

Climateurope2

Glossary of sectoral vocabulary

Deliverable 1.3

Authors: Saioa Zorita (TECNALIA)



Climateurope2

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101056933.

Document Information

GRANT AGREEMENT	101056933
PROJECT TITLE	Supporting and standardizing climate services in Europe and beyond
PROJECT ACRONYM	Climateurope2
PROJECT START DATE	01/09/2022
RELATED WORK PACKAGE	W1 Framework for equitable standardisation and support
RELATED TASK(S)	T1.2 Framework
LEAD ORGANIZATION	TECNALIA (Fundación TECNALIA Research and Innovation)
AUTHORS	Saioa Zorita (TECNALIA)
Co-AUTHORS	Marina Baldissera Pacchetti, Asun Lera St.Clair (BSC)
CONTRIBUTORS	Marta Terrado, Angel Garikoitz Muñoz Solorzano, Carmen Gonzalez Romero, Paula Checchia, Paco Doblas (BSC); Kevin Ramirez, Stefka Domuzova (C-KIC); Arianna Acierno (CMCC); Mirjana Volarev (CNP); Ümit Taner, Bart van den Hurk (Deltares); Lina Monitor (DIN); Fanny Adloff, Martina Stockhause (DKRZ); Siegfried Eisinger, Edwin Aalders (DNV); Tatiana Kolodin Ferrari, Karyn Morrissey (DTU); Carlo Buontempo (ECMWF); Kylie Wood (FhG); Andreas Villwock; Elke Keup-Thiel (HEREON); Alessandro Spinuso (KNMI); Lisa Benes, Imad Audi, Adéola Jaiyeola (LGI); Stacey New (METOFFICE); Laetitia Giraud, Alice Ferrant (REH); Dragan Mihic, Aleksandra Krzic (RHMZ); Helena Martins (SMHI); Jorge Paz Jimenez, Nieves Peña Cerezo, Efren Feliu Torres (TECNALIA); Fiona Kinniburgh (TUM); Werner Krauss (UBREMEN); Charlotte Pascoe (UKRI); Nakiete Msemo (WMO); Adam Jabłoński (WSB); Judith Klostermann (WR)
SUBMISSION DATE	31-08-2023
DISSEMINATION LEVEL	Public

History

DATE	SUBMITTED BY	REVIEWED BY	VISION (NOTES)
28.06.2023	Saioa Zorita	Asun St. Clair	Few clarifications are suggested
03.07.2023	Saioa Zorita	Silke Beck	Few clarifications are suggested

Please cite this report as: Zorita, S. (2023), Glossary of sectoral vocabulary, D1.3 of the Climateurope2 project

Disclaimer: *Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.*

Table of Contents

1	Introduction	8
1.1	Objectives of the work	8
1.2	Structure of this report	9
1.3	Equitable statement	9
2	Methodology	11
2.1	Prioritisation of terms	11
2.1.1	Information collection	13
2.2	Co-development of Key-Terminology Glossary	14
2.2.1	Workshops: miro board	14
2.3	Consensus assessment	18
3	Results	20
3.1	Prioritisation of terms	20
3.2	Terminology building and commenting phase	21
3.3	Co-development of terminology	24
3.3.1	Workshop I	24
3.3.2	Workshop II	26
3.3.3	Workshop III	29
4	Further work	38

List of tables

Table 1. Terms with not explicit objecting during consultation phase and their definitions and source.....	23
Table 2. Most repeated words on the definition of quality and fit for purpose climate services	26

List of figures

Figure 1. Differences between Key Terminology and Specialised Vocabulary	9
Figure 2. Glossary iterative development process over the project lifetime	11
Figure 3. Miro board exercise (n= 11, open to the whole consortium)	12
Figure 4. Survey for Key Terminology prioritisation (n= 39 answers)	13
Figure 5. Terminology commenting template.....	14
Figure 6. Miro template supporting Step 1 and 2.....	15
Figure 7. Miro template supporting Step 3	16
Figure 8. Miro template supporting Step 1 and 4.....	17
Figure 9. Original Miro board exercise to co-develop maturity of climate services.....	18
Figure 10. Consensus scoping framework	19
Figure 11 Image of the Miro board exercise's outputs.....	20
Figure 12. Prioritisation exercise outputs	21
Figure 13. Vote difference for the terms that received more positive than negative votes	21
Figure 14. Weight of comments and objections per term during the commenting phase.....	22
Figure 15. Outputs of the co-creation exercise on the features of quality of climate services.....	27
Figure 16. Wordcloud from the outputs of the co-creation exercise on quality of climate services.....	27
Figure 17. Outputs of the co-creation exercise on the features of fit for purpose climate services	28
Figure 18. Wordcloud from the outputs of the co-creation exercise on fit for purpose of climate services.....	28
Figure 19. Outputs from the exercise to understand what maturity means in the context of the cs components	29
Figure 20. Outputs of the ice-breaker exercise	30
Figure 21. Initial definition of equitable standardisation.....	30
Figure 22. New definition proposals for "equitable standardisation"	34
Figure 23. General considerations on equitable standardisation	35
Figure 24. Outputs of the Miro exercise on climate information.....	37

About Climateurope2

Timely delivery and effective use of climate information is fundamental for a green recovery and a resilient, climate neutral Europe, in response to climate change and variability. Climate services address this through the provision of climate information for use in decision-making to manage risks and realize opportunities.

The market and needs for climate information has seen impressive progress in recent years and is expected to grow in the foreseeable future. However, the communities involved in the development and provision of climate services are often unaware of each other and lack interdisciplinary and transdisciplinary knowledge. In addition, quality assurance, relevant standards, and other forms of assurance (such as guidelines, and good practices) for climate services are lagging behind. These are needed to ensure the saliency, credibility, legitimacy, and authoritativeness of climate services, and build two-way trust between supply and demand.

Climateurope2 aims to develop future equitable and quality-assured climate services to all sectors of society by:

- Developing standardisation procedures for climate services
- Supporting an equitable European climate services community
- Enhancing the uptake of quality-assured climate services to support adaptation and mitigation to climate change and variability

The project will identify the support and standardisation needs of climate services, including criteria for certification and labelling, as well as the user-driven criteria needed to support climate action. This information will be used to propose a taxonomy of climate services, suggest community-based good practices and guidelines, and propose standards where possible. A large variety of activities to support the communities involved in European climate services will also be organised.

Executive Summary

The first section of the deliverable provides an overview of the objectives and structure of the work related to terminology dialogue and harmonisation among Climateurope2 partners to improve coherence among partner's work. By a shared terminology understanding, Task 1.2 *Framework* aims to avoid knowledge fragmentation and foster a common understanding, enabling dialogue and collaboration among Climateurope2 partners as well as to explore and co-create terms to characterise climate services.

This deliverable outlines a three-step methodology for developing the glossary of key terms. The process involves prioritising terms, co-developing the glossary, and reaching a minimum level of consensus on the final list of terms and their definitions. Collaborative exercises and surveys have been used to prioritise terms, identifying the most relevant terms that require a common understanding for the successful achievement of Climateurope2 objectives.

The deliverable is structured into four sections, including an introduction to the objectives and methodology, a detailed description of the methodology, a summary of the results, and an outline of the next steps for updating and expanding the glossary. The work conducted in this deliverable aligns with principles of equity, diversity, and inclusion. Equal opportunities have been provided for all individuals to contribute and access information derived from the glossary. The methodology encourages diverse perspectives and experiences within the project, promoting equitable outputs. Inclusion has been practiced by valuing and respecting the views and contributions of different stakeholders throughout the process.

The prioritisation and terminology building exercises resulted in the identification of key terms through dialogue and a questionnaire. The terminology building and commenting phase collected definitions and sources of information for key terms, with comments and objections received from partners. Workshop sessions facilitated dialogue and co-creation of terms, resulting in refined definitions. Certain terms required special workshops for co-development due to their complexity or lack of previous definitions. The workshops highlighted the importance of considering equity, quality, and fit-for-purpose aspects in standardisation processes.

The terms that have been discussed in each workshop are summarised below. Workshop I terms have been agreed on while terms derived from workshops II and III will need further discussion. Few terms (certification, verification, climate data, climate vulnerability) did not require a discussion as no objections were received:

- Workshop I. 4th May 2023. 22 participants
 - Climate services
 - Standard
 - Standardisation bodies
 - Standardisation process
- Workshop II. 17th May 2023. 23 participants
 - High-quality and fit for purpose climate services
 - Maturity of climate services
- Workshop III. 31st May 2023. 31 participants
 - Equitable standardisation
 - Climate information

This document will undergo updates as the consortium makes progress, ensuring that it reflects advancements in our understanding of terminology. It is important to acknowledge that the development of shared terminology is an iterative process, where revisions will be made to incorporate evolving insights and improve clarity.

Keywords

Key terms, vocabulary, shared understanding, climate services, standardisation, co-development

1 Introduction

1.1 Objectives of the work

The development of climate services entails the active involvement of different stakeholders, including scientists, policymakers, practitioners, and communities, all with their own domain knowledge. It is through collaborative efforts that climate services can be tailored to meet the specific needs and challenges faced by diverse user groups. However, without a common understanding facilitated by harmonised terminology, knowledge fragmentation can occur, impeding efficient collaboration and hindering the potential co-creation of climate services. To overcome this, greater emphasis should be placed on harmonising and standardising terminology and practices across various domains, since *“disciplines are themselves societies, each with its own unique cultural content and linguistic code of signs, symbols, and syntax”*. A shared understanding and consistent terminology help to clarify concepts, methodologies, and outputs. This clarity, which avoids the interpretative flexibility in practice across different contexts, enables effective communication, knowledge sharing, and the achievement of climate services that are tailored to their intended purposes, thus reaching their designed goals.

Terminology harmonisation plays a critical role in avoiding knowledge fragmentation and fostering a common understanding necessary for the co-creation of climate services. By developing a shared vocabulary and terminology, it becomes possible to bridge gaps between different stakeholders, disciplines, and sectors, enabling effective collaboration and coordination. This concerted effort towards harmonisation not only promotes a unified approach but also enhances equity in the provision of climate services by ensuring their suitability and effectiveness for diverse purposes and contexts. Furthermore, it is also important to recognise that terminology harmonisation often serves as the initial step in standardisation processes. By establishing a common language and set of terms, it lays the foundation for standardised practices and procedures by setting the ground for organisation, specification or test method and analysis standards. This standardisation journey, driven by harmonised terminology, paves the way for consistency, comparability, and reliability in e.g. climate services, ultimately leading to improved decision-making and action.

