



Deliverable 4.3:

Stakeholders requirements report

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AI use disclaimer

Parts of the analysis and drafting of this deliverable were carried out with the assistance of AI tools, including Anthropic's Claude, Microsoft's Copilot and a locally-run large language model (via Ollama) for offline text processing. AI was used as a co-analysers under human direction — to support the labelling and clustering of user stories, the summarisation and coding of engagement notes, the consolidation and mapping of the technology and needs material, and the drafting and editing of text — and not as an autonomous author.

All AI-generated outputs (labels, clusters, mappings, summaries and draft text) were reviewed and validated by the responsible consortium partners, who remain responsible for the content of this deliverable. No personal data was sent to external AI services: interview and workshop material was processed locally on consortium machines in line with the project's GDPR and data-management arrangements.

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Executive summary

This deliverable reports the outcomes of stakeholder engagement activities carried out within Task 4.3 of the RIECS-Concept project, Towards a Pan-European Research Infrastructure for Excellent Citizen Science. Building on the engagement methodology established in D4.1 and complementing the citizen-focused findings presented in D4.2, this report synthesises evidence gathered from researchers, citizen science (CS) networks, NGOs, technology providers, companies, education systems, policy makers, and research infrastructures.

Between October 2025 and May 2026, 27 stakeholder-focused engagements were conducted across more than ten countries and regions, involving over 350 participants. These activities generated 415 analysable stakeholder user stories, contributing to a wider project corpus of 823 stories. A shared labelbook and coding framework were used to systematically analyse the data, allowing needs to be clustered into 37 identified needs grouped under nine overarching themes.

The findings reveal strong convergence across stakeholder groups around a core set of requirements. Shared digital infrastructure and hosting emerged as the single most prominent need, followed by networking and collaboration spaces, data collection and crowdsourcing tools, analysis and visualisation services, training and documentation, and low-barrier participation mechanisms. Across sectors, stakeholders emphasised the need for a common European infrastructure that reduces fragmentation, enables collaboration, and provides services that individual projects and organisations cannot sustainably maintain alone.

Researchers, who constitute the largest stakeholder group, prioritised end-to-end support for citizen science workflows, including data collection, validation, analysis, cross-domain integration, and publication. Technology providers and research infrastructures stressed interoperability, shared standards, federated architectures, and the integration of existing platforms rather than their replacement. Education stakeholders highlighted the importance of curriculum-aligned resources, accessible participation pathways, and ready-to-use training materials, while NGOs emphasised trust, transparency, equity, community control of data, and participatory governance. Policy makers focused on evidence pipelines capable of transforming citizen-generated data into policy-relevant and decision-ready outputs.

The analysis also identified five recurring tensions that will require strategic attention during subsequent phases of the project. These include balancing open data with protection of sensitive and community-owned information; reconciling demand for a single European portal with preferences for federated infrastructure; maintaining accessibility while ensuring data quality; providing free public services while sustaining long-term operations; and enabling rapid policy uptake without compromising scientific rigour. Rather than representing barriers, these tensions constitute design challenges that can guide the development of governance models, technical architectures, and sustainability strategies.



List of acronyms

Acronym	Open form
AAI	Authentication and Authorisation Infrastructure
AI	Artificial Intelligence
API	Application Programming Interface
CARE	Collective benefit, Authority to control, Responsibility, Ethics (data principles)
CS	Citizen Science
CSO	Civil Society Organisation
CSV	Comma-Separated Values
D	Deliverable
DIY	Do-It-Yourself
DoA	Description of Action
ECSA	European Citizen Science Association
ESFRI	European Strategy Forum on Research Infrastructures
EU	European Union
FAIR	Findable, Accessible, Interoperable, Reusable
FOSS	Free and Open-Source Software
GA	Grant Agreement
GDPR	General Data Protection Regulation
IAM	Identity and Access Management
KER	Key Exploitable Result
M	Month (project month; M1 = project start)
MAU	Malmö University



NGO	Non-Governmental Organisation
RI	Research Infrastructure
RIECS	Research Infrastructure for Excellent Citizen Science
SH	Stakeholder
SME	Small and Medium-sized Enterprise
T	Task
UN	United Nations
WP	Work Package

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About RIECS-Concept

RIECS-Concept “Towards a pan-European Research Infrastructure for Excellent Citizen Science” is a 36-month Research and Innovation Action funded under HORIZON-INFRA-2024-DEV-01 (grant agreement N° 101188210).

The project responds to growing recognition within the European Research Area, Open Science policies and international sustainability agendas that citizen science plays an increasingly important role in knowledge production, societal engagement and evidence-informed decision making.

Despite the rapid growth of citizen science initiatives across Europe, the landscape remains fragmented, with projects, platforms, tools, datasets and expertise often operating in isolation. RIECS-Concept takes a deliberate first step towards addressing this situation.

Structured around two consecutive phases, the project combines desk research, participatory co-design activities and synthesis work to map stakeholder needs, define technical and governance requirements, and develop a roadmap for RIECS implementation and sustainability. Central to its methodology is the use of agile user stories to translate stakeholder perspectives, gathered from citizens, CS practitioners, researchers, education systems, NGOs, CS networks, other EU RIs and policymakers across Europe and beyond, into concrete infrastructure requirements. A CS Stakeholder Summit hosted at the Ars Electronica Festival in Linz serves as the pivotal event connecting both phases.

The project will deliver six Key Exploitable Results spanning a catalogue of RIECS services and resources (KER1), a technological integration and cross-disciplinary feasibility study (KER2), a data and metadata framework (KER3), a sustainability roadmap (KER4), an impact assessment framework (KER5), and an engagement model for co-creating the roadmap (KER6). Together, these outputs aim to provide the evidence base and strategic pathway needed to initiate an ESFRI application, establishing citizen science as a recognised pillar of the European Research Area.

This deliverable is produced in the first phase of the project (M1–M18) and contributes to Key Exploitable Result 1 (Catalogue of services and resources) and Key Exploitable Result 2 (Technical integration and cross-disciplinary feasibility study).

1. Introduction

1.1 Purpose and scope of this deliverable

This report is part of Work Package 4 (WP4), *Targeted stakeholder engagement*, which involves RIECS stakeholder groups in structured co-design activities to ensure that the future research



infrastructure responds to real needs and challenges. The overall methodology for these engagement activities is described in Deliverable 4.1 (M6).

Delivered at the close of the first phase of the project (M1–18), D4.3 presents the outcomes of engagement activities conducted with key stakeholder groups beyond citizens, under Task 4.3. These stakeholders include actors whose roles are critical in shaping the operational, governance, and strategic dimensions of RIECS: Researchers & Scientists, CS Networks, NGOs, Technology Providers, Companies, Education Systems, Policy Makers and other EU Research Infrastructures researchers.

While RIECS is designed to serve a wide and diverse community, these stakeholder groups play a central role in defining the infrastructure's systemic requirements, including governance frameworks, service provision, interoperability, and long-term sustainability. Their perspectives complement citizen-focused insights (reported in D4.2) by addressing organisational, institutional, and policy-related needs that underpin the effective functioning of the infrastructure. As such, their input is treated as a core component of the conceptual and technical design of RIECS, ensuring that the infrastructure can operate efficiently and deliver impact at pan-European scale.

This deliverable synthesises evidence gathered across eight stakeholder groups as part of T4.3. It includes an overview of participants and engagement formats, a collection of stakeholder user stories, thematic clustering of needs, and cross-group analysis highlighting convergences and divergences.

The findings reported here complement those of D4.2 (citizen-focused engagement) and D4.4 (global policy organisation-focused engagement), and contribute directly to the technical specification and service catalogue developed in D2.2 and D2.3.

1.2 Related tasks and deliverables

This deliverable sits within the RIECS-Concept workflow, as illustrated in Fig. 1. Stakeholder input is gathered as challenges and needs in the form of user stories, workshop discussions and interviews. D4.2 owns the citizen-facing evidence, D4.3 the evidence of all other SH groups, D4.4 synthesis needs and recommendations from UN agencies and international organisations. Needs documented in D4.2, D4.3 and D4.4 are translated into infrastructure requirements (D2.2), and ultimately into a list of services and functionalities (D2.3), further informing activities of WP3 (Roadmap & sustainability) and WP5 (continuous engagement) in phase 2 of the project (M19-36). Aspect IDs (e.g. WP3-01) are tags that flag a non-technical or unresolved issue surfaced in the analysis and route it to the work package or task that must handle it, carrying it forward from D4.3 into D2.3 §12 and the WP3 agenda.



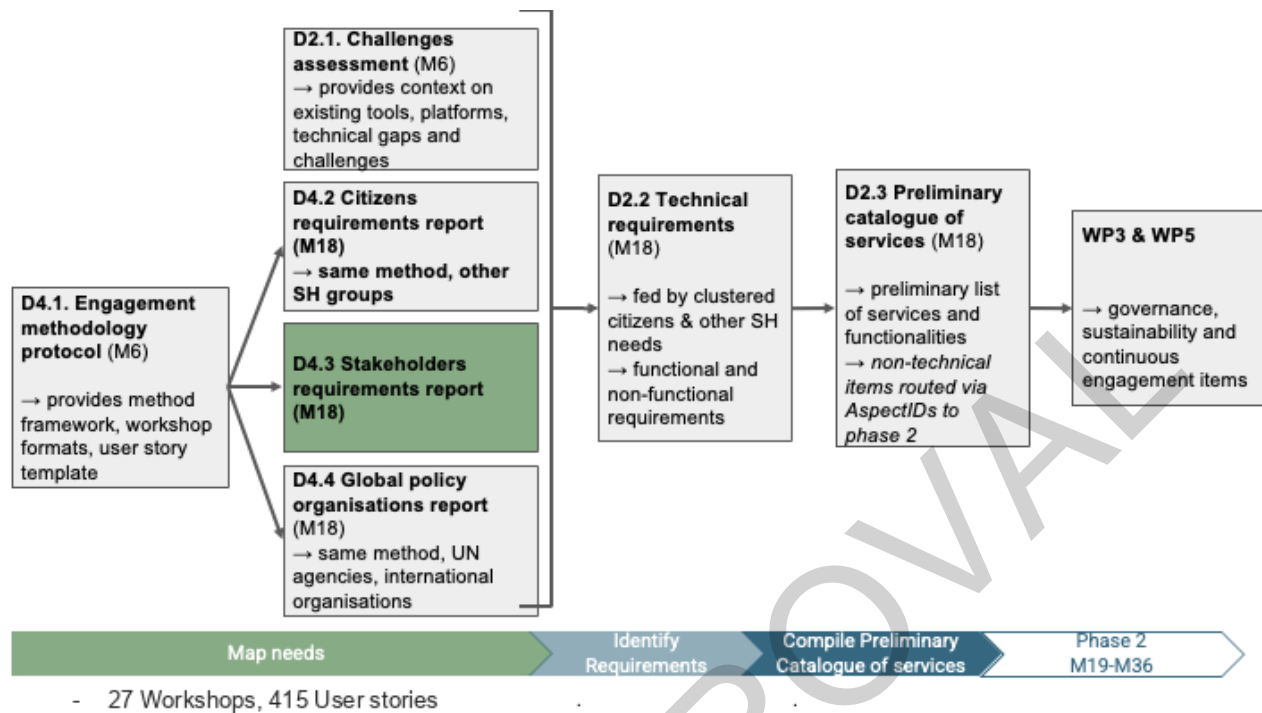


Figure 1. RIECS-Concept workflow for evidence collection and analysis from stakeholder engagement.

