19:05 (30 minutes)
COFFE BREAK		19:05 – 19:15 (10 minutes)
PROCESS EVALUATION	• Work in groups: Short interviews with participants	19:15 – 19:35 (20 minutes)
CLOSING REMARKS	• Summary of workshop outcomes	19:35 – 19:40 (5 minutes)

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Annex 6 – Chios Workshop Expert-revised Scenario Summaries

GUIDELINES

The five scenarios (aimed at enhancing the resilience of societies to climate change), which were initially developed during the Chios workshop (November 2023), have been amended with contributions from experts (in red font). You are now kindly asked to compare the scenarios in pairs across 12 criteria, using a 17-point evaluation scale.

This scale ranges from an extreme value of 9 in favour of the first scenario (left side), to "equally good scenarios — 1" (centre), and up to an extreme value of 9 in favour of the second scenario (right side).

THE 5 SCENARIOS

Scenario 1: High-level climate response combining traditional knowledge with innovation

In this scenario, efforts focus on protecting forests and water resources. Traditional techniques such as controlled burning are applied in pine forests alongside innovations such as drone and satellite monitoring. Reforestation programs use fire-resistant and native plants (e.g., carob trees in Chios). Forest protection offers multiple benefits, including carbon sequestration and flood prevention. Water management actions include water-saving campaigns, maintenance of water supply networks, reuse of treated wastewater for irrigation, and seawater desalination using renewable energy. Nature-based solutions, such as the strategic creation of urban parks, enhance rainwater retention, recharge groundwater, and reduce flood risk. The traditional "fountanas" (rainwater collection systems from the roof to tanks in the basements, once used in Chios homes) are revived. Awareness campaigns, especially targeting younger generations with no prior exposure to such practices, highlight their importance. Sea level rise is moderate, and inspired by the Dutch example, pre-emptive infrastructure projects are implemented to protect critical assets such as ports, airports, coastal cities, industries, hotels, beaches, and ecosystems. Given the significant resources required, climate justice is ensured through prioritising investment in vulnerable areas and communities, aiming to reduce inequalities, prevent climate-driven migration, and benefit all rather than the few. Education on climate change equips citizens with the knowledge and skills to make informed decisions, adopt sustainable practices, and promote solutions.

Scenario 2: Digitalisation and artificial intelligence for sustainable agriculture

Agriculture accounts for one-quarter of global greenhouse gas emissions and is vital to feeding a growing global population. Looking toward 2050, technological innovations are leveraged to enhance productivity while reducing environmental impact. Agricultural lands are mapped in high resolution; sensors monitor soil properties, weather, pests, diseases, and plant growth. Data

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visualised on high-resolution maps enables precision agriculture and informed decisions about irrigation, fertiliser/pesticide use, and extreme weather protection (e.g., hail nets). Sustainable agricultural practices, such as regenerative farming, can become more productive through the use of digital tools. Plant growth is optimised with efficient energy and water use and reduced chemical inputs, gradually lowering agriculture's environmental footprint. Farmer training through traditional and lifelong learning programs is key to adopting digital tools and driving change. Consumer awareness campaigns encourage the selection of products from sustainable practices. Authorities monitor innovation uptake and offer financial incentives, especially to disadvantaged farmers and consumers. Researchers identify best practices and share them with farmers, while the food industry is expected to integrate sustainability and ethical principles into its products and services.

Scenario 3: Sustainable tourism in the era of climate change

In the Mediterranean, climate change brings higher temperatures, more frequent extreme weather events, coastal erosion or flooding, and salinisation of freshwater supplies. Unsustainable tourism, driven by overcrowding, threatens natural resources and overburdens infrastructure, providing only short-term economic benefits. A coordinated effort among policymakers, the tourism industry, and citizens is essential. Authorities embrace the concept of carrying capacity and focus on integrating local customs, landscapes, traditions, products, and culture into the tourist experience. This enriches tourism, promotes intercultural understanding, and ensures sustainability. To address hotter summers, the tourism season shifts toward spring, autumn, and even winter, while ensuring the protection of vulnerable ecosystems. Hotels adopt technologies to reduce environmental footprints, such as energy-efficient appliances, heat pumps, and rooftop solar panels. Water usage is controlled, and single-use plastics like bottles are reduced. "Blue tourism" is promoted in coastal areas, allowing visitors to rent boats and witness traditional fishing methods, giving fishers alternative income while promoting sustainable harvesting. Targeted awareness campaigns inform visitors about minimising their environmental footprint, recognising that degraded destinations negatively impact their own experience. As a result, tourism becomes a more sustainable activity with fewer environmental impacts.