Moreover, the promotion of equitability in climate services is an essential aspect of achieving sustainable development goals. Climate change impacts are not evenly distributed, and vulnerable communities often face disproportionate risks and challenges. By developing fit-for-purpose climate services, customized to address specific contexts, needs, and capacities, equitable access to climate information and resources can be ensured. Terminology harmonisation plays a crucial role in this process, as it allows for the consistent and accurate assessment of vulnerabilities, decision-context needs and responses across different regions and sectors.

Thus, this WP 1 *Framework for equitable standardisation and support* includes the development of a glossary of terms with the following objective:

- Improving the usability and support effective communication within a wide network of actors with non-overlapping expertise

This will be achieved by:

- Reviewing existing definitions in the literature, discussing them and adapting them to reach a minimum level of consensus¹ on how the vocabulary is understood within Climateurope2.
- Elaborating on new terms that do not yet have published definitions.

The work described in this deliverable focuses on Key Terminology (Figure 1) which compiles a collection of terms that are relevant for the successful outcome of Climateurope2. It addresses the following question: Does the common understanding of a particular term have the potential to impact the work of other work packages? For instance, establishing a shared understanding of the term "best practice" in WP1, which focuses on landscape and framework, is essential for discussions related to "value" in WP3.

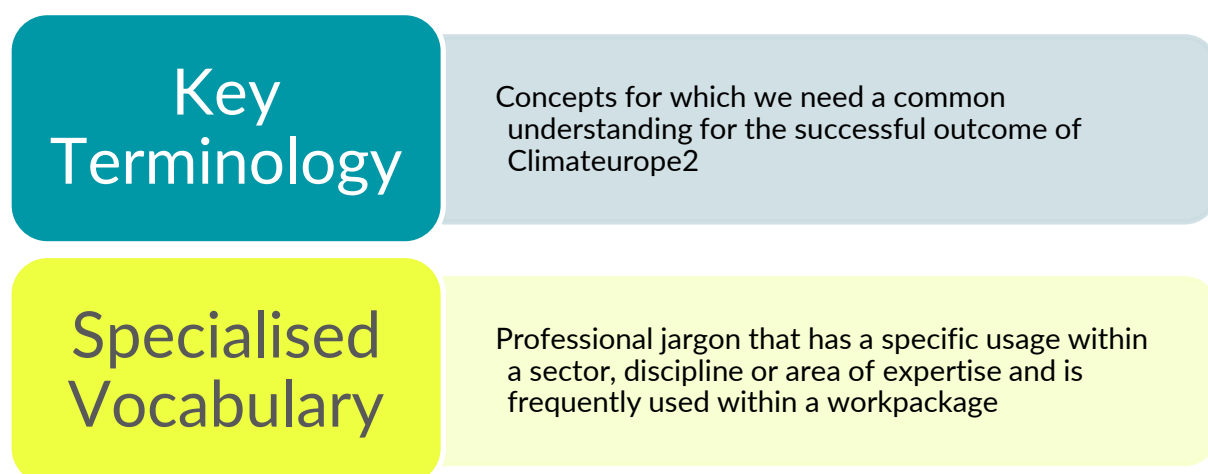


Figure 1. Differences between Key Terminology and Specialised Vocabulary

1.2 Structure of this report

The report is divided into 4 sections. Following this introduction, Section 2 describes the used methodology for the prioritisation of terms that should be collected and co-develop within the Key-Terminology plus the descriptions of the steps and methods used in the co-creation of the terminology. Section 3 focuses on a summary of the results and conclusions of co-creation process. Finally, Section 4 establishes the next steps that will be carried out (under task T1.3 *Synthesis and guidance information*) to continue feeding and updating the vocabulary as the Climateurope2 project evolves.

1.3 Equitable statement

This deliverable and the work to develop its content have been produced considering three criteria: Equity, Diversity, and Inclusion.

- Equity is understood as providing all individuals with equal opportunities to contribute and access the information derived from this work. This will help remove barriers and avoid systemic biases, ensuring that everyone has an equal opportunity to benefit from the knowledge resulting from this Vocabulary. To achieve this, TECNALIA and BSC have led various meetings aimed at co-creating the key-terminology, thus breaking down silos of knowledge and understanding among WPs. The outputs of this work will be accessible to all members of the

¹ Regarding terminology, achieving complete agreement can be difficult. Many professionals understand that terminology standards serve as formal channels, smoothly bringing together different interpretations in discussions and connections. The effectiveness of these standards often depends on acknowledging that they work best when built upon a willingness to embrace diverse viewpoints—a way of finding common ground even amid potential differences, which helps them function harmoniously.

consortium via this deliverable and follow-up meeting (Task 1.3) to periodically gather inputs as the Climateurope2 project evolves and to continue further developing complementary terminology work.

- Diversity is understood as encompassing differences in race, gender, age, background, perspectives, etc., as well as varying degrees of experience in climate services, research expertise, and roles within Climateurope2. The work has accommodated a diversity of perspectives (e.g., working team, consortium composition, etc.) to achieve research excellence and promote equitable outputs from Climateurope2.
- Inclusion is understood as the practice of ensuring that all individuals, their perspectives, and contributions are valued and respected. To achieve this, efforts have been made to listen to and integrate the views of different WPs and individuals, serving as a guiding principle in all the meetings held.

2 Methodology

The methodology employed in this glossary development process followed a clear and systematic three-step approach. These steps are: (i) prioritisation of terms plus information gathering, (ii) co-development of the key glossary, and (iii) validation of the final list of terms and definitions with a consensus assessment if necessary (see Figure 2).

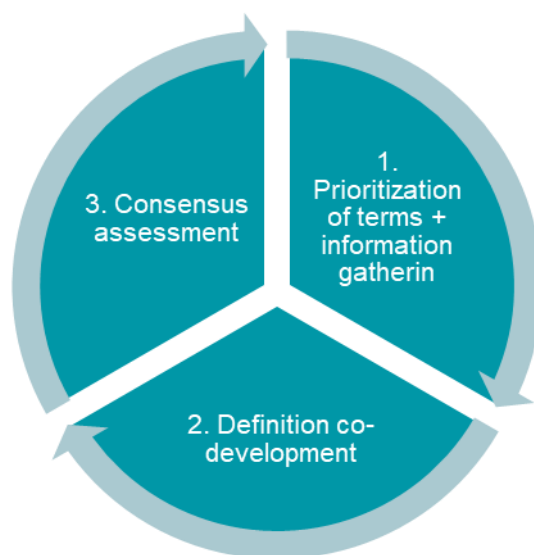


Figure 2. Glossary iterative development process over the project lifetime

The tools used in this methodology aim to encourage a dialogue, accounting for different views on the matter, collaboration, inclusivity, and consensus-building, ensuring that the glossary reflects a collective understanding and agreement among the Climateurope2 partners. The resulting glossary serves as a reliable resource that enhances communication and understanding within the subject area. It encompasses the collective knowledge and expertise of the Climateurope2 partners, capturing a wide range of perspectives and insights. As a result, the glossary becomes a valuable tool for effective communication and knowledge sharing among the partners, facilitating a common understanding of the subject and minimise misunderstandings.

2.1 Prioritisation of terms

A two-stage process was necessary to prioritise the terms for which it was identified as essential to provide definitions in order to avoid misunderstandings and proceed with discussions on how individuals from different work packages understood them.

First, the focus was on identifying the terms that are most important and frequently used, ensuring they receive proper attention in the glossary. A careful evaluation was conducted, considering those terms derived from the Climateurope2 summary and objectives as well as terms relevant to each work package subject but that at the same time could have a potential impact on how different work packages understand it. This initial exercise was carried out by the use of a Miro board which allowed for visual representation and organisation of the

information while promoting effective collaboration among the participants. This was carried out in two steps which instructions were:

STEP 1: Key term definition

1. Revise the terms, both from the project's objectives & WP text
2. Move the terms you think are relevant as key-words (Concepts for which we need a common understanding for the successful outcome of CE2) to the central part of the MIRO

STEP 2: Prioritisation of terms

-Add a star to those 5 terms that you believe are most relevant to co-define in order to have a common understanding

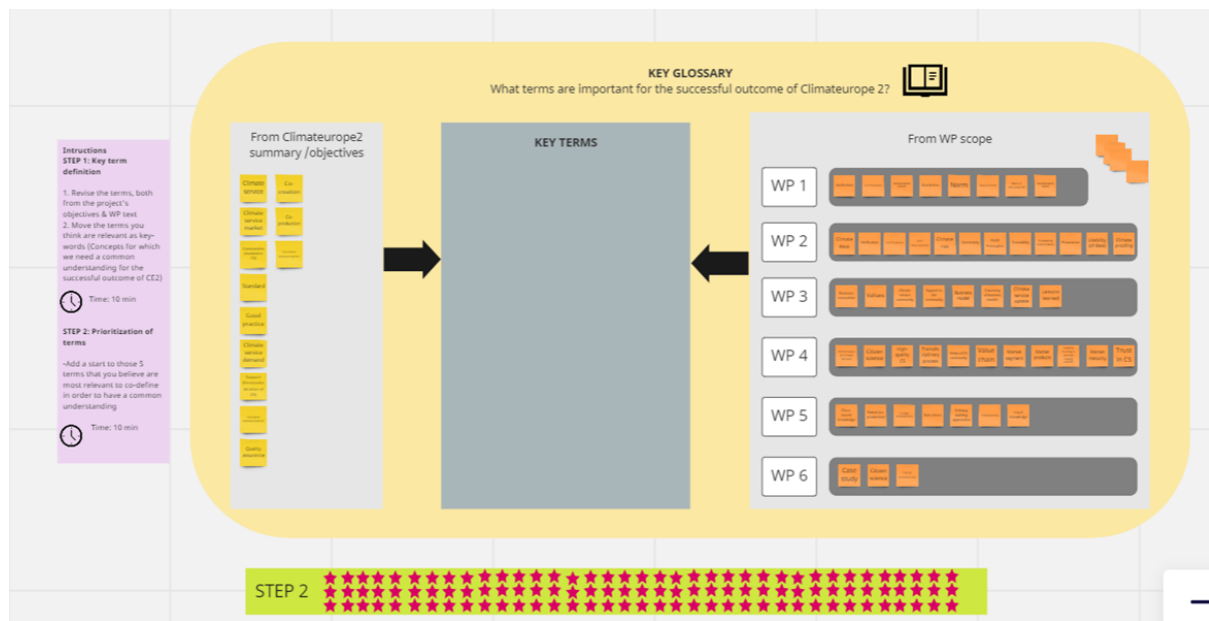


Figure 3. Miro board exercise (n= 11, open to the whole consortium)

Since the results from the Miro exercise were not very conclusive (Figure 12), an additional step was introduced to validate the results.