1.3 Intended audience

This deliverable is mainly intended for internal use within the RIECS-Concept consortium, acting as a key evidence source for D2.2 and D2.3. After submission, it will also be shared with the External Advisory Board to provide a strategic overview, and with reviewers to illustrate the participatory methodology in practice. Beyond the consortium, the report is expected to be of interest to the wider citizen science community, related Horizon Europe projects, educators and training providers, as well as platform developers aiming to understand citizen-identified needs for citizen science infrastructure.

1.4 Structure of this document

Following an introduction outlining the purpose, scope, and relationship to other project activities, the report describes the engagement methodology and analytical process used to collect, code, and cluster stakeholder user stories into needs and themes. It then provides an overview of the workshops and participants before presenting the findings in two complementary ways: first by stakeholder category (researchers, CS networks, NGOs, technology providers, companies, education systems, policy makers, and research infrastructures), and then through a thematic analysis organised around nine overarching themes, including access and discoverability, data quality and trust, tools and infrastructure, training and capacity building, governance and sustainability, and policy and impact. The report subsequently synthesises convergences,



divergences, and tensions across stakeholder groups, compares stakeholder priorities with those identified in the citizen-focused engagement reported in D4.2, and maps the resulting needs to technical requirements, services, and governance considerations feeding into D2.2, D2.3, and subsequent work packages. The document concludes with key findings, limitations, and next steps, while the annexes provide the full evidence base, including anonymised user stories, needs frequencies, and the complete project labelbook used during the analysis.

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2. Engagement methodology

This section briefly re-states parts of the engagement methodology detailed in Deliverable D4.1 (Engagement Methodology Protocol, AE, M6) pertaining to D4.3 stakeholder workshop design. Please refer to D4.2 for the summary of the core engagement principles, and the key GDPR, ethical, and inclusion considerations guiding the process. Hence, for more details on the engagement methodology, D4.3 should be read together with D4.2 but can be read independently of D4.1.

2.1 Workshop format and design

Across all 42 engagements conducted in the first project phase, 514 reported participants were reached (23 on-site, 17 online, 2 hybrid). For the stakeholder groups in T4.3, a total of 27 (13 online, 13 in-person, 1 hybrid) engaged 352 participants, generating user stories of which 415 are in scope for this report.

Workshops were facilitated by a lead facilitator, supported by additional facilitators where participant numbers allowed or required breakout groups, and a dedicated note-taker. The format was kept consistent across online and in-person settings to ensure comparability of outputs.

The stakeholder engagement in Task 4.3 followed the engagement methodology defined in D4.1. The primary instrument was the co-design workshop, complemented by surveys and other engagements (expert sessions, partner meetings and conference-based activities) for groups that are harder to convene in standalone workshops.

Where dedicated workshops were held, they followed a common structure: a welcome and framing; an introductory round; a facilitated exploration of challenges and needs; a move from needs to candidate services and functionalities; a prioritisation of cross-cutting tensions; and a closing — adapted in length and emphasis to a professional audience. Each session had a lead facilitator, additional facilitators for breakout groups where numbers allowed, and a dedicated note-taker.

Needs were captured using the shared RI user-story template introduced in D4.1 — “As a <type of user>, I want to <task/need>, so that I can <goal/outcome>” — completed by participants directly or drafted by facilitators from the discussion. In-person sessions used printed user-story and consent forms and physical synthesis aids or shared digital boards and live polling and printed consent forms; online sessions used shared digital boards and live polling. After each engagement the facilitating partner completed a structured workshop-documentation sheet (D4.1, Annex 2) recording logistics, methodological choices, observed strengths and limitations, and a summary of key learnings, giving a consistent basis for cross-engagement comparison.



3. Analysis process

The following section details the process used to analyse user stories generated through workshops with the stakeholder groups of T4.2 and T4.3. Figure 2 below shows the analytical pipeline underpinning both the citizens' and stakeholders' requirements reports, with divergence occurring only at a later stage of analysis. The description below follows the sequential structure illustrated in the accompanying figure 2, with step numbers indicated in parentheses to maintain alignment with the visual representation.

The process begins with the engagement methodology protocol (1), which establishes the overall design of the study, including data collection (2). This protocol, defined in Deliverable D4.1, is summarised in section 3 of D4.2.

Following collection, all user stories were consolidated into a single master corpus (3). This corpus comprises 823 individual user stories, each annotated with metadata including stakeholder group, workshop context, country, modality of engagement, and intended deliverable audience (citizens contributing to D4.2 and stakeholders to D4.3).

A shared labelbook (described in section 3.1 and found in Annex C) was developed and applied (4). This labelbook constitutes a controlled vocabulary used for coding the user stories and includes 19 label groups—comprising 17 thematic categories and two structural facets—and a total of 166 sublabels. It is iteratively developed and revised collaboratively within the consortium, ensuring that it captures the range and nuance of the collected data.

The labelling process (5) involved a consortium-wide effort with partners participating remotely. Partners were assigned different sections of the user story corpus and each user story was coded against the labelbook and assessed in terms of whether it was in scope. A portion of the assigned sections overlapped between partners to enable double-labelling to detect and resolve inconsistencies or conflicts in interpretation. User stories could be assigned multiple labels, enabling rich multidimensional analysis of the dataset.

The labelled dataset was then clustered to define user needs (6), which are further organised under nine overarching thematic categories (see section 5.2). This shared needs framework is central to both deliverables D4.2 and D4.3 and provides the common analytical structure from which both T4.2 and T4.3 stakeholder-focused insights are derived.

Subsequently, the corpus was divided according to its intended audience (7). This marks the point at which the previously unified analytical process diverges for D4.2 and D4.3. User stories generated by citizens were analysed in terms of frequencies, thematic distributions, and priority needs for inclusion in the citizens' requirements report (see D4.2 for further details). In parallel, stories from T4.3 stakeholders were analysed with attention to group-specific frequencies, cross-group comparisons, and potential tensions between stakeholder perspectives for the stakeholders' requirements report (D4.3). Despite this divergence, both analyses remain grounded in the same labelbook and needs framework.



The results of these analyses were then formalised into their respective reports (8), namely D4.2 and D4.3. Finally, the outputs fed into downstream processes (9), where the shared needs framework informs subsequent technical and design-oriented work. Specifically, it contributes to Deliverable D2.2 (technical requirements), Deliverable D2.3 (preliminary catalogue), and further development activities within work packages WP3 and WP5.

Several interdependencies characterise this methodology. Steps (1) through (6) constitute a shared analytical trunk, meaning that any revisions—such as updates to the labelbook or re-clustering of needs—have direct implications for both D4.2 and D4.3. The divergence at step (7) is parallel rather than sequential, as neither report depends on the other, yet both remain aligned due to their shared analytical foundations. The needs framework developed in step (6) acts as a hinge connecting engagement activities to downstream technical work.

PRE-APPROVAL



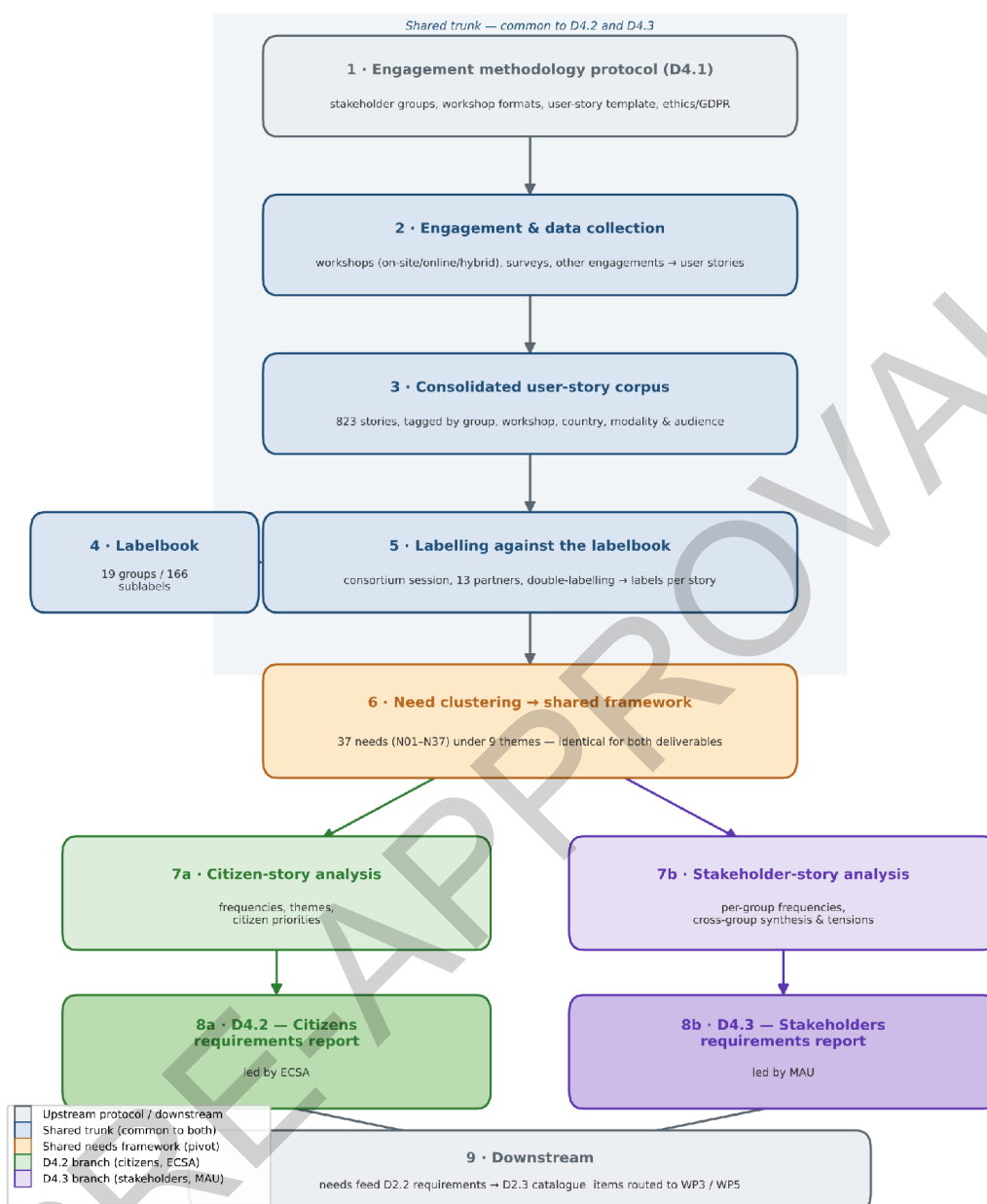


Figure 2. How D4.2 and D4.3 were produced

3.1 Coding scheme and labelbook

After collection, every user story was coded against a shared labelbook (see Annex C and (2) in figure 2) — a controlled vocabulary developed and maintained by the consortium so that contributions from all engagement activities could be analysed consistently. The labelbook organises codes on two levels: a broad thematic label (group) and a more specific sublabel beneath it (for example, “Scalability & Performance › Geographic Scalability”). Alongside the



thematic content codes it also captures two structural facets: the target user in the story (used to attribute each story to a stakeholder group) and the user-story concept (Challenge; Solution; Technical requirement; Resource; Service; Functionality). In its revised form (28 May 2026) the labelbook comprises 19 label groups — 17 thematic content groups plus the two facets — and 166 sublabels in total. The broad thematic labels and sublabels were derived iteratively, with the Deliverable 2.1: Challenges assessment and the related publication by Soacha-Godoy et al. (2025)¹ as starting points. The initial set of thematic labels and sublabels were compared to EuroVoc EU terminology database² using Microsoft Co-Pilot to align definitions of labels with existing terminology. These labels were refined and added by partners iteratively, in the process of analysing the user stories.