Scenario 4: Top-down policies and emerging technologies

This scenario highlights the development and implementation of top-down environmental policies by governments, alongside the adoption of innovative technologies by industry, to address the climate crisis. Policymakers and industry bear the primary responsibility. Decision-making is centralised at the national level. The industry is shifting toward the production of environmentally friendly goods and services. While overconsumption is not directly addressed, waste production is reduced through durable products and alternatives with low carbon footprints and high reuse/recycling potential. In transport, technologies like drones for last-mile delivery and electric/autonomous vehicles help maintain a low carbon footprint, supported by state policies for reliable public transport. The state invests in education (formal and informal) at all levels and runs environmental campaigns to encourage public support for these policies.

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Scenario 5: A society on the path to sustainability

Citizens' values and lifestyles align with the principles of sustainability—meeting present needs without compromising future generations' ability to meet theirs. This is achieved through education, lifelong training (in workplaces and online platforms), environmental campaigns, and local community-led sustainability projects. Consumption is reduced, and recycling and circular economy solutions are promoted. There is a bottom-up social movement, consistent and persistent in response to visible environmental degradation. This movement informs and inspires citizens to adopt sustainable values and lifestyles. Social inclusion is prioritised to ensure the movement is accessible and leaves no one behind. Politicians are pressured by this movement to adopt environmentally friendly laws tailored to society's needs. All stakeholders work to improve governance and reduce bureaucratic inertia. In transport, both innovative and traditional solutions are embraced: active mobility (walking, cycling), micro mobility, shared transport, on-demand services, autonomous vehicles, and drones—all contributing to fossil fuel reduction and carbon emissions, improving environmental quality.

CRITERIA

1. Relevant: The scenario should address local conditions and future needs.
2. Adaptive: The scenario should reflect adaptability to changing situations, resources, systems, and infrastructures.
3. Engaging: The scenario should include participation of institutions, local authorities, small communities, and citizens.
4. Inclusive: The scenario should ensure benefits for all, especially vulnerable groups and populations.
5. Sustainable: The scenario should promote transformations toward sustainability.
6. Tangible: The scenario should contain clearly defined and measurable elements.
7. Motivational: It should inspire change.
8. Shared: It should reflect consensus among key stakeholders and the community.
9. Comprehensive: The scenario should address all relevant factors and projections.
10. Environmental Effect: It should account for the environmental impacts of climate change.
11. Plausible: The scenario should be logical, realistic, and probable based on existing data or conditions.
12. Cost-effective: The scenario should deliver the best outcomes at the lowest possible cost.

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Annex 7 – Chios Workshop One-page Scenario Overviews

Scenario 1: High-level climate response combining traditional knowledge with innovation

- **Protection**
  - **Forests** (controlled burning, reforestation with local species, monitoring with drones)
  - **Water resources** (fountanas – traditional rainwater collection systems, increased greenery in cities to retain water).
  - **Nature-based solutions.**
- Prioritization of protection for vulnerable groups and communities
  Education of young people in traditional techniques (as they are unfamiliar with them)

Scenario 2: Digitalization and artificial intelligence for sustainable agriculture

- Digital mapping of agricultural land
- Sensors to monitor plant growth, soil, and weather conditions / Regenerative agriculture
- Informed decision-making – Enhanced productivity with reduced environmental footprint
- Training of farmers in new technologies
- Engagement of the entire system (authorities, researchers, food industry, consumers) to support sustainable agriculture

Scenario 3: Sustainable tourism in the era of climate change

Respect for the carrying capacity of tourist destinations
Integration of local traditions and products
Extension of the tourist season into the shoulder seasons
Hotels: Measures to reduce environmental footprint
Fishing tourism (blue tourism)
Tourist awareness campaigns

Scenario 4: Top-down policies and emerging technologies

Top-down environmental policies (from governments)
Innovative technologies from industry to address the climate crisis
Long-lasting products
Electric vehicles
Reliable public transportation
State investment in citizen education

Scenario 5: A society on the path to sustainability

A grassroots social revolutionary movement, consistent and persistent due to clear signs of environmental degradation.
Change in citizens' values and lifestyles (reduction of consumption, recycling, active mobility—cycling, walking—micromobility).
Politicians are pressured by social demand to adopt environmentally friendly legislation.
Education, lifelong training at workplaces and online platforms, environmental campaigns, and sustainability projects involving local communities.
Priority is given to social inclusion to ensure the movement is non-exclusive and leaves no one behind.

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Annex 8 – Chios Workshop Interview Questions (Future Scenario Building and Scenario Prioritisation)

ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΙΓΑΙΟΥ

Scenario Generation and Evaluation (Tools 3.2, 3.4) Participant Interview

Questions:

For the future scenarios building workshop (November 29, 2023)

1. What is your overall impression of the Workshop process on November 29, 2023, where scenarios were created for a resilient future in climate change? Did it seem easy or complicated? Interesting or boring? What did you like most or least?
2. Do you think the following stages of the workshop helped in generating the future scenarios? Why? (Below are stages of the methodology)
   - Presentation of the workshop's purpose and methodology to the plenary
   - Work in groups (brainstorming)
   - Selection of critical factors that will influence the path to a climate-resilient society (categories of factors used: Social, Technical, Environmental, Economic, Political)
   - Morphological box
   - Scenario formulation and narration
3. Do you think the above methodology limited your imagination or creativity? Were there any moments when you felt your opinions could not be expressed or incorporated into the scenarios?
4. The Workshop lasted about 3.5 hours. Do you think this was enough time to create good scenarios?