A survey (Figure 4) was employed to gather preferences and opinions, serving as valuable feedback to shape the final glossary.

Glossary: Key Terminology prioritization

WP1, together with the Climateurope2 consortium members, is working on the definition and consensus assessment of concepts for which the consortium needs a common understanding for the successful outcome of Climateurope2.

The following questions may help you understand which terms should be included as key terminology:

- What terms are important to define to avoid future misunderstanding among the Climateurope2 partners?
- Can I perform my work without having a clear understanding of the term or what other partners mean?

We would appreciate if you spend 5 minutes of your time completing this form to help us further prioritize key terminology and identify possible missing terms.

Please, feel free to let us know your name (optional)

Texto de respuesta larga

Which of these terms do you think necessary to include in the key-term glossary? *

	Yes	No
Climate service	☐	☐
Climate service market	☐	☐
Standard	☐	☐

Figure 4. Survey for Key Terminology prioritisation (n= 39 answers)

2.1.1 Information collection

Simultaneously, a diligent effort was made to gather relevant definitions associated with each term, along with their sources. This work facilitates subsequent discussions by providing a conceptual foundation. In this way, structured discussions are facilitated by relying on established definitions, such as those provided by recognized international organisations. This process was carried out in the Climateurope2 wiki using Google Docs. As a result, it was also identified gaps in definitions.

2.2 Co-development of Key-Terminology Glossary

The second step embraces the power of collaboration to refine and enrich the glossary. All participants were encouraged to contribute their insights, ideas, and examples of term usage. This inclusive approach ensures that a diverse range of perspectives is considered, increasing the validity of the glossary. As a crucial part of this step, first participants also reviewed and provided feedback on each other's definitions using a word template as shown in Figure 5. This constructive feedback process, which mimic coproduction processes often practiced in standardisation processes, helped to identify those terms with higher and lower agreement. After this initial round of feedback three workshops were conducted utilising various formats of MIRO Boards to better fit the purpose and expected outcomes of each workshop.



WP 1. Key-terminology

Purpose of the key-term glossary: Concepts for which we need a common understanding for the successful outcome of CE2. This key-terminology definition will also be an opportunity to create new definitions on key CE2 concepts when not available.

The aim of this feedback template is to gather comments

Definition no	Term it refers to	Type of comment ¹	Comments	Proposed change

¹ **Pre= preference** (just to let us know which definition among the ones available is preferred); **Te= Technical** (Suggestions to the modification of the proposed definitions, propose new term based on previous defined terms etc.); **Ed=editorial** (minor edits such as rephrasing, grammar correction); **Co= conceptual** (Identification of the most suitable term, e.g. High quality climate services may not be the most appropriate term, then a term proposal may be included to change "High quality climate services")

Figure 5. Terminology commenting template

2.2.1 Workshops: miro board

1. Workshop (I)

Miro board: https://miro.com/app/board/uXjVMOVVRfk=

The miro exercise followed three steps for the co-development of standard, standardisation body and process definition:

- STEP 1: Read the definitions and comments. Participants were instructed to thoroughly read the provided definitions and comments.
- STEP 2: Discuss appropriateness. Participants were encouraged to engage in discussions regarding the definitions. Additionally, they should consider whether ClimateEurope2 should take into account industry-led standards and potentially adopt a different definition.
- STEP 3: Identify the most comprehensive definition and reach a consensus vote. Participants were required to identify the definition that is most comprehensive and aligns with the project's goals. A simple consensus scoping exercise was carried out.