The labelbook was applied in a consortium-wide labelling session in May 2026 involving partners, using a collaborative browser-based tool with double-labelling to surface and resolve coding conflicts. This browser-based labelling tool developed specifically for the project by MAU³. New labels could be proposed during the sessions and were systematically checked against the EuroVoc EU terminology database⁴ to ensure alignment with established European concepts. The tool operated fully locally via a facilitator-hosted application, with no cloud infrastructure, ensuring data security and GDPR compliance. For each story, partners recorded the target user type, the story concept, a relevance judgement and, where applicable, a rejection judgement. A 5% overlap was set to multiple groups to enable cross-group comparison and conflict detection. The vocabulary was refined collaboratively during this process: 42 additional sublabels were proposed and added by partners — each recorded with its author — where the original vocabulary did not capture a recurring idea (for example “Identity and Access Management”, “Independent project hosting” and “Participation governance”). A single story typically carried several labels at once. For each story, the final set of labels was determined by combining all labels assigned by partners, and removing any that were disputed and overruled during the conflict resolution process. Stories rejected by at least one partner (41 out of 823) were excluded from the analysis and are listed in Annex A. A final manual check of the data was carried out on 18/06/2026 by ECSA.

Because the labelbook post-dates the engagement methodology protocol (D4.1), the coding scheme is documented here, in the analytical report, rather than in the protocol. The full labelbook

¹ Soacha-Godoy, K., Prakash, P., Álvarez, A., Tejada, A. G., López-Borrull, A., Salvador, X., Roderó, C., Torres, D., Roderó, I., Ayure, M., & Piera, J. (2025). Research Infrastructures in Citizen Science: State of Knowledge and Taxonomic Framework As a Pathway to Sustainability. *Citizen Science: Theory and Practice*, 10(1), 21. <https://doi.org/10.5334/cstp.831>

² <https://data.europa.eu/data/datasets/eurovoc?locale=en>

³ Cuartielles, D. (2025)). *RIECS Label Validation*. GitHub. <https://github.com/dcuartielles/riecs-label-validation>

⁴ <https://data.europa.eu/data/datasets/eurovoc?locale=en>



is reproduced in Annex C, and the mapping from labels to the needs and themes can be explored in a browser based interactive visualisation⁵.

3.2 From labels to needs to themes

The needs analysed in this deliverable were derived bottom-up from the collected user stories using Claude Opus 4.8 after anonymising the data using Meta Ollama 3.1:8b and 3.1:70b. Each user story was captured in the shared user-story format (“As a ⟨type of user⟩, I want ⟨task⟩, so that ⟨goal⟩”) and then tagged during the consortium labelling exercise against a common labelbook. Labels are organised on two levels — a broad thematic group and a more specific sublabel (for example, “Scientific principles and practices › recognition mechanisms”) — and a single story typically carries several labels at once. Needs were obtained by clustering co-occurring labels into a smaller set of named, defined needs (N01–N37), each grouped under a higher-level theme. The result is a four-level hierarchy — theme → need → label → user story — in which a need is, in effect, the named and defined abstraction of a recurring cluster of labels. Because stories are multi-labelled, these clusters overlap: one story can contribute to several needs, which is why a story may be counted under more than one need and why the per-need mention counts sum to more than the number of stories.

Each inferred need is grounded in labelled user stories, but there is a difference between N01–N29 and N30–N37. The key difference lies in how the needs were created: needs N01–N29 were derived bottom-up from clusters of labels and therefore have explicit “member” (definitional) links, while N30–N37 were inferred directly from user story text where no suitable label existed. As a result, these later needs are still evidenced by labelled stories and appear in co-occurrence views, but they do not have a single defining label and therefore cannot be traced back to labels.

A concrete example illustrates the relationship between labels – needs – themes, a visual⁶ of which can be found below in figure 3. The sublabel “Scientific principles and practices › recognition mechanisms” was applied to 54 stories, and all 54 map to a single need, N19 (“Recognition and credit for contributions”, theme: Recognition and engagement) — here the label maps almost one-to-one onto the need, and the need simply names and defines that cluster. At the same time, because those 54 stories also carry other labels, they are also associated with other needs: alongside N19 (54 mentions), the same cluster touches, among others, networking and collaboration (N02, 14), integration of contributions into outcomes (N20, 11), low-barrier participation (N03, 9) and feedback on data use (N06, 7). In this way a user story related to asking for recognition that also mentions being integrated into project outcomes is clustered under both N19 and N20. The needs are therefore not disjoint bins but overlapping clusters sitting on top of a multi-label space, to preserve the richness of what stakeholders expressed.

⁵ <https://dcuartielles.github.io/riecs-needs-explorer/>

⁶ See <https://dcuartielles.github.io/riecs-needs-explorer/>.





Figure 3. Screenshot from an interactive web-based visualisation of relationship between labels - needs - themes.

The needs were grouped — bottom-up — into nine overarching themes. Semantically related needs were clustered into candidate groups, each group was named, and the grouping was iterated until every need belonged to exactly one theme.

The nine themes are: Access and discoverability; Data quality and trust; Data governance and compliance; Tools, platforms and infrastructure; Training and capacity building; Recognition and engagement; Governance and sustainability; Policy and impact; and Scientific practice.

The themes are a presentational layer over the needs framework: they do not alter the needs or their evidence, but they organise them so that cross-group patterns and the mapping to requirements can be read theme by theme. The later, inferred needs (N30–N37) were assigned to the same nine themes, so the thematic structure covers the full N01–N37 framework.

3.3 Highlighting convergences and divergences in D4.3 and D4.2

Each in-scope stakeholder user story was coded according to (i) one of the eight stakeholder groups and (ii) one or more identified needs. Aggregating these codings, we computed—per stakeholder group—the number of stories that referenced each need, resulting in a need-by-group frequency matrix. This matrix formed the basis of the “Frequency of Need Mentions by Stakeholder Group” table (see Annex E).

The synthesis (section 7) presents stakeholder evidence on its own terms. Where comparisons are made with the citizen perspective (D4.2), these are limited to illustrating how T4.3 stakeholder weighting reshaped the salience of citizen-derived needs.



4. Overview of workshops and participants

Table 1 below provides an overview of the T4.3 stakeholder workshops and mixed workshops conducted under Task 4.3 during the first project phase (M1–M18). 27 workshops relevant for D4.3 were conducted across 10 countries and regions (Austria, Finland, Germany, Italy, Lithuania, Serbia, Spain, Sweden, Switzerland, and Tanzania/online), involving 8 consortium partners and 352 reported participants across the workshops for which attendance was recorded. Several workshops, particularly the mixed and conference-based sessions, did not report participant numbers (marked as 'n/r'), meaning the true total of participants engaged is likely higher than 352.

Table 1. Stakeholder-facing and mixed workshops conducted under Task 4.3.

Workshop host country	Audience	Workshop	Participants	Modality
Spain	CS networks	WS05	16	Online
Germany	CS research community	WS33	15	On-site
European (online)	NGOs	WS12	10	Hybrid
Germany	NGOs / FOSS community	WS11	25	On-site
Lithuania	companies	WS37	15	On-site
Lithuania	companies	WS40	15	Online
European (cross-border)	conference co-design mixed	WS22	30	On-site
Finland	conference mixed	WS21	22	On-site
Austria	education systems	WS30	40	Online
Austria	education systems	WS31	20	Online
Switzerland	health CS mixed	WS02	n/r	On-site
International	local policy actors	WS20	7	Online
Spain	mixed national	WS01	n/r	On-site
Tanzania	open science forum mixed	WS13	n/r	Online
International	policy / official statistics	WS19	35	On-site
Italy	research infrastructures	WS34	10	Online
Spain	researchers	WS04	n/r	Online
Sweden	researchers	WS07	4	Online
Sweden	researchers	WS08	3	Online



Sweden	researchers	WS09	2	Online
Sweden	researchers	WS10	5	On-site
Serbia	researchers	WS16	22	Online
Austria	researchers	WS32	6	On-site
Lithuania	researchers + citizens	WS38	20	On-site
Lithuania	researchers + citizens	WS41	20	On-site
Serbia	Researchers + citizens	WS18	10	Online
Spain	symposium mixed	WS03	n/r	On-site

Overall, while the targets were not uniformly met across all participating countries, the total volume and geographic spread of activities met the DoA commitment.

5. User stories per stakeholder category

Each subsection reports on the most prominent needs, defined as the most often occurring need associated with the user stories of the respective stakeholder category. The full anonymised list of user stories can be found in Annex A and the machine-readable CSV. Table 2 below shows the number of user stories per stakeholder group engaged in T4.3.

Table 2. User stories per stakeholder group.

SH group	Description	User stories
Researchers & scientists	Researchers across 10+ disciplines using or studying citizen science.	171
CS networks	European and international citizen science networks and associations.	20
NGOs	NGOs and civil-society organisations running or supporting CS activities.	65
Technology providers	Providers of CS platforms, tools and data technology.	26
Companies	Private-sector actors engaging with CS (CSR, innovation, services).	22



SH group	Description	User stories
Education systems	Teachers, schools and education institutions embedding CS in curricula.	51
Policy makers	EU, national and local policy actors, funders and statistical offices.	40
Research infrastructures	Operators and planners of existing and future RIs.	11

5.1 Researchers & scientists

A total of 171 user stories focused on the researcher & scientist stakeholder category. The need **N02: Networking and collaboration spaces** (40 instances) reflects current experiences of being “part of an institutional network which does currently not prioritises [sic] public engagement.” (ECSA_PW_002)”, also highlighting the importance for practicing ethical research (IBE_OQ_28). Furthermore, emphasis was placed on **N10: Shared digital infrastructure and hosting** (46 instances), **N11: Data collection and crowdsourcing tools** (34 instances), and **N12: Analysis, visualisation, and decision support** (28 instances).

5.2 CS networks

Of the 20 analysable stories for CS networks, **N10 Shared digital infrastructure and hosting** (7) emerged as the most prominent need, e.g. in terms of “means for projects to host their data (IBE_CSN_07).” Furthermore, there is an expressed need for “Open APIs and interoperability services between existing platforms [to] reduce fragmentation and enable seamless data exchange across the currently disconnected CS landscape. (IBE_CSN_10).” CS networks also emphasized **N01 Project discovery and matchmaking** (6); **N02 Networking and collaboration spaces** (5) and **N03 Low-barrier, accessible participation** (4).

5.3 NGOs

NGOs (65 analysable stories) also expressed the importance of **N10 Shared digital infrastructure and hosting** (17), highlighting that even with strong interest from the community, limited funding availability creates a need for shared access to equipment through borrowing services to support rigorous scientific project design (ECSA_NGO_001). These user stories also related to **N02 Networking and collaboration spaces** (16) and **N08 Open Science, FAIR and CARE compliance** (12). **N06 Trust, transparency and provenance** (12) can be important in relation to measuring and showing the impact of work, “for people to see what we do makes a difference (ECSA_NGO_033).”

5.4 Technology providers



Among Technology providers' 26 analysable stories, the theme of Tools, platforms and infrastructure was most prominent: Related to **N14 Interoperability and platform integration** (10), a desire was expressed for "RIECS to provide a shared pipeline for publishing citizen collected environmental data that meets scientific standards (ECSA_CCC_001)", while the theme was also represented in mentions related to **N10 Shared digital infrastructure and hosting** (8) and **N11 Data collection and crowdsourcing tools** (4). Another prominent need was **N05 Shared data and metadata standards** (8), with APIs and shared protocols across platforms — "so that users, data and recognition can move across projects (IBE_CAPS_09)."

