

## D4.1 Evaluation of language, visual presentation, uncertainty information: user relevant criteria in climate communication

### - Report on the results of WP4 of the project “Use.AT”

#### Executive Summary English

**Contributors:** Benedikt Becsi<sup>1</sup>, Laura Mainetti<sup>2</sup>, Matthias Schwarz<sup>2</sup>,

1: BOKU University

2: GeoSphere Austria

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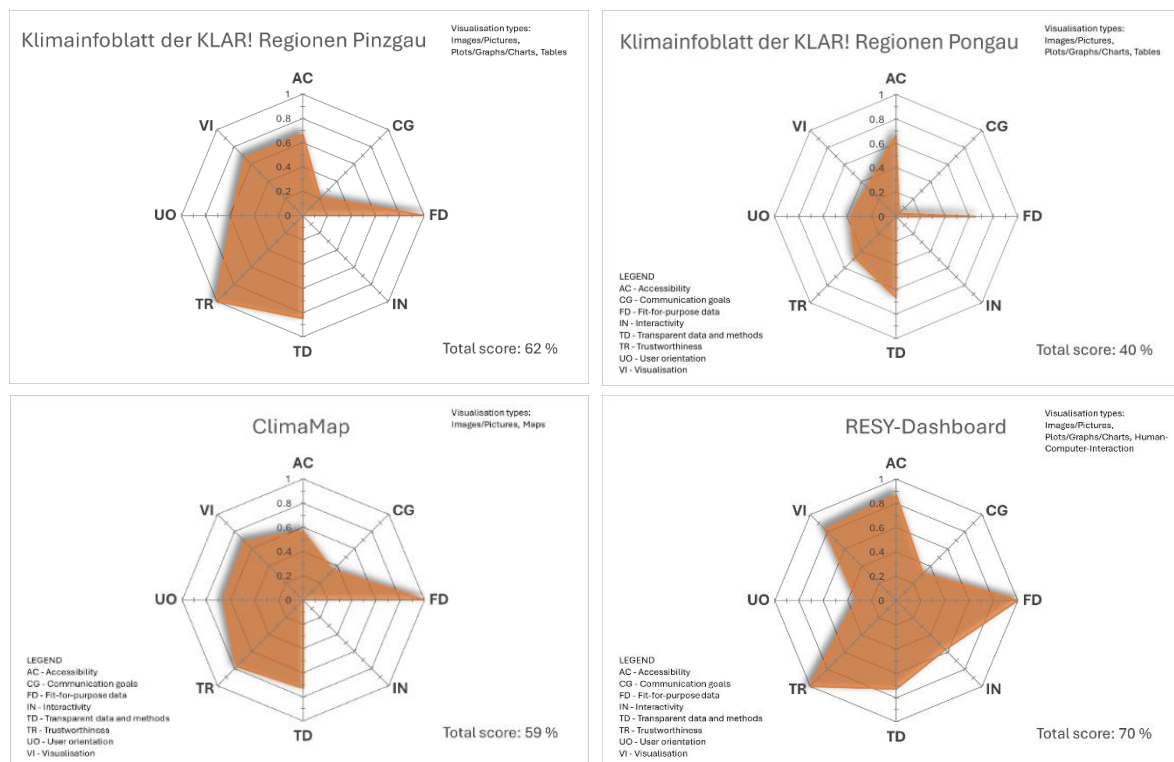


Figure 1: Evaluation results for the four CCRs: KLAR! Factsheet Pinzgau (a), KLAR! Factsheet Pongau (b), ClimaMap (c), and RESY-Dashboard (d). Spider diagrams show the score that the CCRs reached in each category on the radial axis. The total score shown in the left bottom is the average over all category scores, not single criteria scores. On the top left of each panel the types of visualisations used in the respective CCR are listed. This information is not included in the quantitative score.

**LEGEND**  
AC - Accessibility  
CG - Communication goals  
FD - Fit-for-purpose data  
IN - Interactivity  
TD - Transparent data and methods  
TR - Trustworthiness  
UO - User orientation  
VI - Visualisation

## Executive Summary WP4

As there is a great demand for climate information to support decision making processes, stakeholders are faced with a variety of different products, services and information. But how can relevant information be conveyed? What makes climate communication effective, and what constitutes good communication? Within the Use.AT project, the project team conducted a literature search, literature review and finally compiled a catalogue of criteria for effective climate communication. This knowledge is to be incorporated into the development of the future climate scenarios for Austria, the “ÖKS next generation”, as part of the “Klimaszenarien.AT” initiative.

This report summarizes the results of the activities in WP4 of Use.AT. The aim was to identify best practice criteria for visual and textual representation in climate communication resources (CCRs) from the scientific literature. Based on these criteria and a survey, user-group specific recommendations on how to improve the communicative aspects of these resources were developed.

Climate change communication is a diverse field spanning psychology, cognitive science, visualisation, and more. Each discipline has its own focus, making universal best practices hard to define. Moreover, what counts as “good communication” shifts with scientific knowledge and always depends on goals, framing, and audiences. The literature highlights that effectiveness in climate communication requires evaluation, which in turn needs a framework to describe and compare communication resources (CCRs). A standardised framework has been repeatedly called for, but it must account for the wide variety of formats.