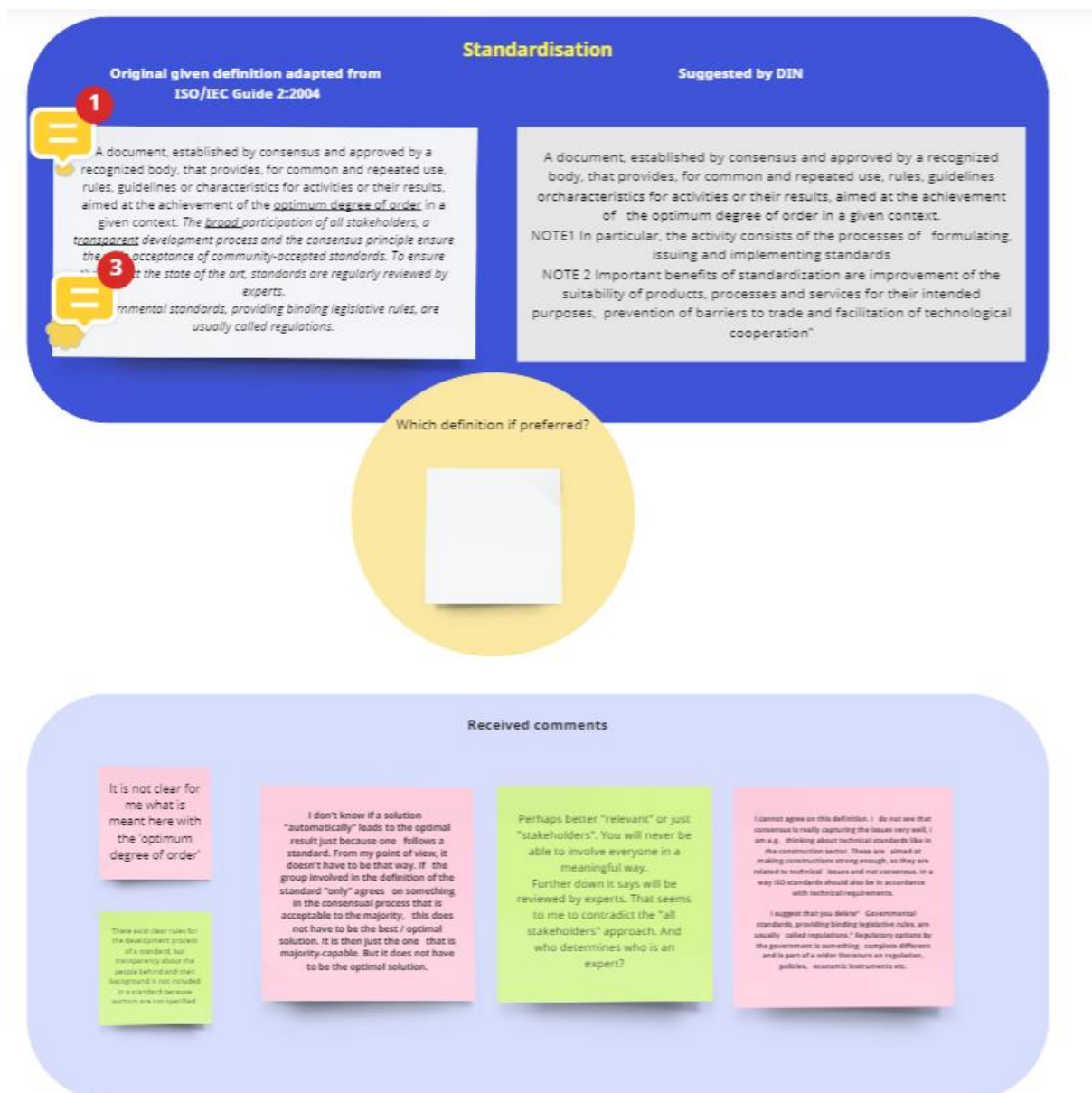


Figure 6. Miro template supporting Step 1 and 2

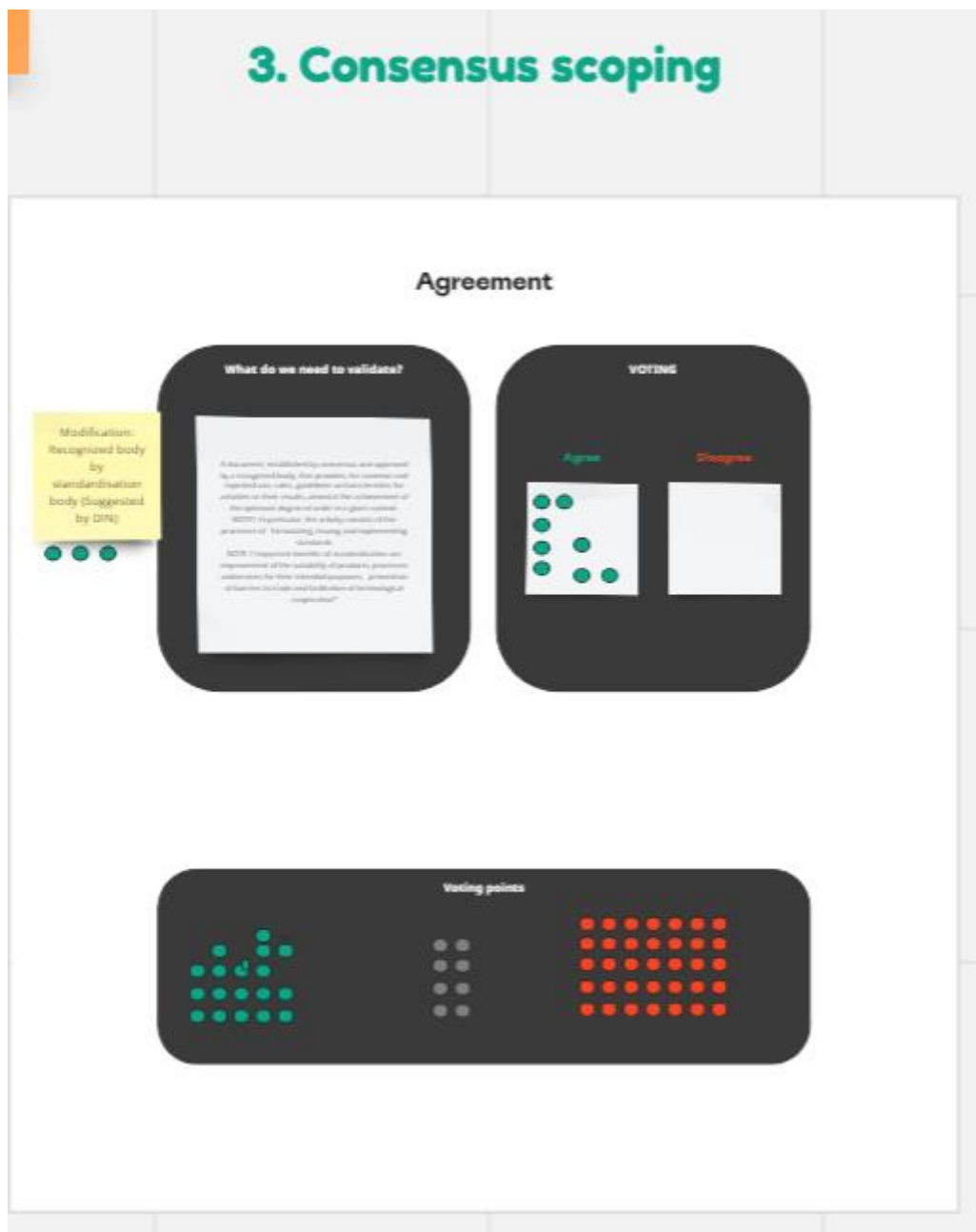


Figure 7. Miro template supporting Step 3

For the climate service definition, a different template was used to accommodate the needs. The steps of the exercise were:

- STEP 1: Read the definitions and comments. Participants were instructed to read the provided definitions and accompanying comments.
- STEP 2: Identify relevant concepts. Participants should review the concepts identified as crucial for defining climate services and engage in discussions with partners to determine the essential concepts that need to be included in the definition. This step was briefly discussed
- STEP 3: Identify the most comprehensive definition. Participants were tasked with identifying the definition that encompasses all the necessary key concepts and accurately represents climate services.
- STEP 4: Rewrite the definition. If any key concepts are missing or modifications are needed, participants should work together to update and refine the definition accordingly.

- STEP 5: Reach consensus. Consensus should be sought among the participants to ensure agreement and alignment on the finalised definition. This step was not needed

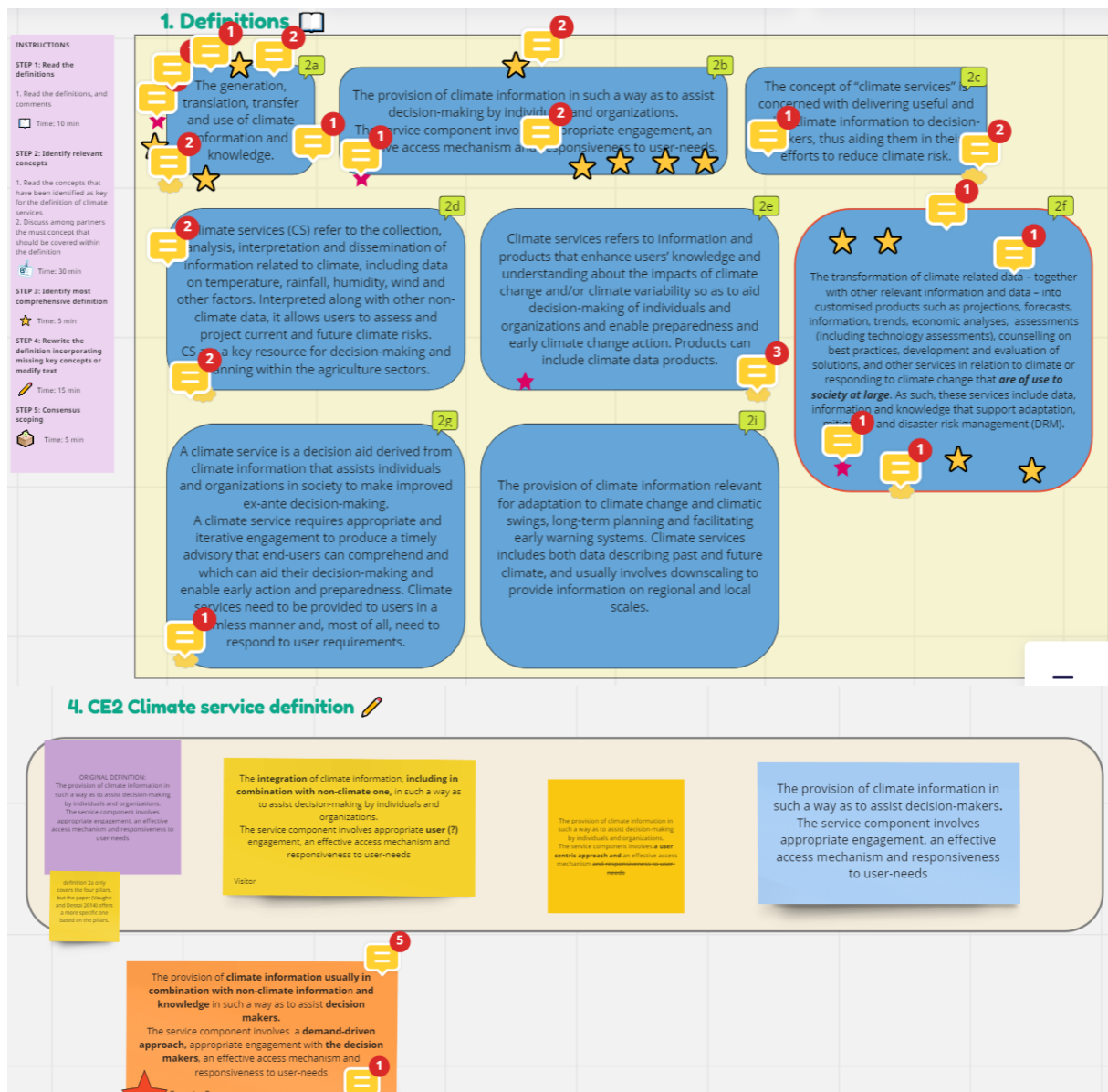


Figure 8. Miro template supporting Step 1 and 4

2. Workshop (II)

Miro board: https://miro.com/app/board/uXjVMIL_Tm4=

High quality climate services

Participants were asked To read the information given around high-quality and fit for purpose climate services and potential features that climate services may require to achieve high-quality or fit for purpose climate services. Then it was asked to participants to identify and discuss what features would characterize a fit for purpose or high quality for purpose climate services. Figure 15 and Figure 17 shows how the exercise was designed.

Maturity of climate service's components

The Miro exercise was initially designed to address the maturity of climate services using a maturity model. However, based on participants' suggestions, it was determined that it would

be more meaningful to begin by defining how participants individually perceive the maturity of each component identified in the Framework for standardisation T1.2, as shown in Figure 19.



Figure 9. Original Miro board exercise to co-develop maturity of climate services

3. Workshop (III)

Miro board: <https://miro.com/app/board/uXjVMF9Uymo=/>

The purpose of this Miro exercise was to facilitate discussions on equitable standardisation from both process and outcome perspectives. Additionally, the participants collaborated in developing a definition (Figure 22) starting from a general one provided by WP1 (Figure 21). General considerations and comments were also gathered for future discussions (Figure 23).

To complement climate service definition, it was highlighted in previous discussion the need to also define what “*climate information*” is. Due to lack of time the exercise (Figure 24) to determine climate information was explained and completed individually by participants with the aim of discussing this topic in the future.

2.3 Consensus assessment

The final step aims to assess the level consensus among the community or stakeholders regarding the terms and their respective definitions. In other words, this step intends to answer the following question: Are we understanding each other when talking about a specific concept? A conceptual framework was established to determine the level of consensus and provide guidance in cases of low consensus was reached, as depicted in Figure 10. In the case of high consensus, the definition of the term will be provided, along with a suitable usage example if deemed appropriate. In situations where consensus is moderate, multiple definitions will be presented, as long as they are compatible, accompanied by various usage examples. This scenario may arise when there are minor differences between knowledge areas, but where the definition offers a slightly different perspective. The third possibility occurs when there is low consensus regarding a term. In such cases, one may question whether the term is truly key to achieving the project's objectives. If it is indeed crucial, a special workshop will be conducted to enhance understanding and, consequently, consensus regarding that particular term. Consensus scoping may be assessed by a vote or alternatively, further discussions can be held to address any remaining disagreements or uncertainties. It has to be highlighted that the

outputs from this work represents an "initial consensus" that is expected to evolve and develop further as the project progresses and reaches maturity.

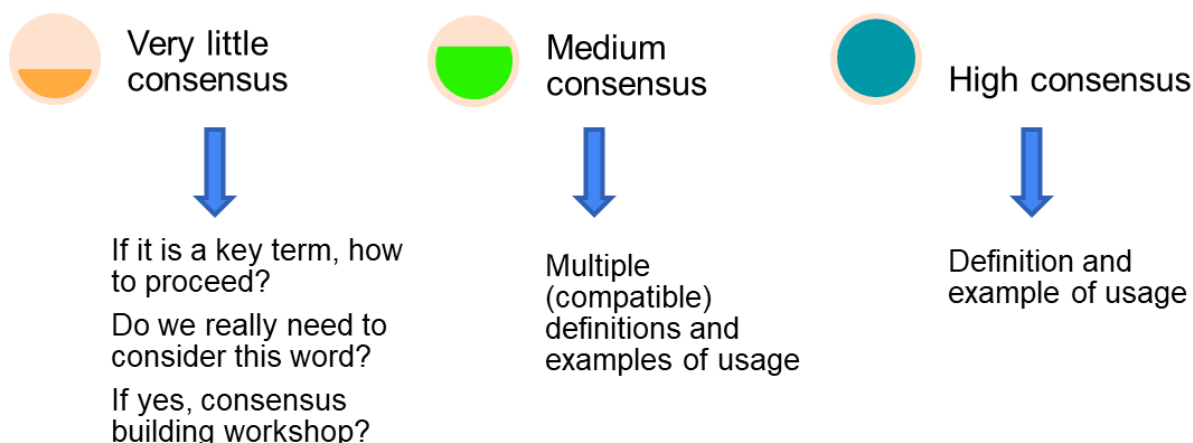


Figure 10. Consensus scoping framework

When and for which terms do we need consensus/choice of usage?