5.5 Companies

Of the 22 analysable stories for this stakeholder, four needs stand out: **N12 Analysis, visualisation and decision support** (6), **N11 Data collection and crowdsourcing tools** (4); **N05 Shared data and metadata standards** (5); **N14 Interoperability and platform integration** (5). User story VT_01-C01-003 highlights **N05** and **N12** in the expressed need to "assess data reliability, align datasets with reporting standards, visualize sustainability indicators, and integrate qualitative community insights".

5.6 Education systems

For education systems (51 analysable stories), need **N16 Training materials and documentation** (19) can be illustrated through a teaching professionals desire to "be involved in the design of learning materials from citizen science projects — so that it can be assured that these align with the curricula (OeAD_01_012)". Other prominent clusters for this stakeholder group are **N03 Low-barrier, accessible participation** (17); **N10 Shared digital infrastructure and hosting** (10); **N01 Project discovery and matchmaking** (13).

5.7 Policy makers

The stakeholder group of policy makers had 40 analysable stories. The dominant need clusters are: **N25 Policy readiness and evidence pipelines** (15); **N12 Analysis, visualisation and decision support** (12); **N23 Participatory and equitable governance** (11); **N02 Networking and collaboration spaces** (10). The latter two needs are reflected in the expression of "a need for effective ways to engage directly with citizens, collect their input, and translate policy goals into meaningful, actionable initiatives. This includes access to communication platforms and participatory tools that enable gathering constructive, structured, and usable citizen contributions, as well as the ability to integrate science-based insights into local decision-making. (CGSP_03_005)"

5.8 Research infrastructures

For this stakeholder group there were 11 analysable stories. Dominant need clusters include: **N10 Shared digital infrastructure and hosting** (5); **N05 Shared data and metadata standards** (4);



N14 Interoperability and platform integration (4); N12 Analysis, visualisation and decision support (4). The following quote illustrates **N05** and **N12**: “As a public research funder, there is a need to ensure that all research outputs, including datasets, are openly available and accessible, as they are funded by public resources. While this is relatively established for traditional research outputs, citizen science data presents additional challenges, particularly in terms of systematic sharing, tracking, and standardization. There is a strong need for easy-to-use technology, software, infrastructure or other tools that allow researchers and citizen science projects to share, describe, and combine datasets efficiently, ensuring interoperability and alignment with FAIR principles. (CGSP_04_003)”

5.9 Distribution of need mentions by stakeholder group

A limitation of reporting user stories by combining all stakeholder groups is that it reduces detail and clarity. Different groups (e.g. researchers, companies, education systems) have distinct needs, but aggregation blends these together, making specific priorities harder to see. While common needs can be identified, important differences, trade-offs, and group-specific requirements may be overlooked, making it harder to translate the findings into targeted design decisions. Figure 4 below shows how mentions of needs are distributed across the T4.3 stakeholder groups, normalised to the percentage of that need's total mentions (each need row sums to 100%). The actual frequency of need mentions in brackets, and per stakeholder group can also be found in Annex E. Furthermore, the figure provides a visual overview to compare the differences in distribution of mentions. It is not evident from this figure that there is an alignment between any two stakeholders on what needs are mentioned most frequently. An interpretation of the differences in distribution of needs mentions has to be qualified by the differences in number of participants from each stakeholder group, and the overrepresentation of the researcher and scientist stakeholder.



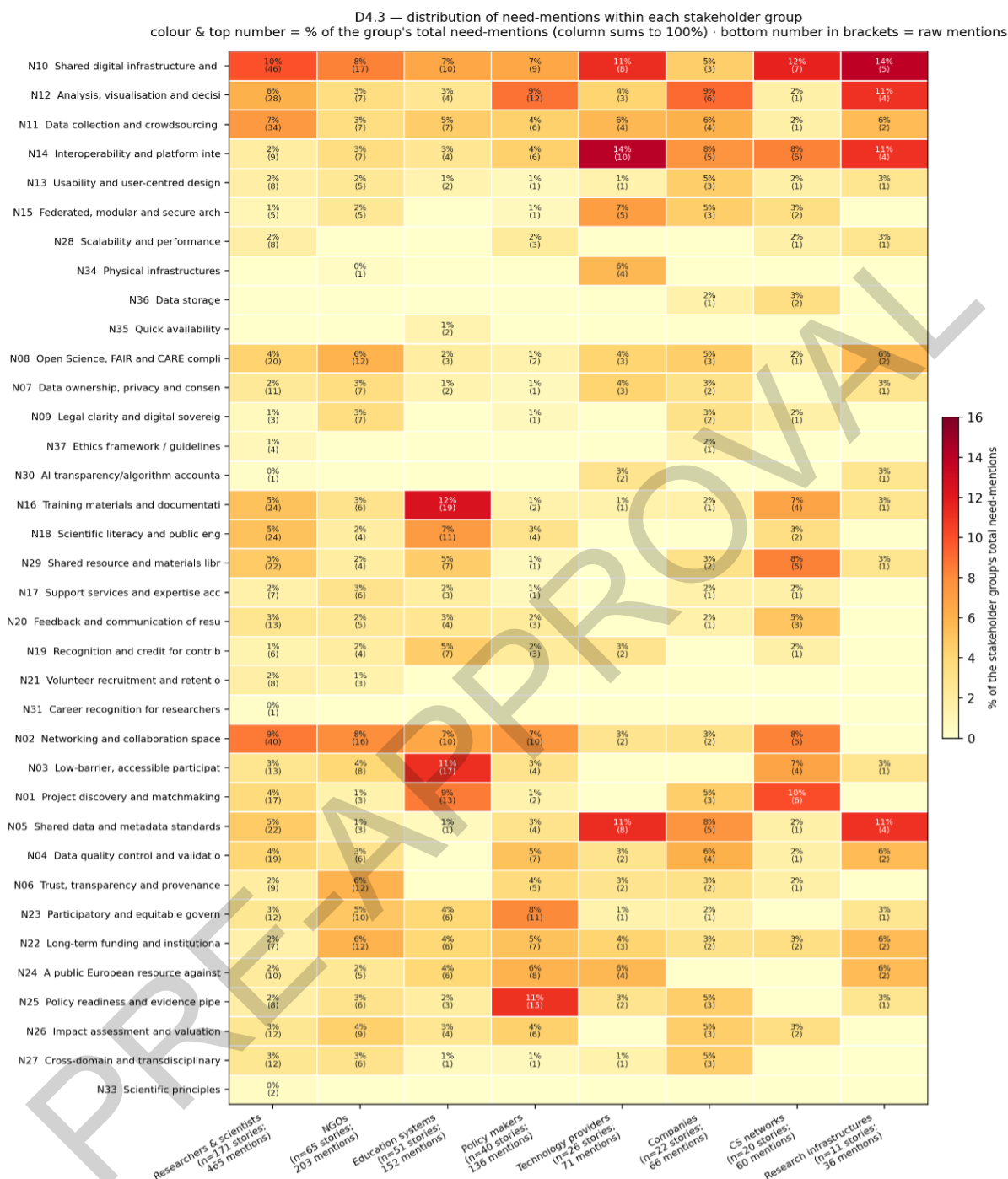


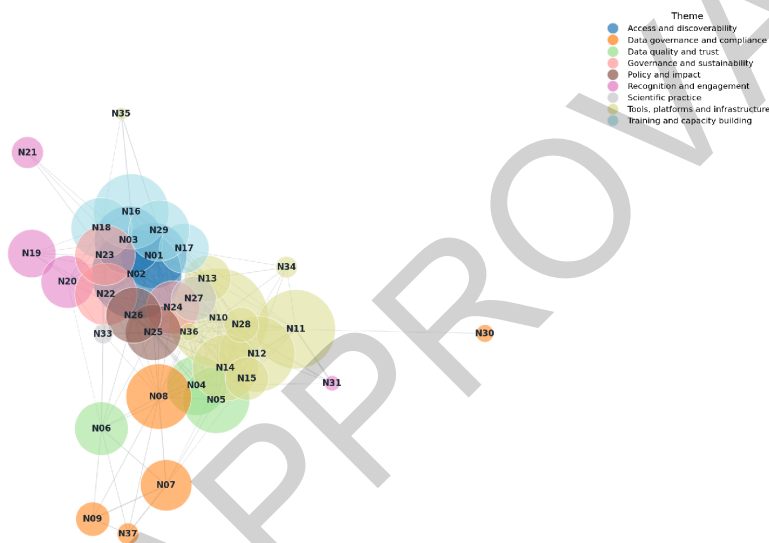
Figure 4. Distribution of need-mentions within each stakeholder group — colour and the upper number in each cell show the percentage of that group's total need-mentions going to each need (each stakeholder column sums to 100%); the number in brackets is the raw count of mentions.



5.10 Needs overlap

Because needs are composed of different sets of labels there can be an overlap between needs. Figure 5 below illustrates how the needs overlap. It shows that the needs grouped under the following themes cluster and are composed of overlapping labels: Access and discoverability; Governance and sustainability; Tools, platforms and infrastructure; Training and capacity building; Policy and impact;. At the same time, there are themes which group needs that are more dispersed and needs overlap to a lesser extent: Data quality and trust; Recognition and engagement. The theme Data governance and compliance has, with one exception (N08), no needs that overlap. The sizes of the circles reflect the number of stories associated with a need.

How the needs overlap by shared labels — stakeholders (D4.3)



Each circle is a need (radius = number of stakeholders stories; colour = theme). Needs built from similar labels are pulled together, so overlapping / linked circles share label content. Lines connect needs whose label profiles are most similar (cosine ≥ 0.35).

Figure 5. How the stakeholder (D4.3) needs overlap by shared labels.

6. Thematic Overview of T4.3 stakeholders

The needs are analysed below by theme, as they appear across the eight T4.3 stakeholder groups.

6.1 Thematic grouping of needs with example user stories

The table below contains examples of user stories of the D4.3 stakeholder groups corresponding to each need, grouped according to themes.



Table 3. Example user stories by theme and need.