Therefore, a criteria catalogue was compiled to describe and assess CCRs, screening nearly 200 papers. The catalogue includes 70 criteria, grouped into eight categories, and supported by about 1,300 references. This catalogue enables systematic characterisation of CCRs. But that alone doesn’t reflect on the users’ priorities. For evaluation, a stakeholder perspective was added. We surveyed potential user groups on which aspects of communication matter most. Combined with the assessment based on the criteria catalogue, this allows us to evaluate how well specific resources address specific user groups, forming the basis of our recommendations to Klimaszenarien.AT.

### Developing the criteria catalogue

After the literature review, the criteria catalogue contained 72 criteria and roughly 1300 ‘hits’, i.e. mentions of a criterion in the literature. The criteria were reviewed after the literature research to ensure applicability and consistency of the entire framework. We then developed a grouping for the criteria shown in Table 1 to provide an overview for application and analysis.

The criteria catalogue was then made operational: For that, we defined single-choice answers for each criterion and assigned a number between 0 and 1 to each answer. Since most criteria are posed as yes/no questions, their score was 0 for no, 1 for yes. For some criteria with graded response options (like ‘fast – medium – slow’), the score could assume values between 0 and 1.

Table 1: Criteria categories in the final catalogue.

Category name	No of criteria	Description
<b>Transparent data and methods</b>	11	Means the scientific quality of the data. Procedures and methods are transparent and documented, data sources are specified, uncertainties and its sources are disclosed.
<b>Fit-for-purpose data</b>	6	Means the quality of fit of the data. Data fits the specific goals and scope of the resource.
<b>User orientation</b>	10	Means that the needs of specific user groups were considered during development of the resource. The user groups could be directly involved in the development of the resource or indirectly surveyed.
<b>Communication goals</b>	8	Means the communicative goal of the resource
<b>Visualisation</b>	13	Means the quality and quantity of visualisations used in the resource.
<b>Interactivity</b>	3	Means the way the user(s) can interact with the resource.
<b>Accessibility</b>	15	Means the way the user(s) can locate, access and navigate the resource to find the required information.
<b>Trustworthiness</b>	4	Means the subjective feeling of trust associated with the resource, mainly concerning the developing and/or publishing organisation

Applying this catalogue to four case study CCRs showed that it can differentiate clearly between formats (for more detail, see D4.1 full report). The more recent KLAR! factsheet scored higher than the older version, demonstrating improvements in design and accessibility. ClimaMap performed well on communication goals but less on accessibility, while the RESY dashboard stood out as interactive but lacked in user orientation and communication goals. These findings highlight that CCRs have distinctive communicative features and that no single resource can meet all user needs equally.

## User group survey

What counts as “good communication” shifts with scientific knowledge and always depends on goals, framing, and audiences. “Optimal” CCRs cannot be defined universally; instead, relevance depends on user orientation and group-specific needs. To address this, a short online survey was designed based on the criteria framework.

Findings show that less experienced users prioritise trust in data providers, prefer clear communication goals and framing, and are less interested in interacting with data. More experienced users emphasise transparency in data and methods, value user involvement in design, and show more varied visualisation preferences. Both groups favour communication on impacts, risks, and adaptation over mitigation or sustainability.

By combining CCR characteristics with user group priorities, the fit-for-user group evaluation demonstrated that the case study CCRs are better aligned with less experienced users, while more experienced audiences may prefer raw data and transparent documentation. The analysis also highlighted that CCRs inherently involve trade-offs: no single format can satisfy all needs equally. Therefore, early

identification of user group priorities and specific design decisions and are essential for CCR development and effective communication strategies. The criteria catalogue provides an easy-to-use, robust, literature-based framework for planning those design choices.

## What can we learn for the next generation of Austrian Climate Scenarios?

**What learnings can we “harvest” for the development of CCRs in general and for the next generation of Austrian Climate Scenarios in particular?**

### **Key Learning 1:**

*No universal best practice in climate communication*

The effectiveness of CCRs depends on many facets of communication like goals, framing, visualisation, accessibility, or transparency, each of which are of different importance for different user groups. Instead of seeking one-size-fits-all solutions, communication strategies must be aware of user needs and contexts.

The developed catalogue of 70 criteria, grouped into eight categories, provides a systematic way to describe and characterise CCRs. It offers a common scoring framework for a diverse range of communication formats.

### **Key Learning 2:**

*There is the need for a standardised framework for CCR characterisation*

### **Key Learning 3:**

*CCRs involve trade-offs*

Different resources highlight different strengths—some excel in accessibility, others in interactivity or goal definition. No CCR can meet all requirements equally; design choices inevitably prioritise some aspects over others.

By combining CCR characteristics with user group preferences, the evaluation framework shows how well resources align for certain audiences. Given limited resources, CCRs cannot be optimised for everyone. Identifying target groups early and aligning design choices with their preferences can improve both usability and usefulness of climate communication efforts.

### **Key Learning 4:**

*Fit-for-user group evaluation is a valuable approach*