Consensus or the choice of usage is typically needed in situations where there are different interpretations, perspectives, or variations in how specific terms are understood or used within a given context. There are few instances when consensus or choice of usage may become necessary:

- **Ambiguous Terms:** When there is ambiguity or disagreement surrounding the meaning, scope, or application of a particular term, consensus is needed to define it clearly and ensure consistent understanding among the stakeholders.
- **Interdisciplinary Collaboration:** In interdisciplinary projects or collaborations involving individuals from diverse fields, achieving consensus on terms may become essential to bridge the gaps between different disciplines and establish a common language for effective communication.
- **Addressing Varied Contexts or Interpretations:** When a term is used differently across various contexts or has multiple interpretations, it becomes important to reach a consensus on its usage within the specific context or project to avoid confusion and ensure clarity. For example, different sectors often possess their unique microcosms of terminology, which can vary significantly between, for instance, the business domain and at the community level. Therefore, the variations in terminology closely tied to the diverse involved stakeholder groups.

3 Results

3.1 Prioritisation of terms

During the exercise, most of the suggested terms from the project proposal were considered as relevant terms (Figure 11). However, the prioritisation process was not able to clearly identify the key terms. Among the most prominent terms were "Standard" and "Climate service market" (Figure 12). The inputs collected afterwards also did not allow for the identification of a clear list of terms. Although the session served to initiate a dialogue regarding the key terms and highlighted important aspects to consider, such as ambiguity or the suitability of certain terms like *"high quality climate services"* or *"demand"* as it is better to think of it in terms of a *"problem to be solved"* since it captures the complex interaction between supply and demand more effectively.

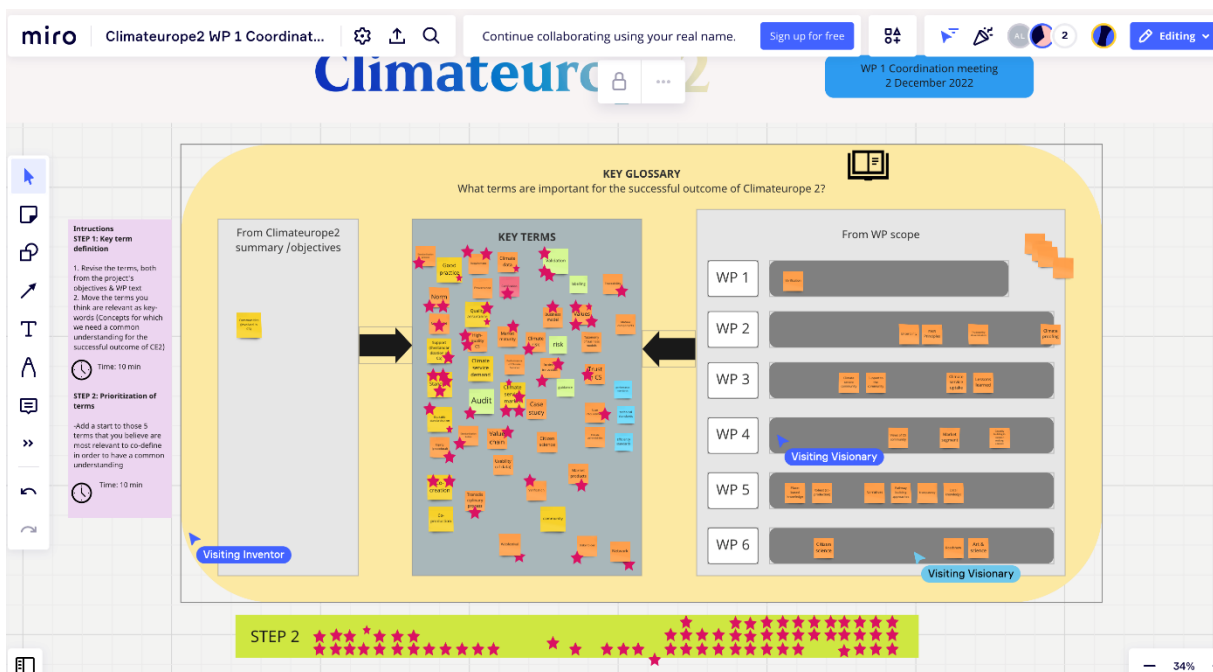


Figure 11 Image of the Miro board exercise's outputs



Figure 12. Prioritisation exercise outputs

However, the results of the questionnaire (Figure 13), in which 39 people participated and the difference between positive and negative votes was recorded, clearly show those terms (derived from the MIRO exercise) that were considered for inclusion in the key terminology and therefore discussed and co-created.

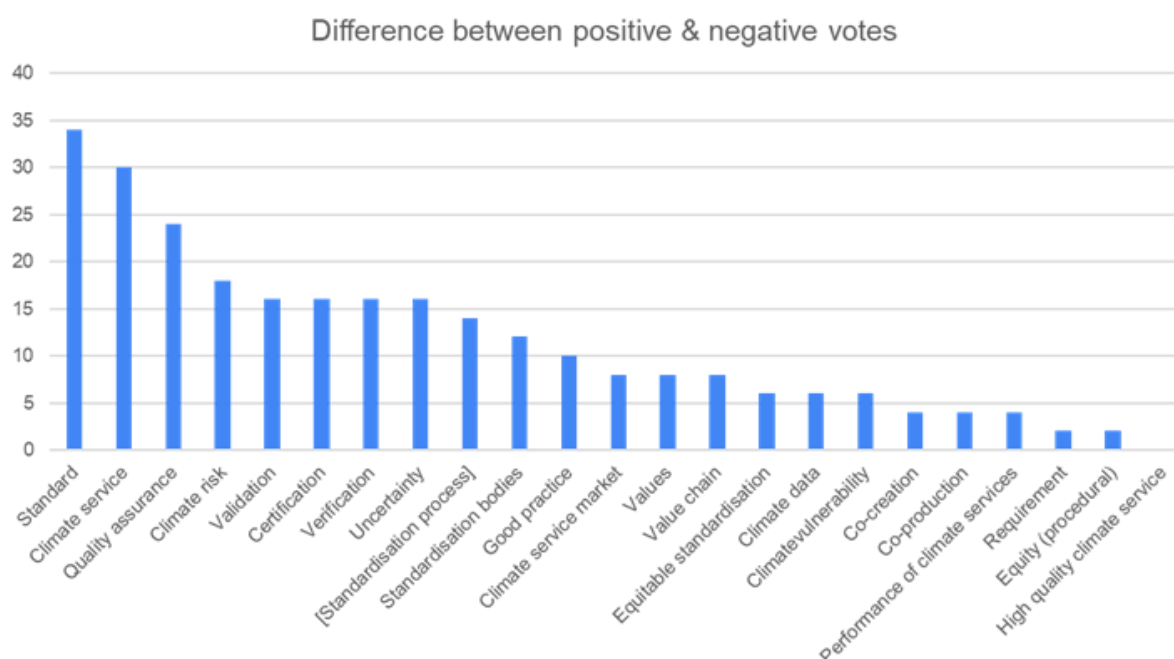


Figure 13. Vote difference for the terms that received more positive than negative votes

3.2 Terminology building and commenting phase

Definitions and their corresponding sources of information were collected for all key terms among all consortium partners, except for:

- Values
- Equitable standardisation
- Performance of climate services
- High quality climate services or fit for purpose
- Mature components

These terms have not been previously defined for climate services, likely due to their complexity, novel nature, or being very general in character. This means that in the context of Climateurope2, special workshops will be required to co-develop how the project understands these terms and how it will address them.

The commenting phase gathered more than 50 inputs for 16 terms from 8 partners as represented in Figure 14. Climate services gathered the most comments with a total of 15, probably as a result of numerous definition collection. Also, two new term suggestions were received: “Users and end-user” and “Climate service users & providers”. These terms may be considered after the prioritised list of terms have been defined.

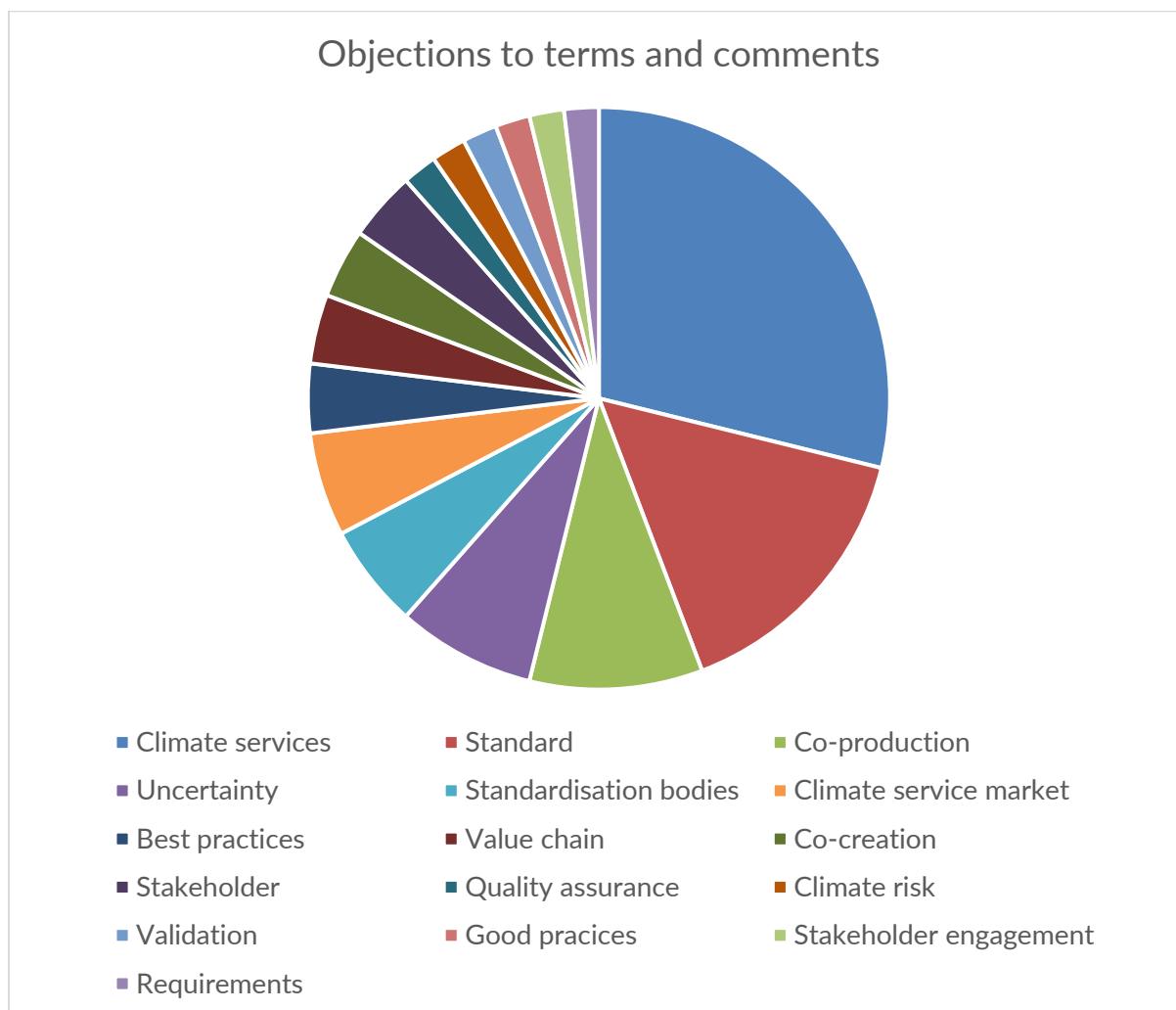


Figure 14. Weight of comments and objections per term during the commenting phase