Theme	Need	Stakeholder group	User story example
Access and discoverability	N01 Project discovery and matchmaking	CS networks	"As a national CS network coordinator, I would love to have a CS platform fully working to showcase projects and resources in an accessible way." [IBE_CSN_05]
Access and discoverability	N02 Networking and collaboration spaces	CS networks	"Support for community-led science and dedicated spaces for structured collaboration We can exchange practices and support each other instead of working in isolation." [IBE_CSN_14]
Access and discoverability	N03 Low-barrier, accessible participation	Education systems	"As a school leader, I want a framework for embedding citizen science at an institutional level so that participation is supported across the whole school rather than depending on individual teachers." [OeAD_01_076]
Data quality and trust	N04 Data quality control and validation	Policy makers	"As a local government officer, there is a need to access reliable and validated citizen-generated data, particularly on urban issues such as heat and greening, while also ensuring that citizens are involved in shaping what data is collected. To better understand how citizens experience and use the city, and to integrate these insights into urban planning and policy-making, leading to more responsive and effective interventions." [CGSP_03_003]
Data quality and trust	N05 Shared data and metadata standards	Technology providers	"As a data infrastructure operator, I want common rules for licences, metadata and identifiers so that data can flow between projects, platforms and aggregators without legal or technical ambiguity." [IBE_SW_067]
Data quality and trust	N06 Trust, transparency and provenance	NGOs	"We are exploring ideas like social licences for data, where communities are consulted continuously about how their data is used. RIECS should incorporate such a system in theory, but this is quite complex in practice. If it works, it would give communities much more control and awareness over their data. It could also build more trust in how data is reused, especially in connection to AI use." [ECSA_NGO_036]



Data governance and compliance	N07 Data ownership, privacy and consent	Research infrastructures	"I want an AI tool designed from the ground up for citizen science (not borrowed or adapted), and whose development involved citizens in the process So that the tool truly fits citizen science workflows and reflects the values and needs of non-expert users, avoiding mismatched functionality." [ECSA_OCP_032]
Data governance and compliance	N08 Open Science, FAIR and CARE compliance	NGOs	"As a small third-sector organisation, I want technical support to manage large historical datasets so that years of volunteer work can be stored, analysed and reused." [IBE_SW_056]
Data governance and compliance	N09 Legal clarity and digital sovereignty	NGOs	"I want citizen science data to have a position in the European digital public infrastructure. So that it has legal and political protection from commercial capture." [ECSA_FSB_008]
Data governance and compliance	N30 AI transparency/algorithm accountability	Technology providers	"As a platform developer, I want open and well-documented algorithms so that data processing is transparent, auditable and trusted." [IBE_CAPS_09]
Data governance and compliance	N37 Ethics framework / guidelines	Researchers & scientists	"As a researcher supporting Indigenous-led and anticolonial research practice in Indigenous cultural landscapes, I want to be able to collaborate with other colleagues but retain control over the data I input in order to confirm Indigenous data sovereignty In order to practice ethical research" [IBE_OQ_28]
Tools, platforms and infrastructure	N10 Shared digital infrastructure and hosting	CS networks	"A FAIR data repository with consistent metadata I can ensure long-term hosting and preservation of scientific data while maintaining high quality and validation standards." [IBE_CSN_11]
Tools, platforms and infrastructure	N11 Data collection and crowdsourcing tools	Technology providers	"As an AI developer working with citizen science data, I want clear metadata standards for models and algorithms so that AI tools can be used responsibly and transparently." [IBE_CAPS_10]
Tools, platforms and infrastructure	N12 Analysis, visualisation and decision support	Research infrastructures	"I want to connect civil society organizations with researchers so that the CSO's research questions can be developed into citizen science research projects" [MAU_R01_005]
Tools, platforms and infrastructure	N13 Usability and user-centred design	Companies	"As a Digital innovation SME, I want onboarding tools, user guidance systems, simplified interfaces, automated workflows, and



			technical support resources so that I can launch projects quickly, reduce user friction, improve participation rates, enhance user experience, and scale solutions efficiently” [VT_02-C02-006]
Tools, platforms and infrastructure	N14 Interoperability and platform integration	Technology providers	“As a citizen science infrastructure designer, I want RIECS to build on existing resources such as citizen devices, platforms, data collections and research infrastructures, so that the future infrastructure avoids unnecessary duplication and uses what is already available.” [IBE_SW_020]
Tools, platforms and infrastructure	N15 Federated, modular and secure architecture	Technology providers	“As a citizen science platform or initiative, I want federated and modular infrastructure so that my existing system can connect with others without being replaced.” [IBE_OSF_07]
Tools, platforms and infrastructure	N28 Scalability and performance	CS networks	“Computing capacity for large datasets, including images and time series, I can perform advanced analysis on complex citizen science data at scale.” [IBE_CSN_12]
Tools, platforms and infrastructure	N34 Physical infrastructures	Technology providers	“I want RIECS to formally recognise DIY sensing hardware as a legitimate data source. So that low-cost community-built sensors (cosmic ray, air quality, soil moisture) are not excluded from scientific infrastructure on grounds of not being “certified equipment”.” [ECSA_CCC_002]
Tools, platforms and infrastructure	N35 Quick availability	Education systems	“As a teacher, I want ready-to-use citizen science projects mapped to national curricula by subject (e.g., biology, geography), age group, and country, including clear learning outcomes and assessment criteria so that I can systematically embed them in my teaching.” [OeAD_01_068]
Tools, platforms and infrastructure	N36 Data storage	CS networks	“I'd like to provide services related to data storage, validation and use, and to be connected with the activities carried out by the members, specifically for the projects hosted on our platform. The aim is to integrate the above-described services into the list of opportunities offered to CS project leaders, but also practitioners that are using the current platform.” [CGSP_02_012]
Training and capacity building	N16 Training materials and documentation	Education systems	“As a science educator, I want scientific language to be translated into accessible learning materials so that citizens and students



			can participate correctly without being excluded by jargon." [IBE_SW_027]
Training and capacity building	N17 Support services and expertise access	NGOs	"I need to connect with other organisations doing similar work. Right now we sometimes realise too late that others are doing related things. To learn from each other and not miss important initiatives or opportunities to collaborate." [ECSA_NGO_029]
Training and capacity building	N18 Scientific literacy and public engagement	Education systems	"As a teacher supporting fieldwork, I want offline or low-data collection options so that students can collect observations during field trips without relying on mobile data or constant connectivity." [IBE_SW_031]
Training and capacity building	N29 Shared resource and materials library	CS networks	"1) Training opportunities (online or presence) 2) Toolkits based on logistic support to recruit citizens & engage them, e.g. through a trusted, established platform to create surveys easily in different languages, e.g. facilities to conduct workshops, both online or with citizens 3) Methodological support about different approaches 4) Searchable database of the literature 5) Networking/community building opportunities." [CSZ_CS4H_059]
Recognition and engagement	N19 Recognition and credit for contributions	Education systems	"As a university or training provider, I want modular micro-credentials in citizen science so that students, researchers, teachers and citizens can gain recognised competences." [IBE_SW_077]
Recognition and engagement	N20 Feedback and communication of results	CS networks	"Improved visibility and specialized tools for communicating impact data I can address institutional skepticism and gain stronger political recognition for citizen science." [IBE_CSN_16]
Recognition and engagement	N21 Volunteer recruitment and retention	NGOs	"I need better ways to communicate scientific results to participants and the general public. The way our data is given back to the participants is often not accessible or engaging for non-experts. I want to improve how participants understand the outcomes of their contributions and remain motivated long-term." [ECSA_NGO_013]
Recognition and engagement	N31 Career recognition for researchers	Researchers & scientists	"Participatory work or integration of citizen science is not always recognised as valuable in academic evaluation systems compared to publications. If there were recognition frameworks (e.g., allowing modular outputs or



			multiple publications from participatory work), this would support career progression.” [ECSA_STU_030]
Governance and sustainability	N22 Long-term funding and institutional support	Policy makers	“As a public administration partner, I want citizen science outputs to be linked to policy needs and SDG reporting so that results can support public decisions and justify public investment.” [IBE_SW_046]
Governance and sustainability	N23 Participatory and equitable governance	Technology providers	“I need approaches to reach beyond the usual participants and involve more diverse groups. We repeatedly are engaging the same audiences, leading to participation bias, and a lack of true engagement of the full community. I want our citizen science community to become more inclusive and representative of wider society. This would improve both social engagement, impact and the diversity of data we collect.” [ECSA_NGO_010]
Governance and sustainability	N24 A public European resource against fragmentation	Policy makers	“I want RIECS to avoid dependence on private platforms outside public or European control” [IBE_SW_038]
Policy and impact	N25 Policy readiness and evidence pipelines	Policy makers	“As a policymaker, I want clear visualisations and actionable recommendations from citizen science data so that I can understand and use the evidence in policy decisions.” [IBE_CAPS_23]
Policy and impact	N26 Impact assessment and valuation	Policy makers	“As a policy evaluator, I want indicators that capture scientific, social, educational, policy and community impacts so that the value of citizen science can be assessed before, during and after projects.” [IBE_SW_092]
Scientific practice	N27 Cross-domain and transdisciplinary research	Companies	“As a Environmental monitoring company, I want to integrate citizen-generated environmental observations, standardize incoming data formats, validate data quality using automated tools, combine datasets with existing monitoring systems, and ensure metadata completeness so that I can improve spatial and temporal data coverage, reduce operational monitoring costs, enhance environmental reporting accuracy, support regulatory compliance, and provide higher-quality datasets to clients” [VT_01-C01-001]



Scientific practice	N33 Scientific principles	Researchers & scientists	“As a researcher using citizen science data, I want robust data provenance tracking so that I can understand where data comes from, how it was produced, and whether it is scientifically reproducible.” [IBE_CAPS_03]
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6.2 Themes overview

Each theme opens with an interpretation of the cross-group pattern, taking into consideration the relative prominence of needs mentions for a stakeholder, and sets out the needs it contains (with the number of in-scope stakeholder stories mentioning each). Because the Researcher & Scientist mentions of needs is relatively evenly distributed between the needs and high, their perspective is prominent in most themes.

6.2.1 Theme: Access and discoverability

Access and discoverability is, with tools and infrastructure, one of the two broadest themes in the stakeholder evidence: 75 researcher stories engage it, but it is also where Education systems (30) and NGOs (25) are most present. The theme divides into two distinct concerns. The first — finding projects, data and collaborators (N01, N02) — is, in relative terms, driven by researchers and CS networks, who describe a fragmented landscape in which initiatives exist but cannot find one another. Education systems and NGOs highlight lowering the barriers to entry (N03), with access as being related to inclusion, e.g. of underrepresented groups and non-experts, who must be able to take part. For RIECS this implies a discovery layer that serves two audiences at once: researchers seeking partners and datasets, and educators and civil-society actors seeking low-threshold, welcoming entry points.

Networking and collaboration spaces (N02, 87 mentions) was raised mainly by Researchers & scientists (40), NGOs (16) and Policy makers (10). Spaces and mechanisms to connect coordinators, researchers, volunteers and organisations across projects, disciplines and countries. (IBE_OQ_06; CPN_04-SH09-003; VT_01-C01-009).

Low-barrier, accessible participation (N03, 47 mentions) was raised mainly by Education systems (17), Researchers & scientists (13) and NGOs (8). Participation paths that work regardless of language, disability, age, digital skills or location. (ECSA_NGO_021; IBE_CSN_08; CGSP_02_019).

Project discovery and matchmaking (N01, 44 mentions) was raised mainly by Researchers & scientists (17), Education systems (13) and CS networks (6). A single place to find ongoing CS projects, events and calls, and to match volunteers, schools and researchers to projects relevant to them. (CPN_04-SH09-006; VT_02-C02-007; VT_01-C01-004).

6.2.2 Theme: Data quality and trust



Data quality and trust is dominated by researchers (55) and is the theme where Technology providers (12) and Companies (8) are comparatively most active, reflecting their stake in standards and validation. The substantive split is between making data technically sound — standards and validation (N05, N04), where researchers, technology providers and companies converge — and making it socially trustworthy — provenance and transparency (N06), where NGOs and policy makers are notably present and link trust to accountability and uptake. Policy makers in particular tie data quality directly to whether evidence can be used in decision-making. RIECS is therefore asked not only to make citizen data accurate, but to make its quality visible and auditable to non-technical audiences.

Shared data and metadata standards (N05, 49 mentions) was raised mainly by Researchers & scientists (22), Technology providers (8) and Companies (5). Common data/metadata standards and standardisation support enabling cross-project and cross-domain reuse. (IBE_CAPS_07; ECSA_FSB_016; CPN_04-SH09-006).

Data quality control and validation (N04, 41 mentions) was raised mainly by Researchers & scientists (19), Policy makers (7) and NGOs (6). Quality assurance, validation and calibration pipelines so citizen-generated data can be trusted and reused by science and policy. (VT_02-C02-004; VT_01-C01-001; VT_01-C01-008).

Trust, transparency and provenance (N06, 31 mentions) was raised mainly by NGOs (12), Researchers & scientists (9) and Policy makers (5). Visibility of where data goes, who uses it and how decisions are made; provenance records that build mutual trust. (CGSP_01_013; OeAD_01_035; VT_02-C02-010).