For today's (21 May 2025) scenario evaluation workshop:

5. How do you assess the criteria chosen for evaluating the scenarios? Too many or too few? Relevant or irrelevant? Understandable or confusing?
6. How did you find the questionnaire you answered for the scenario evaluation? Was it difficult or easy to complete? Why?

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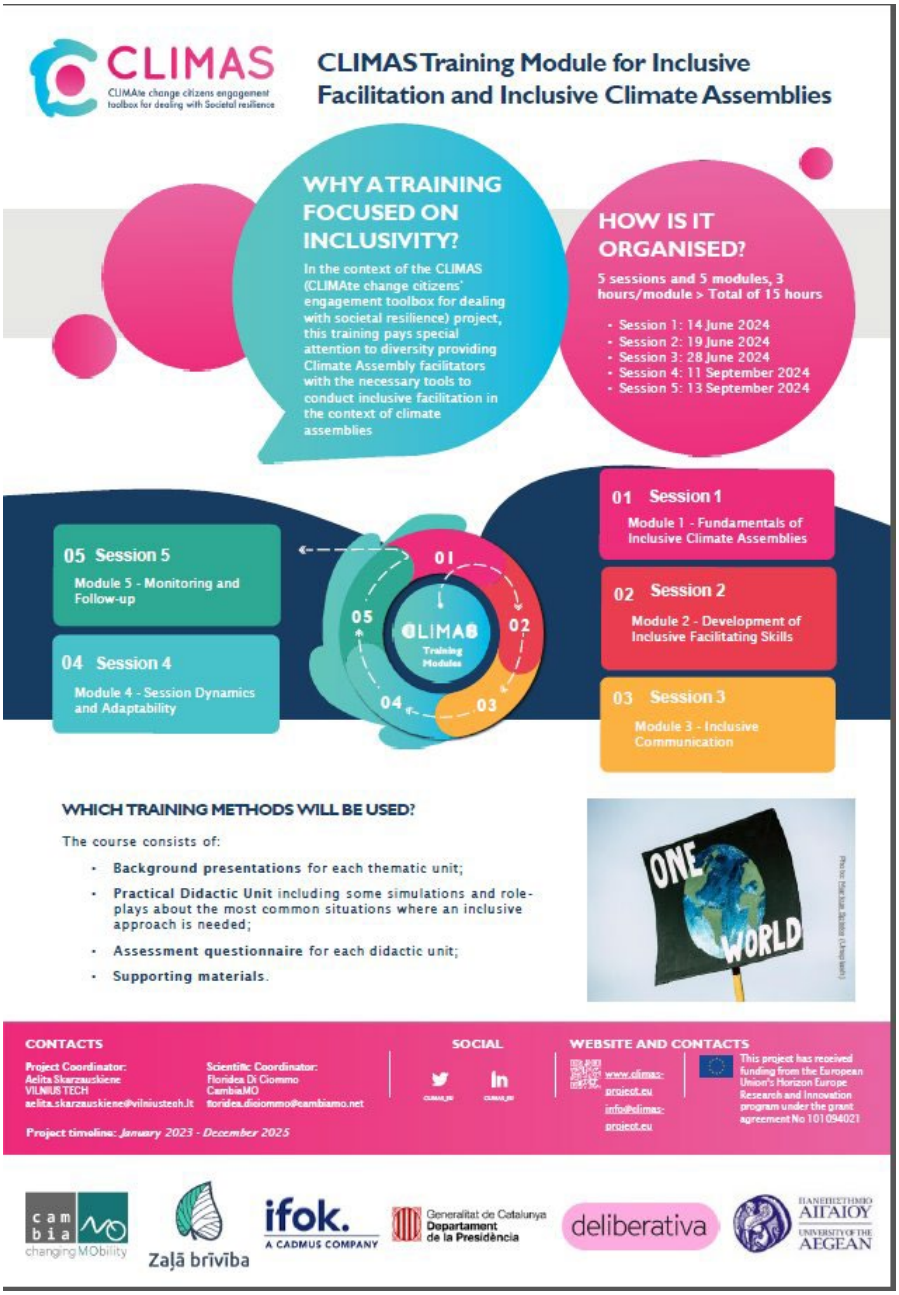
Annex 9 – CLIMAS Training for Inclusive Facilitation



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Annex 10 – Riga Climate Assembly report

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Annex 11 - Edermünde Climate citizens' Council Final Report

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Annex 12 – Catalonia Climate Assembly Final Report

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