Table 1 shows the terms that did not receive any comments and, thus, they will not undergo a co-development phase, but rather a validation phase.

Table 1. Terms with not explicit objecting during consultation phase and their definitions and source

No.	Term	Definition	Source
6	Certification	Third-party attestation related to an object of conformity assessment, except accreditation.	ISO 17000
7	Verification	Confirmation, through the provision of objective evidence, that specified requirements have been fulfilled. The term “verified” is used to designate the corresponding status.	ISO 9000
14	Climate data	Climate data are the records of observed climate conditions taken at specific sites and times with particular instruments under a set of standard procedures. A climate dataset therefore contains climate information at the observation sites, as well as other non-climate-related factors such as the environment of the observation station, and information about the instruments and observation procedures (Metadata).	https://community.wmo.int/en/climate-data-homogenization
15	Climate vulnerability	The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and lack of capacity to cope and adapt. See also Exposure, Hazard and Risk.	IPCC WG2 Glossary (“Vulnerability”)

Based on these inputs, three workshops were designed to facilitate dialogue and co-creation of terms. The selection criteria for determining which terms would undergo a co-creation process were based on their significance to Climateurope2 and the need for a shared understanding among project members to progress on project tasks and achieve project objectives. It is important to note that the goal is not necessarily to reach a consensus, but rather to recognise and accommodate the diversity of perspectives on term definitions while fostering a common understanding among project members.

The terms that were discussed in each workshop and number of participants are summarised below:

- Workshop I. 4th May 2023. 22 participants
 - Climate services
 - Standard
 - Standardisation bodies
 - Standardisation process
- Workshop II. 17th May 2023. 23 participants
 - High-quality and fit for purpose climate services

- Maturity of climate services
- Workshop III. 31ST May 2023. 31 participants
 - Equitable standardisation
 - Climate information

3.3 Co-development of terminology

3.3.1 Workshop I

1. Standard

Standard definition, standardisation body and standardisation process were discussed at the same time as they are closely related. It was suggested by DIN to change the definition previously shared, which partly contained the ISO definition, to the original ISO definition. No objections were made except of changing “recognised body” by “standardisation body”. This was supported by 3 participants. The definition was approved with 8 votes in favour, no abstentions and no objections.

STANDARD

A document, established by consensus and approved by a standardisation body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.

NOTE1 In particular, the activity consists of the processes of formulating, issuing and implementing standards

NOTE 2 Important benefits of standardisation are improvement of the suitability of products, processes and services for their intended purposes, prevention of barriers to trade and facilitation of technological cooperation”

2. Standardisation body

Two definitions were discussed, the official ISO/CEN definition “Body that has recognized activities in standardisation” and the one preferred by most of the participants below. The discussion focused on whether sectoral or industry associations promoting standards should also be considered as part of standardisation organisations. It was agreed to include them as standardisation bodies. Examples are given below.

STANDARDISATION BODY

A standards organisation, standards body, standards developing organisation (SDO), or standards setting organisation (SSO) is an organisation whose primary function is developing, coordinating, promulgating, revising, amending, reissuing, interpreting, or otherwise contributing to the usefulness of technical standards to those who employ them.

Examples of standardisation bodies are:

- International: ISO, IEC, ITU, OEKO-TEX, Forest Stewardship Council International Center, Fairtrade International
- European: CEN, CENELEC, ETSI,
- National: ASI, DIN, UNE, UNI, SIS, AFNOR...

3. Standardisation process

This term did not get any objections prior to the workshop neither during the workshop. The definition was approved with 6 votes in favour, 1 abstention, and no objections.

STANDARDISATION PROCESS

A standardisation process refers to the systematic process of developing, establishing, and implementing standards. The standardisation process is a collaborative and iterative process that involves the participation of diverse stakeholders, including experts, industry representatives, and consumers.

The standardisation process typically involves several steps, including:

-Identification of the need for a standard: This involves identifying the problem or issue that the standard is intended to address, as well as the stakeholders who will be affected by the standard.

-Preparatory work: This involves conducting research, gathering data, and consulting with stakeholders to define the scope, objectives, and requirements of the standard.

-Drafting of the standard: This involves developing a draft of the standard, which typically includes the technical specifications, guidelines, and requirements for the product, process, or service.

-Consultation and review: This involves soliciting feedback from stakeholders and experts, and revising the draft standard based on their input.

-Approval and publication: This involves finalising the standard, obtaining approval from relevant organisations or authorities, and publishing the standard for use by stakeholders.

-Maintenance and revision: This involves monitoring and updating the standard as needed, to ensure that it remains relevant and effective over time

4. Climate Services

The last term that was discussed was Climate services. The 8 definitions were read, and time was given to participants to read the received comments. Key-concept covered in different definitions were mentioned. Then the discussion focused on preferences by participants and the reason behind it. Then the preferred definition was voted. Definition 2a and 2f (see miro board) were the preferred ones, however after highlighting that 2a was found vague by a participant, the preference was shifted towards 2b. Initially, there was a tie between 2b & 2f definitions. Finally, 2b won by one vote (6 to 5). 2f definition was then discussed again among the remaining 12 participant and an improved version was provided.

Adapted definition from 2b:

The provision of climate information usually in combination with non-climate information and knowledge in such a way as to assist decision makers.

The service component involves a demand-driven approach, appropriate engagement with the decision makers, an effective access mechanism and responsiveness to user-needs

3.3.2 Workshop II

1. High quality climate services

After the presentation of the Miro board to support the discussion, participants emphasised the importance of agreeing on the features and rationale for each quality aspect, without necessarily establishing specific criteria and requirements. One participant raised a concern about the use of the term "high" and suggested that there should be room for considering medium-quality climate services as well. It was suggested that the features should be independent of the quality level, as quality is determined by the fulfilment of various requirements associated with the selected features. Services that fulfil a greater number of quality criteria could be deemed as "high" quality. The more quality criteria they meet, the higher their level of quality can be considered.

The term "fit for purpose" was discussed and recognised as an important element of climate services quality. Both the terms "quality" and "fit for purpose" were considered, with awareness of potential redundancy between these elements. The participants included in the Miro board the different features that characterise "quality" (Figure 15) and "fit for purpose" (Figure 17). The exercise highlighted that quality is very much associated to data and knowledge component while fit-for-purpose is closely linked to the process and the users/stakeholders decision-making (decision context and stakeholder engagement components).

It was highlighted that in the future, this exercise should be linked to the climate service components defined in Climateurope2 (1. The decision context, 2. Data of different types and related selection, evaluation, and translation processes, 3. Delivery mode and evaluation of the delivery mode, 4. Stakeholders & knowledge holders and co-creation processes). There was a discussion about the features of data, including accuracy, validity, reliability, timeliness, relevance, and completeness, as well as the FAIR principles.

The participants also engaged in a discussion regarding the best terms to describe one of the components, such as data, information, or knowledge. Due to time constraints and the progress made in WP4 on high-quality climate services, it was suggested to revisit the definition of the term once the study is completed.

Table 2. Most repeated words on the definition of quality and fit for purpose climate services

Term	Quality climate services	Fit-for-purpose climate services
Most repeated term	Reliability	Clear, Process