6.2.3 Theme: Recognition and incentives

Recognition and incentives is a comparatively small but distinctive theme. Researchers lead (35), but Education systems (14) and NGOs (11) give it a particular character: feedback and recognition are framed as conditions for sustaining participation, not as rewards. A prominent need is closing the loop — feedback and communication of results (N20) — closely followed by credit and attribution (N19), with recruitment and retention (N21) connecting the theme to sustainability. For RIECS the message is that engagement is not secured by access alone: contributors and the organisations that mobilise them want to see that their effort is acknowledged and that it had an effect.

Feedback and communication of results (N20, 30 mentions) was raised mainly by Researchers & scientists (13), NGOs (5) and Education systems (4). Closing the loop: participants see what happened with their data and what the project achieved. (ECSA_PW_013; OeAD_01_052; VT_01-C01-006).

Recognition and credit for contributions (N19, 24 mentions) was raised mainly by Education systems (7), Researchers & scientists (6) and NGOs (4). Acknowledgement, certification and credit mechanisms for citizen contributions, including non-institutional expertise. (IBE_SW_088; OeAD_01_052; CGSP_02_019).



Volunteer recruitment and retention (N21, 11 mentions) was raised mainly by Researchers & scientists (8) and NGOs (3). Sustainable recruitment of new participants and strategies to keep them engaged over years. (IBE_CS4H_18; ECSA_NGO_013; ECSA_NGO_027).

6.2.4 Theme: Tools, apps and platforms

Tools, apps and platforms is the largest theme in the stakeholder evidence and the one every group engages: 104 researcher stories, but also strong showings from NGOs, Education, Technology providers and Policy makers. Shared hosting and infrastructure (N10) is the single largest need in the whole dataset, reflecting a near-universal expectation that RIECS provide the common technical substrate that individual projects cannot build alone. Around it cluster collection tools (N11), analysis and visualisation (N12) and — distinctively for Technology providers — interoperability and federated architecture (N14, N15), where providers ask to connect rather than be replaced. Policy makers enter this theme through analysis and decision-support (N12), wanting outputs they can act on. RIECS is expected to be infrastructure first.

Shared digital infrastructure and hosting (N10, 106 mentions) was raised mainly by Researchers & scientists (46), NGOs (17) and Education systems (10). Common hosting, storage, repositories and computing so projects do not have to build and maintain their own stack. (IBE_SW_088; IBE_SW_020; IBE_SW_097).

Data collection and crowdsourcing tools (N11, 66 mentions) was raised mainly by Researchers & scientists (34), Education systems (7) and NGOs (7). Mobile/field data-collection tools, crowdsourcing workflows and sensor support for contributors. (ECSA_CCC_004; IBE_CS4H_15; IBE_SW_033).

Analysis, visualisation and decision support (N12, 68 mentions) was raised mainly by Researchers & scientists (28), Policy makers (12) and NGOs (7). Online analysis and visualisation of project data, including AI-assisted tooling and outputs usable for decision-making. (IBE_OSF_04; VT_01-C01-007; MAU_S01_022).

Interoperability and platform integration (N14, 52 mentions) was raised mainly by Technology providers (10), Researchers & scientists (9) and NGOs (7). Connecting existing CS platforms, apps and repositories through APIs and shared interfaces rather than replacing them. (IBE_OSF_07; VT_02-C02-008; CSZ_UNIT_005).

Usability and user-centred design (N13, 23 mentions) was raised mainly by Researchers & scientists (8), NGOs (5) and Companies (3). Interfaces designed for non-experts, with workflows that fit how volunteers actually work. (ECSA_NGO_028; MAU_R01_022; CSZ_SG_019).

Federated, modular and secure architecture (N15, 21 mentions) was raised mainly by NGOs (5), Researchers & scientists (5) and Technology providers (5). A federated/modular technical design with shared identity and access management, security and reliability. (ECSA_FSB_015; IBE_CSN_15; IBE_CS4H_07).



Physical infrastructures (N34, 5 mentions) was raised mainly by Technology providers (4) and NGOs (1). Access to shared physical resources such as laboratory spaces, field equipment, sensors and hardware that participants and projects can borrow or use without needing to own or maintain them independently. (ECSA_FSB_009; ECSA_NGO_001; ECSA_CCC_002).

6.2.5 Theme: Training and capacity building

Training and capacity building is the theme where Education systems are most prominent relative to their size (27 stories), alongside the ever-present researchers (57). The leading need is ready-to-use training materials and documentation (N16), followed by scientific literacy and outreach (N18) and a curated, reusable resource library (N29). Education actors and NGOs ask for concrete, classroom- and community-ready materials; researchers and CS networks ask more for methodological, legal and strategic support (N17). The recurring sentiment is a reluctance to reinvent the wheel — groups want to draw on shared, maintained resources rather than rebuild their own each time.

Training materials and documentation (N16, 60 mentions) was raised mainly by Researchers & scientists (24), Education systems (19) and NGOs (6). Ready-to-use training, manuals, templates and documentation for participants, teachers and coordinators. (OeAD_01_014; IBE_SW_030; IBE_OSF_19).

Scientific literacy and public engagement (N18, 45 mentions) was raised mainly by Researchers & scientists (24), Education systems (11) and NGOs (4). Outreach, literacy-building and engagement formats that bring new audiences into citizen science. (IBE_CIR_09; CPN_02-SH01-001; IBE_CIR_08).

Shared resource and materials library (N29, 43 mentions) was raised mainly by Researchers & scientists (22), Education systems (7) and CS networks (5). A curated library of reusable resources — protocols, worksheets, equipment guides, best-practice examples — that projects and citizens can draw on. (IBE_CS4H_11; IBE_SW_078; IBE_CS4H_05).

Support services and expertise access (N17, 19 mentions) was raised mainly by Researchers & scientists (7), NGOs (6) and Education systems (3). Helpdesk-style support, peer-to-peer learning, expert/organisation databases and proposal support. (IBE_SW_056; IBE_OQ_13; CSZ_SG_009).

6.2.6 Theme: Data governance and compliance

Data governance and compliance is led by researchers (37) but is the theme where NGOs are proportionally most vocal (18), giving it an equity and rights framing. Open Science, FAIR and CARE compliance (N08) is a prominent need and is treated almost as a default expectation, especially for publicly funded data. Data ownership, privacy and consent (N07) is raised around sensitive data and community-generated knowledge, with NGOs stressing that people, not businesses, should benefit from the data they generate. Legal clarity and digital sovereignty (N09) is smaller but pointed, with concern about dependence on non-European platforms. RIECS is expected to be open and FAIR by default while giving clear, flexible control over rights.



Open Science, FAIR and CARE compliance (N08, 47 mentions) was raised mainly by Researchers & scientists (20), NGOs (12) and Companies (3). FAIR/CARE-aligned, openly licensed data, software and outputs as the default mode of operation. (IBE_SW_056; IBE_SW_039; CSZ_CS4H_074).

Data ownership, privacy and consent (N07, 27 mentions) was raised mainly by Researchers & scientists (11), NGOs (7) and Technology providers (3). Clear rules on who owns contributed data, privacy protection, consent management and handling of sensitive data. (IBE_CS4H_20; ECSA_NGO_018; OeAD_01_030).

Legal clarity and digital sovereignty (N09, 14 mentions) was raised mainly by NGOs (7), Researchers & scientists (3) and Companies (2). Legal certainty for data use across borders and public/European control over infrastructure and data. (ECSA_FSB_008; ECSA_FSB_016; VT_01-C01-009).

Ethics framework / guidelines (N37, 5 mentions) was raised mainly by Researchers & scientists (4) and Companies (1). Practical guidance, templates and support for implementing ethical principles in citizen science projects, covering informed consent, participant rights, responsible data use and compliance with relevant regulations. (VT_02-C02-010; IBE_OQ_28; CGSP_02_001).

Data storage (N36, 3 mentions) was raised mainly by CS networks (2) and Companies (1). Secure, reliable and long-term storage of project data in a trusted environment, ensuring that citizen-generated datasets remain accessible, preserved and reusable beyond the lifetime of individual projects. (VT_01-C01-008; CGSP_02_012; IBE_CSN_11).

6.2.7 Theme: Governance and sustainability

Governance and sustainability is raised across organisational actors, with NGOs (25) and Policy makers (22) relatively prominent next to researchers (41). Three concerns are roughly co-equal: long-term funding and institutional anchoring (N22), participatory and equitable governance (N23), and a public, non-fragmented European resource (N24). NGOs and policy makers frame governance as a first-order infrastructure question — who decides, who is represented, and who pays — rather than an administrative afterthought, while the recurrent funding concern reflects a pattern of projects creating value that then dies with the grant. RIECS is asked to be governed participatorily and sustained institutionally, not merely built.

Long-term funding and institutional support (N22, 41 mentions) was raised mainly by NGOs (12), Policy makers (7) and Researchers & scientists (7). Funding models and durable institutional backing so projects and platforms survive beyond project grants. (CGSP_02_020; ECSA_NGO_022; ECSA_NGO_008).

Participatory and equitable governance (N23, 43 mentions) was raised mainly by Researchers & scientists (12), Policy makers (11) and NGOs (10). Citizens and stakeholders represented in



decision-making, with co-creation and equitable participation protocols. (CSZ_SG_017; IBE_SW_088; IBE_CIR_05).

A public European resource against fragmentation (N24, 37 mentions) was raised mainly by Researchers & scientists (10), Policy makers (8) and Education systems (6). RIECS as a public, Europe-wide resource that connects rather than duplicates the fragmented CS landscape. (IBE_SW_020; IBE_SW_024; IBE_SW_095).

Federated, modular and secure architecture (N15, 21 mentions) was raised mainly by NGOs (5), Researchers & scientists (5) and Technology providers (5). A federated/modular technical design with shared identity and access management, security and reliability. (ECSA_FSB_015; IBE_CSN_15; IBE_CS4H_07).

6.2.8 Theme: Policy and impact

Policy makers (19) are the second-largest voice after researchers (25) for this theme. The two needs — making evidence policy-ready (N25) and demonstrating impact (N26) — are evenly weighted and they are linked: policy makers want quality-assured, interpretable, decision-ready outputs, and all groups want to show that citizen science achieves something. For RIECS it implies an explicit pathway from citizen data to usable evidence, with impact measurement built in rather than assumed.

Policy readiness and evidence pipelines (N25, 38 mentions) was raised mainly by Policy makers (15), Researchers & scientists (8) and NGOs (6). Making citizen-generated evidence usable by policy-makers: quality seals, official-statistics integration, policy interfaces. (IBE_CIR_10; IBE_SW_088; MAU_R01_001).

Impact assessment and valuation (N26, 37 mentions) was raised mainly by Researchers & scientists (12), NGOs (9) and Policy makers (6). Methods and indicators to assess and demonstrate the scientific and societal impact of citizen science. (VT_02-C02-001; IBE_SW_092; OeAD_01_023).

6.2.9 Theme: Scientific practice

Scientific practice is the smallest theme, carried almost entirely by researchers (14) but with some NGO and company voices. Of the two needs it is comprised of, the more significant is cross-domain and transdisciplinary research (N27): linking datasets, methods and communities across scientific disciplines. Though infrequent, it speaks to the credibility and scope of RIECS — the expectation that citizen science be treated as scientifically valid and able to bridge disciplines. The implication for RIECS is modest but real: design choices should not lock the infrastructure into a single domain.

Cross-domain and transdisciplinary research (N27, 24 mentions) was raised mainly by Researchers & scientists (12), NGOs (6) and Companies (3). Linking datasets, methods and



communities across domains and disciplines. (VT_01-C01-001; VT_01-C01-003; ECSA_NGO_037).

Scientific principles (N33, 3 mentions) was raised by Researchers & scientists (2). Support for embedding recognised scientific standards — including reproducibility, peer review and disciplinary rigour — into citizen science practice, so that CS outputs are accepted as legitimate contributions to knowledge. (CGSP_01_002; CPN_02-SH01-015; IBE_CAPS_03).

7. Cross-group synthesis and tensions between D4.2 and D4.3 (and D4.4)

This section provides preliminary synthesis and tensions between primarily D4.2 and D4.3, supplemented by D4.4 (section 7.3). The table below shows the converging needs when only T4.3 stakeholder groups are considered.

Table 5. Converging needs and the stakeholder groups that evidence each.

Need	Stakeholder stories	# groups	Groups evidencing it
N10 Shared digital infrastructure and hosting	105	8	Res, NGO, Edu, Pol, Tech, Co, CSnet, RI
N02 Networking and collaboration spaces	85	7	Res, NGO, Edu, Pol, Tech, Co, CSnet
N11 Data collection and crowdsourcing tools	65	8	Res, NGO, Edu, Pol, Tech, Co, CSnet, RI
N12 Analysis, visualisation and decision support	65	8	Res, NGO, Edu, Pol, Tech, Co, CSnet, RI
N16 Training materials and documentation	58	8	Res, NGO, Edu, Pol, Tech, Co, CSnet, RI
N03 Low-barrier, accessible participation	47	6	Res, NGO, Edu, Pol, CSnet, RI
N01 Project discovery and matchmaking	44	6	Res, NGO, Edu, Pol, Co, CSnet
N05 Shared data and metadata standards	48	8	Res, NGO, Edu, Pol, Tech, Co, CSnet, RI

7.1 Citizens and stakeholders: how the stakeholder evidence re-weights the citizen needs



Both citizen (D4.2) and stakeholder (D4.3) evidence are labelled against the preliminary need framework (N01–N37). In doing a cross group analysis, what the T4.3 stakeholder engagement changes is the weight, priority and framing of citizen needs. The T4.3 stakeholder corpus is the larger of the two — 415 in-scope stakeholder stories against 378 in-scope citizen stories, i.e. roughly 1,357 stakeholder need-mentions against some 877 from citizens — so the overall prioritisation is stakeholder-weighted, and a reading based only on citizens differs from the combined picture in specific, identifiable places.

In table 4 below, converging needs are those expressed across many groups, indicating broad consensus. Diverging needs and tensions are those where groups differ, or where the same underlying issue pulls in opposite directions. To control for the different sizes of the groups, convergence and divergence were assessed from each need's relative weight within a group (its share of that group's own stories), not from raw counts alone.

A convergent core is reinforced. Six needs are high-priority for both audiences and emerge as the most robust requirements: networking and collaboration (N02), low-barrier participation (N03), shared digital infrastructure and hosting (N10), data-collection tools (N11), analysis and visualisation (N12), and training and documentation (N16). Shared hosting (N10) is the single largest need overall, and T4.3 stakeholders nearly double the citizen signal for it.

T4.3 Stakeholders raise the organisational and policy needs. The clearest re-prioritisation is policy readiness and evidence pipelines (N25), which moves from a low citizen priority to a medium overall priority once policy-makers, NGOs and research infrastructures are included. A broader cluster roughly doubles its evidence base with stakeholders — long-term funding and sustainability (N22), shared standards (N05), interoperability (N14), participatory governance (N23) and the shared resource library (N29) — reflecting an institutional concern with durability, standardisation and integration that is less prominent in the citizen stories.

Some citizen-led needs are softened in the T4.3 stakeholder view. Three needs rated high by citizens are only medium for stakeholders: recognition and credit for contributions (N19), feedback and communication of results (N20), and — within the stakeholder corpus — Open Science / FAIR / CARE (N08, which nevertheless remains high overall, reinforced by international stakeholders in D4.4). These are participant-experience needs that matter more to individual contributors than to organisations, and they should be deliberately protected: a prioritisation driven only by the larger stakeholder corpus would under-rank exactly the needs that could help sustain citizen participation.

Table 4. Citizen (D4.2) versus stakeholder (D4.3) need priorities (selected needs).



Need	Citizens (D4.2)	Stakeholders (D4.3)	Overall	Effect of stakeholder evidence
N10 Shared infrastructure & hosting	High	High	High	Largest need overall; stakeholders raise it even more than citizens (26% vs 22% of their stories).
N02 Networking & collaboration	High	High	High	Convergent core — strong for both audiences.
N11 Data-collection & crowdsourcing tools	High	High	High	Convergent core — strong for both audiences.
N16 Training materials & documentation	High	High	High	Convergent core — strong for both audiences.
N03 Low-barrier, accessible participation	High	Medium	High	Citizen-led — High for citizens, Medium (11%) for stakeholders.
N12 Analysis, visualisation & decision support	Medium	High	High	Stakeholder-raised — Medium (11%) for citizens, High for stakeholders.
N08 Open Science / FAIR / CARE	High	Medium	High	Citizen-led — High overall, but only Medium within the stakeholder corpus (kept high by D4.4 international input).
N19 Recognition & credit	High	Medium	Medium	Softened — participant-experience need; High for citizens, Medium for stakeholders.
N20 Feedback & communication of results	High	Medium	Medium	Softened — participant-experience need; High for



Need	Citizens (D4.2)	Stakeholders (D4.3)	Overall	Effect of stakeholder evidence
				citizens, Medium for stakeholders.
N01 Discovery & matchmaking	High	Medium	Medium	Citizen-led — High for citizens, Medium for stakeholders.
N25 Policy readiness & evidence pipelines	Low	Medium	Medium	Raised by stakeholders — Low for citizens, Medium once policy-makers, NGOs and RIs are included.
N14 Interoperability & platform integration	Medium	High	Medium	Stakeholder-raised — Medium for citizens, High for stakeholders.
N05 Shared data & metadata standards	Medium	Medium	Medium	Stakeholder-weighted — Medium for both; higher share among stakeholders.
N22 Long-term funding & sustainability	Medium	Medium	Medium	Stakeholder-weighted — institutional concern with durability and sustainability.
N23 Participatory & equitable governance	Medium	Medium	Medium	Stakeholder-weighted — governance and equity.
N29 Shared resource & materials library	Medium	Medium	Medium	Stakeholder-weighted — shared resources and reuse.

Beyond re-weighting, comparing T4.3 and T4.2 stakeholders considerations highlights trade-offs that are not evident when considering only T4.2 stakeholders (see section 7.2): trust and verification versus participation and accessibility; governance versus technical development; European infrastructure versus global relevance; and long-term sustainability.

The comparison keeps the citizen needs intact but shifts the centre of gravity towards shared infrastructure, standards, interoperability, sustainability and policy-readiness, while the



citizen-specific needs of recognition, feedback and openness require explicit safeguarding in the combined prioritisation.

7.2 Diverging needs and tensions

Open data vs sensitive and community-held data. Researchers and NGOs push for open access and reuse (FAIR, open licensing), while health researchers, companies and community organisations handle sensitive or locally owned data and need restriction options. RIECS should support graduated access levels and CARE-aligned community control rather than a single openness default.

One excellent portal vs federated autonomy. Policy actors and many citizens favour a single, public, European entry point; platform operators and CS networks insist existing platforms must not be replaced or duplicated. The federation-with-front-door architecture (connect, not replace) is the reconciliation candidate, but it transfers the cost to interoperability work.

Low-barrier participation vs data quality. Education and citizen-facing groups want minimal entry requirements; researchers and policy users require validated, calibrated, well-documented data. Validation services and quality scoring (rather than entry barriers) are the proposed reconciliation.

Free access vs sustainable operation. Nearly all groups expect free public services, while technology providers and platform operators emphasise real operating costs (one platform operator cited ~200k EUR/year). The funding-model question is routed to WP3 (Aspect **WP3-04**) rather than resolved here.

Speed of policy uptake vs scientific rigour. Policy actors want timely, usable evidence; researchers warn against over-claiming from uncalibrated data. Quality seals and provenance metadata are the bridge both sides asked for.

7.3 Policy and governance signals

Extending the crossed analysis of D4.2, D4.3, and D4.4, when looking at this last one, policy-facing engagements (UNSTATS workshop, local policy actors workshop, policy-maker stories from national workshops) send three consistent signals: (1) use of citizen-generated data in policy and official statistics is dependent on how quality assurance is institutionalised — validator tools, quality seals and accreditation mechanisms were explicitly proposed; (2) public control and European digital sovereignty over data and governance are conditions for institutional trust; (3) funders and local authorities need impact indicators to justify sustained support. These map to needs **N25**, **N09/N24** and **N26** and are routed to WP3/WP5 via Aspects **WP3-04**, **WP3-06**, **WP5-04** and **WP7-02**.

8. How this deliverable feeds D2.2, D2.3 and WP3



All stakeholder needs are listed below with their frequency (number of stakeholder stories), so the prioritisation is transparent. The 'Fed into D2.2' column states whether the need yielded a technical requirement; needs below threshold or non-technical in nature are routed to WP3/WP5 via the Aspect IDs instead.

Table 6. Stakeholder needs mapped to D2.2 requirements, D2.3 catalogue families and Aspect IDs.

Stakeholder need	Stories	Fed into D2.2?	Candidate requirement(s) in D2.2	Catalogue family (D2.3)	Aspect ID (WP3/WP5 via D2.3 §12)
N10 Shared digital infrastructure and hosting	106	Yes	RIECS-REQ-F-004; RIECS-REQ-F-005	Data and metadata services	—
N02 Networking and collaboration spaces	87	Yes	RIECS-REQ-F-003	Engagement and community services	—
N12 Analysis, visualisation and decision support	68	Yes	RIECS-REQ-F-007	Data and metadata services	—
N11 Data collection and crowdsourcing tools	66	Yes	RIECS-REQ-F-006	Software and tooling resources	—
N16 Training materials and documentation	60	Yes	RIECS-REQ-F-011	Training and capacity-building services	WP3-02; WP5-03
N14 Interoperability and platform integration	52	Yes	RIECS-REQ-I-001; RIECS-REQ-I-002	Integration services	WP3-05
N05 Shared data and metadata standards	49	Yes	RIECS-REQ-F-009	Data and metadata services	—



Stakeholder need	Stories	Fed into D2.2?	Candidate requirement(s) in D2.2	Catalogue family (D2.3)	Aspect ID (WP3/WP5 via D2.3 §12)
N03 Low-barrier, accessible participation	47	Yes	RIECS-REQ-N-005	Cross-cutting policy: accessibility and inclusion	WP7-01
N08 Open Science, FAIR and CARE compliance	47	Yes	RIECS-REQ-I-002; RIECS-REQ-C-003	Cross-cutting policy: FAIR and Open Science	—
N18 Scientific literacy and public engagement	45	Yes	RIECS-REQ-F-017	Engagement and community services	WP3-02; WP5-03
N01 Project discovery and matchmaking	44	Yes	RIECS-REQ-F-001; RIECS-REQ-F-002	Discovery and findability services	—
N29 Shared resource and materials library	43	Yes	RIECS-REQ-F-011	Knowledge and training resources	—
N23 Participatory and equitable governance	43	No — non-technical / below threshold	—	Governance (WP3 roadmap)	WP3-04
N22 Long-term funding and institutional support	41	Yes	RIECS-REQ-N-007	Governance (WP3 roadmap)	WP3-04
N04 Data quality control and validation	41	Yes	RIECS-REQ-F-008	Quality assurance and validation services	—
N25 Policy readiness and evidence pipelines	38	Yes	RIECS-REQ-F-015	Policy and advocacy services	WP5-04; WP7-02
N26 Impact assessment and valuation	37	Yes	RIECS-REQ-F-016	Policy and advocacy services	WP3-06
N24 A public European resource	37	No — non-technical /	—	Governance (WP3 roadmap)	WP3-04