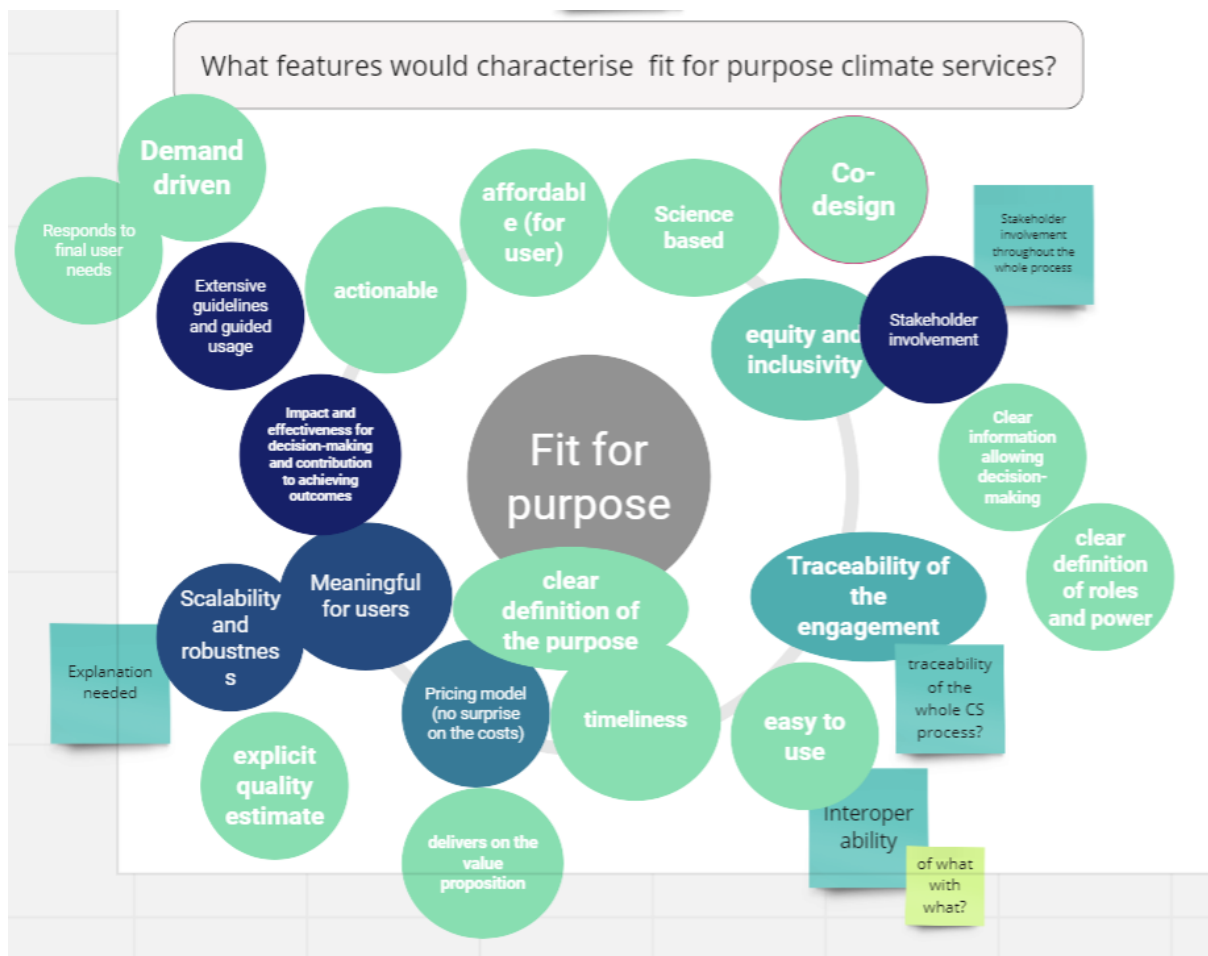


Figure 17. Outputs of the co-creation exercise on the features of fit for purpose climate services



Figure 18. Wordcloud from the outputs of the co-creation exercise on fit for purpose of climate services

2. Maturity of components

The proposed exercise is presented. But instead of working on a maturity model of CS components in general, it is preferred to work on answering the following question: *How do you define the maturity of a component in relation to standardisation?*

Different inputs are gathered depending on the component (Figure 19).

There is no time to deeply discuss this definition.

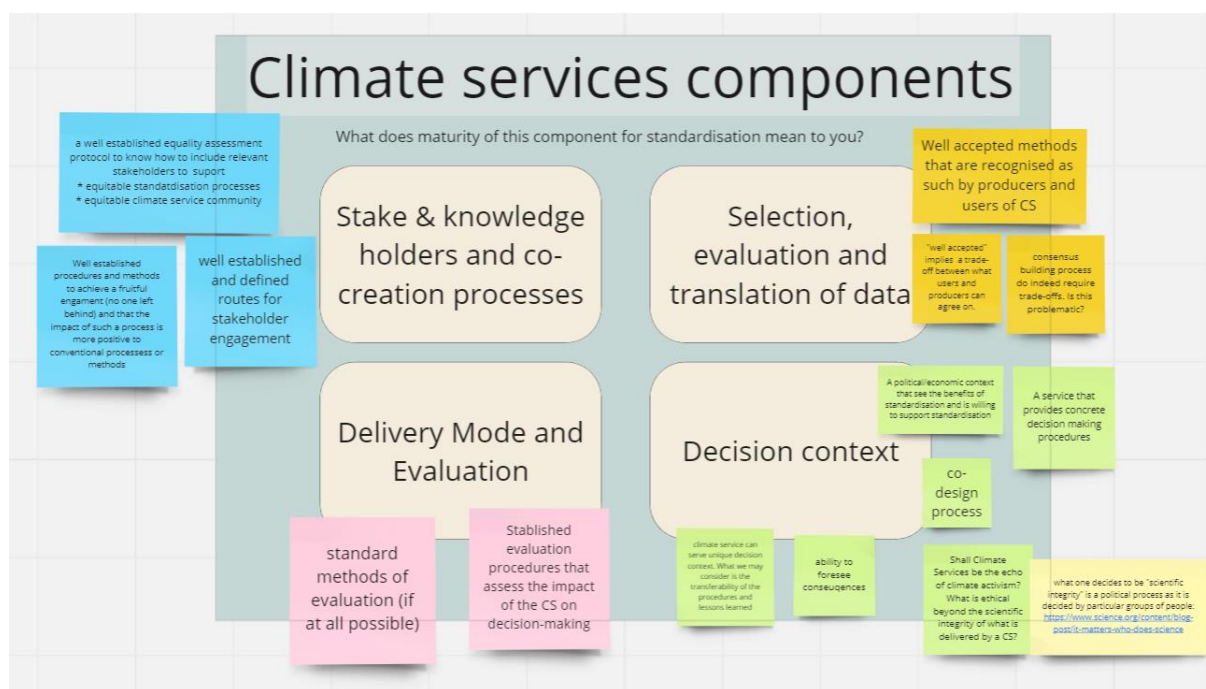


Figure 19. Outputs from the exercise to understand what maturity means in the context of the cs components

3.3.3 Workshop III

1. Equitable standardisation

The first minutes of the workshop were dedicated to an icebreaker (Figure 20) where attendees were asked to select which emoji represented better equity and why.

The juggler, the recycling sign and galaxy brought a sense of circularity, the inclusion of everyone or no one left behind.

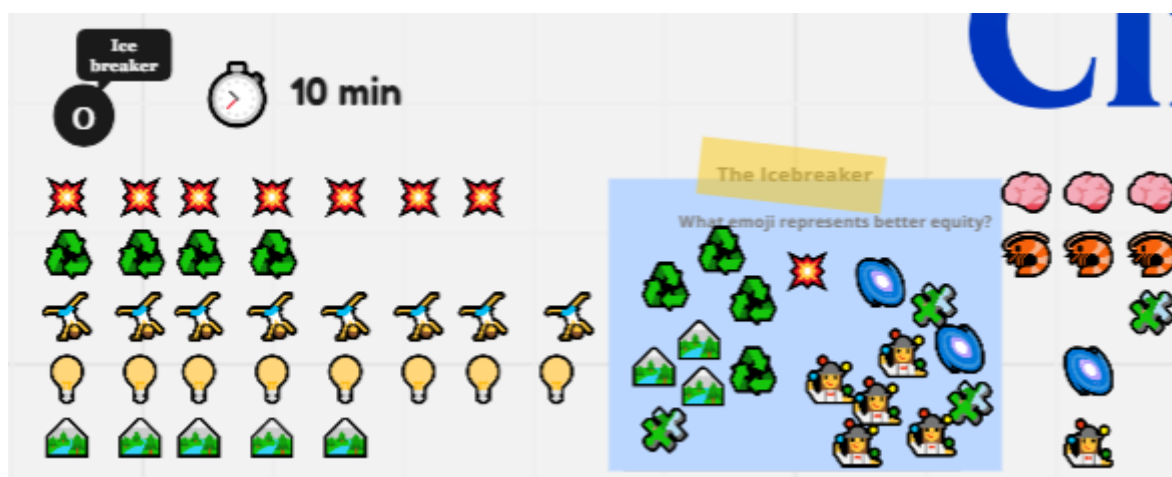


Figure 20. Outputs of the ice-breaker exercise

Next, efforts were dedicated to refining the concept of equitable standardisation, taking into account the necessity of considering equitable standardisation from both the procedural and implementation perspectives.

Figure 21 presents the initial definition, which participants modified according to their individual perspectives on the essence of equitable standardisation.

EQUITABLE STANDARDISATION
Equitable standardisation refers to the process of developing and implementing standards in a manner that promotes fairness, equality, and social justice. This approach recognizes that standards can have significant social and economic impacts, and seeks to ensure that the development and implementation of these standards is guided by equitable principles and considerations

Figure 21. Initial definition of equitable standardisation

A collection of six new definition proposals (Figure 22) was gathered, each offering unique perspectives on equitable standardisation. One proposal specifically emphasized the equitable standardisation of climate services, highlighting the importance of not only ensuring equitable principles in the decision and development process and outcomes but also guaranteeing accessibility to those outcomes. Among the definitions, two emphasized the significance of a consensus-based process in promoting equity throughout the standardisation process. In general, these definitions aimed to enhance the understanding of equity in standardisation by

incorporating explicit statements regarding aspects that should be considered, forming an integral part of equitable standards, such as:

«to reduce potential disadvantages with respect to accessibility, understanding and capability»

«to ensure that the development and implementation of these standards does not disadvantage individuals in the targeted community on the basis of their access to the process, capacity engage in the relevant area of expertise or ability to be represented »

« takes into consideration the different capabilities of stakeholders »

The discussion revolved around the question of whether the definition of equitable standardisation should focus on an idealised concept or reflect current practices. The consensus reached was that it is valuable to consider both perspectives.

BSC point about making trade-offs visible in order to enhance equitable standardisation was widely agreed upon. It was acknowledged that standardisation inherently involves including and excluding certain priorities, making it impossible to achieve equitability for everyone in all circumstances. However, making these trade-offs transparent can facilitate a more transparent equitability debate, allowing different stakeholders to voice their priorities.

Deltares emphasised the need for a societal debate that sets the standards, as it provides a platform for weighing the trade-offs involved. He highlighted that discussions on standardisation often occur in technical realms, which may exclude many stakeholders unless intentional efforts are made to include them.

TUM supported the idea of a societal debate and stressed the importance of ensuring the participation of all affected parties to achieve equitable standards.

Deltares provided an example of normative discussions in the Netherlands regarding flood protection standards. These discussions result in technical specifications for dike heights, which are based on a trade-off between the cost of building the dike and the damage it prevents. Both cost and damage considerations involve equity elements, such as weighing the interests of different groups and assessing monetary and non-monetary damage indicators, as well as long-term versus short-term impacts.

The discussion concluded with an agreement on the significance of differentiating between various dimensions of equitability for different components. There was an expressed interest in further exploring and describing these dimensions. It was acknowledged that defining equitability in standardisation requires taking a normative stance and establishing a position on the matter.

As time was limited, participants shifted their attention to general comments (Figure 23) that should be taken into account for the next workshop on equitable standardisation. Here is a summary of the main themes that were discussed:

- **Inclusivity and Participation:** Participants emphasized the importance of including and involving all relevant actors and stakeholders in the standardisation process. They stressed that equitable standardisation requires providing opportunities for diverse voices to be heard and ensuring meaningful participation, irrespective of background or expertise.
- **Differentiated Considerations:** Participants recognized the need for differentiated considerations in equitable standardisation. They emphasized that different standards may require distinct approaches to equity, taking into account specific socio-economic groups, regional priorities, and varying impacts on different stakeholders.
- **Transparency and Trade-Offs:** Transparency emerged as a key theme, with participants emphasizing the importance of openly discussing and making visible the trade-offs involved in standardisation processes. Transparent decision-making and communication

of the equity considerations were seen as crucial to enhancing equitable standardisation.

- **Consensus Processes and Societal Debate:** Participants advocated for expanding the consensus processes in standardisation beyond traditional expert participants. They highlighted the need for a wider societal debate that sets the standards, involving a broader range of stakeholders and allowing for deliberation and trade-offs in decision-making.
- **Non-Mandatory Standards:** There was discussion about the perception of equity in non-mandatory standards. Participants suggested that if a standard is accepted and used by diverse stakeholders and groups, it may be seen as equitable.
- **Dimensions of Equity:** Participants expressed an interest in exploring and describing the different dimensions of equitability in standardisation. They recognized that equity considerations extend beyond the development and implementation of standards and encompass aspects such as access, representation, capability, and non-exclusionary practices.

EQUITABLE STANDARDISATION

Bart: Equitable standardisation refers to the process of **developing** and **implementing** standards in a manner that promotes fairness, equality, and social justice.

This approach supports the societal debate that leads to a consensus-based system of standards guided by equitable principles and considerations, recognizing that "consensus" on trade-offs is affected by cultural backgrounds, and recognizing that standards can have significant social and economic impacts



EQUITABLE STANDARDISATION

Equitable standardisation refers to the process of **developing** and **implementing** standards in a manner that promotes fairness, equality, and social justice in three-aspects: *In the design process (considering different actors - not leaving someone behind), on the **outcomes** (so that they can be used to assure equity: promoting opportunities and avoiding risk), but also on the **delivery/format** by assuring the accessibility of these outcomes.*

This approach recognizes that standards can have significant social and economic impacts, and seeks to ensure that the development and implementation of these standards is guided by equitable principles and considerations

Marina: Equitable Standardisation.



Equitable standardisation refers to the (consensus-based) process of **developing** and **implementing** standards in a manner that recognizes that in order to achieve and promote fairness, recognizes that different individuals for which the standard is relevant may have different requirements regarding access, capacity and/or representation in the process.

This approach recognizes that standards can have significant social and economic impacts on the communities that they target, and, through the explicit consideration of equity, seeks to ensure that the development and implementation of these standards does not disadvantage individuals in the targeted community on the basis of their access to the process, capacity engage in the relevant area of expertise or ability to be represented - as its goal is to provide standards that benefit everyone in the community.

Equitable standardisation refers to the process of **developing** and **implementing** standards in a manner that takes into consideration the different capabilities of stakeholders and gives them equal opportunities to act under a specific standard.

This approach recognizes that standards can have significant social and economic impacts, and seeks to ensure that the development and implementation of these standards is guided by equitable principles and considerations

Equitable standardisation refers to the process of **developing, implementing** and **maintaining/governing** standards that is guided by equitable principles and considerations including equality, inclusion, diversity, and social justice.

This approach recognizes that standards can have significant social and economic impacts.

The approach takes into account existing socioeconomic, cultural differences among different groups and communities, and enable the standardisation process to reduce potential disadvantages with respect to accessibility, understanding and capability.

Figure 22. New definition proposals for "equitable standardisation"

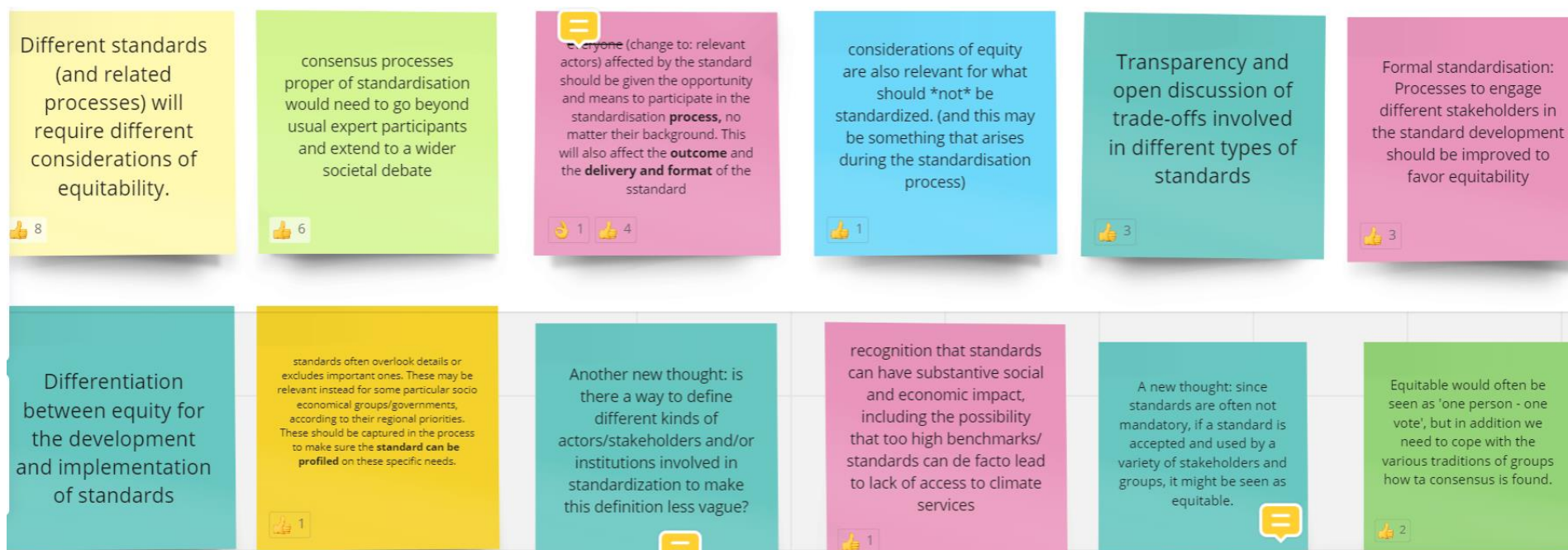


Figure 23. General considerations on equitable standardisation

Despite the lack of time, three participants completed an additional exercise on the MIRO Board aiming to identify how an equitable standardisation process should be from their point of view. All these inputs will be considered in the next workshop dedicated to equitable standardisation as it was agreed that that further discussion is needed to further co-develop the concept of equitable standardisation.

Concept Equitable standardisation process	
WP: 4	
Who should be involved?	Broad participation from both sides (provider / users) depending on who is affected
Which equitable principles should be considered?	The standard should be understandable, usable, affordable, transparent and lead to increase of trust.
How should the process be?	Depending on who is driving the process ensure that "the other side" is equitable participating in the process, ensuring a broad consensus.

Concept Equitable standardisation process	
WP:	
Who should be involved?	All stakeholders (whoever is affected by the results of the standard)
Which equitable principles should be considered?	Sharing advantages and disadvantages equally among stakeholders, as far as reasonably possible. If the 'bias' cannot be reduced in a reasonable way, compensation should be considered.
How should the process be?	

Concept Equitable standardisation process	
WP:	
Who should be involved?	users of the standard, experts for the topic (e.g. Climate change, standardisation etc) ,
Which equitable principles should be considered?	the standard should be transparent, coherent, usable
How should the process be?	transparent, equitable, balanced

2. Climate information

The discussion on equitable standardisation was the focus of the workshop, but since the definition of climate services was not accompanied by a definition of climate information, the Board Meeting highlighted the need to also work on this complementary definition. To address this need, an initial exercise (Figure 24) had been prepared to identify what is considered climate information. Although there was not enough time to work on it, the exercise was presented for attendees to rate the different options and add new ones either during the remaining time of the workshop or afterwards. Among the options, observations, re-analysis, global warming scenarios, and forecasts were the most voted for. Additionally, numerous comments were collected on the MIRO Board. All this information will be used to work on the definition or the list of examples that are considered climate information.

Climate information		20 min		
	YES	NO	Outputs	How climate information is presented
Observations	•••••		Data series	••
Emission Scenarios	•••••		Indicators	••
Re-analysis	•••••		Maps	••
Global warming scenarios	•••••		Graph	••
Climate models	•••••		Thresholds	•
Climate impact	•••••		Primary text	••
Uncertainty	•••••	•	Text-based insurance	•
Forecast (seasonal, seasonal, etc.)	•••••		Forecast-based finance	•
Bioindicator	•••••		Early warning systems	•
Climate Projections	•••••		climate change adaptation	•
Climate indices	•••••		Forecast-based action	•
Trainings on climate related topics	•••••		"Farmers rules"	••
			List of Weblinks	•
			Trainings	•
			consultation processes	•

Figure 24. Outputs of the Miro exercise on climate information

4 Further work

Despite efforts to cover and co-define all prioritised and identified relevant terms, it has not been possible to complete the glossary of key terms within the first year of the project. Several reasons contribute to this, including the presence of new or immature terms that require in-depth discussions, the need to harmonise different perspectives based on specific domains and areas of expertise, and the requirement to concurrently work on other project tasks such as aligning the standardisation framework with this work and avoiding overwhelming partners with excessive workload.

Nevertheless, despite the challenges encountered, the project team remains committed to fostering this enriching dialogue and pursuing a shared understanding of the key terms. Continuous efforts will be made to refine and expand the glossary in order to establish a robust and comprehensive reference for the project's terminology. This ongoing work will contribute to enhancing collaboration and facilitating effective communication among project partners, thereby promoting a deeper and more cohesive comprehension of the subject matter.

As this document represents the first iteration, it is important to note that subsequent iterations will be developed as the project progresses. These iterations may include the addition of new terms, the revision of consensus or addition of use cases and updates to the currently agreed-upon definitions.