Stakeholder need	Stories	Fed into D2.2?	Candidate requirement(s) in D2.2	Catalogue family (D2.3)	Aspect ID (WP3/WP5 via D2.3 §12)
against fragmentation		below threshold			
N06 Trust, transparency and provenance	31	Yes	RIECS-REQ-F-010	Quality assurance and validation services	—
N20 Feedback and communication of results	30	Yes	RIECS-REQ-F-014	Engagement and community services	WP5-02
N07 Data ownership, privacy and consent	27	Yes	RIECS-REQ-C-001; RIECS-REQ-C-002	Cross-cutting policy: GDPR and ethics	WP3-03
N19 Recognition and credit for contributions	24	Yes	RIECS-REQ-F-013	Engagement and community services	WP5-02
N27 Cross-domain and transdisciplinary research	24	Yes	RIECS-REQ-F-018	Data and metadata services	—
N13 Usability and user-centred design	23	Yes	RIECS-REQ-N-004	Cross-cutting policy: usability	—
N15 Federated, modular and secure architecture	21	Yes	RIECS-REQ-N-001; RIECS-REQ-N-002; RIECS-REQ-N-006	Identity and access services	WP3-05
N17 Support services and expertise access	19	Yes	RIECS-REQ-F-012	Training and capacity-building services	WP3-02
N09 Legal clarity and digital sovereignty	14	Yes	RIECS-REQ-C-002; RIECS-REQ-C-004	Cross-cutting policy: GDPR and ethics	WP3-03
N28 Scalability and performance	13	Yes	RIECS-REQ-F-005; RIECS-REQ-N-003	Cross-cutting policy: scalability	—



Stakeholder need	Stories	Fed into D2.2?	Candidate requirement(s) in D2.2	Catalogue family (D2.3)	Aspect ID (WP3/WP5 via D2.3 §12)
N21 Volunteer recruitment and retention	11	No — non-technical / below threshold	—	Engagement and community services	WP5-02

9. Conclusions and next steps

9.1 Key findings

Institutional stakeholders converge on infrastructure, interoperability, standards and sustainable hosting — the technical core for D2.2.

Researchers need end-to-end workflow support (collection → validation → analysis → publication) more than any single tool.

Education systems need curriculum-compatible, long-running projects with ready-made materials — a service design constraint, not just content.

Policy uptake depends on institutionalised quality assurance and impact evidence.

The five cross-group tensions are design decisions for WP3, not blockers; each has a reconciliation candidate.

9.2 Limitations

Group attribution was partly inferred for stories without an explicit stakeholder group. A manual assignment pass is planned for phase 2.

Citizen science practitioners are reported with citizens in D4.2, but some practitioner stories (coordinators as future RIECS service users) belong analytically here; further differentiation is deferred to phase 2.

Researchers are over-represented (171 of 415 stories); companies, CS networks and RIs rest on smaller samples (13–26 stories each).

Conference-based engagements mix groups; their stories carry low-confidence workshop attribution.

The labelbook was not applied uniformly by all partners. Furthermore, relevance ratings were applied unevenly across labelling partners and serve only as tiebreakers.



The reporting on which countries were represented in each workshop needs to be improved for phase 2 in order to be more accessible for cross-checking whether the geographic spread of activities meet the DoA commitment.

9.3 Next steps

Validation of group attributions and tensions by task leads; presentation at the CS Stakeholder Summit (T5.1, M21); continued group-specific engagement in T5.3 and UN-agency engagement in T5.4 (Aspects **WP5-03**, **WP5-04**).

The D4.1 engagement methodology will be revised based on the limitations found during phase 1.

PRE-APPROVAL



References

- [1] RIECS-Concept proposal (GA 101188210), 2024.
- [2] RIECS-Concept Deliverable D4.1 — Engagement methodology protocol, v1.1, AE/OeAD, M6.
- [3] RIECS-Concept Deliverable D2.1 — Challenges assessment, CSIC, M6.

PRE-APPROVAL



Annex A — Raw user stories per group

The 415 analysable stakeholder stories are published as anonymised verbatim text (unedited except [person]/[institution]/[project] replacements) in outputs/csv/D4.3_user_stories_annexB_v003.csv (for Zenodo deposit). This includes 6 stories reinstated from the original rejection list following the ECSA substance re-filter. The 12 stories that remain excluded are listed with their exclusion category at the end of the CSV.

Flag definitions

INFERRED — stakeholder group not stated at capture; derived from the Target-user label assigned during the consortium labelling session; listed for manual confirmation.

CONFLICT — story labelled by two partners with disagreeing labels; canonical set = union minus adjudicated rejections.

Relevance — highest rating given by any labelling partner; tiebreaker only.

Table 7. Raw stakeholder user stories per group.

Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
ECSA_FSB_002	Companies	WS11	DE	N10 N11 N15	INFERRED
IBE_CAPS_26	Companies	WS03	ES	N22	
IBE_SW_090	Companies	WS01	ES	N01 N22 N26 N27	
VT_01-C01-001	Companies	WS37	LT	N04 N05 N08 N10 N13 N14 N25 N27	
VT_01-C01-002	Companies	WS37	LT	N10 N15	
VT_01-C01-003	Companies	WS37	LT	N04 N05 N09 N12 N25 N27	
VT_01-C01-004	Companies	WS37	LT	N01 N02 N13 N23	
VT_01-C01-005	Companies	WS37	LT	N05 N12	
VT_01-C01-006	Companies	WS37	LT	N20	
VT_01-C01-007	Companies	WS37	LT	N12	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
VT_01-C01-008	Companies	WS37	LT	N04 N12	
VT_01-C01-009	Companies	WS37	LT	N02 N07 N08 N09	
VT_02-C02-001	Companies	WS40	LT	N26	
VT_02-C02-002	Companies	WS40	LT	N11	
VT_02-C02-003	Companies	WS40	LT	N05 N14	
VT_02-C02-004	Companies	WS40	LT	N04 N12 N14 N16 N25	
VT_02-C02-005	Companies	WS40	LT	N05 N06 N14	
VT_02-C02-006	Companies	WS40	LT	N11 N12 N13 N17 N29	
VT_02-C02-007	Companies	WS40	LT	N01 N26	
VT_02-C02-008	Companies	WS40	LT	N14 N15	
VT_02-C02-009	Companies	WS40	LT	N11	
VT_02-C02-010	Companies	WS40	LT	N06 N07 N08 N29	
CGSP_02_012	CS networks	WS20	INT	N01 N02 N04 N10 N13 N14 N29	
CGSP_02_019	CS networks	WS20	INT	N01 N03 N18 N19 N20 N29	
CSZ_CS4H_059	CS networks	WS02	CH	N02 N09 N14 N16 N18 N29	INFERRED
ECSA_OCP_033	CS networks	WS22	EU	N02 N03 N17	INFERRED
ECSA_TCH_003	CS networks	SRC-OTHER	INT	N03 N16	INFERRED
IBE_CSN_02	CS networks	WS05	ES		



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
IBE_CSN_04	CS networks	WS05	ES	N01 N02 N20	
IBE_CSN_05	CS networks	WS05	ES	N01 N29	
IBE_CSN_07	CS networks	WS05	ES	N10	
IBE_CSN_08	CS networks	WS05	ES	N03 N22	
IBE_CSN_09	CS networks	WS05	ES	N16 N29	
IBE_CSN_10	CS networks	WS05	ES	N10 N14	
IBE_CSN_11	CS networks	WS05	ES	N05 N08 N10 N14	
IBE_CSN_12	CS networks	WS05	ES	N10 N12 N28	
IBE_CSN_14	CS networks	WS05	ES	N02 N10 N22	
IBE_CSN_15	CS networks	WS05	ES	N15	
IBE_CSN_16	CS networks	WS05	ES	N01 N06 N20 N26	
IBE_OSF_09	CS networks	WS13	TZ	N10 N11 N14 N15	
IBE_OSF_19	CS networks	WS13	TZ	N16 N26	
MAU_R01_009	CS networks	WS07	SE	N01	INFERRED
CGSP_01_001	Education systems	WS19	INT	N19	INFERRED
ECSA_NGO_002	Education systems	WS12	EU/online	N01 N20	INFERRED
ECSA_PW_001	Education systems	WS33	DE	N02 N03 N12 N16 N20	INFERRED
ECSA_TCH_001	Education systems	SRC-OTHER	INT	N16 N18 N29	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
ECSA_TCH_002	Education systems	SRC-OTHER	INT	N01 N02 N03	INFERRED
ECSA_TCH_004	Education systems	SRC-OTHER	INT	N03 N16 N18	INFERRED
ECSA_TCH_005	Education systems	SRC-OTHER	INT	N01 N02 N18 N29	INFERRED
ECSA_TCH_007	Education systems	SRC-OTHER	INT	N03 N07	INFERRED
ECSA_TCH_008	Education systems	SRC-OTHER	INT	N03	INFERRED
ECSA_TCH_009	Education systems	SRC-OTHER	INT	N16 N24 N25	INFERRED
ECSA_TCH_010	Education systems	SRC-OTHER	INT	N19 N26	INFERRED
ECSA_TCH_011	Education systems	SRC-OTHER	INT	N01 N02 N18 N23	INFERRED
IBE_CIR_03	Education systems	WS04	ES	N11	
IBE_OQ_48	Education systems	SRC-OQ	ES		
IBE_SW_001	Education systems	WS01	ES	N05 N14	
IBE_SW_002	Education systems	WS01	ES	N01 N03 N16 N18 N23	
IBE_SW_007	Education systems	WS01	ES	N10 N12 N16 N27	
IBE_SW_008	Education systems	WS01	ES	N01 N03 N16 N18 N23	
IBE_SW_027	Education systems	WS01	ES	N16 N18 N20	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
IBE_SW_029	Education systems	WS01	ES	N01 N22	
IBE_SW_030	Education systems	WS01	ES	N01 N03 N13 N16	
IBE_SW_031	Education systems	WS01	ES	N10 N11 N18	
IBE_SW_033	Education systems	WS01	ES	N03 N11	
IBE_SW_077	Education systems	WS01	ES	N19	
IBE_SW_078	Education systems	WS01	ES	N16 N20 N24 N29	
IBE_SW_079	Education systems	WS01	ES	N14	
IBE_SW_080	Education systems	WS01	ES	N10 N16 N29	
MAU_R01_004	Education systems	WS07	SE	N10 N11	INFERRED
OeAD_01_011	Education systems	WS30	AT	N10 N16	
OeAD_01_012	Education systems	WS30	AT	N02 N16 N19 N22	
OeAD_01_013	Education systems	WS30	AT	N01 N03 N14 N16 N26	
OeAD_01_014	Education systems	WS30	AT	N03 N13 N16 N17 N18	
OeAD_01_016	Education systems	WS30	AT	N03 N26	
OeAD_01_017	Education systems	WS30	AT	N01 N03 N10 N16	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
OeAD_01_018	Education systems	WS30	AT	N16 N24	
OeAD_01_019	Education systems	WS30	AT	N02 N03 N18 N19 N22 N23	
OeAD_01_023	Education systems	WS30	AT	N26	
OeAD_01_026	Education systems	WS30	AT	N02 N03 N08 N16 N29	
OeAD_01_028	Education systems	WS30	AT	N08 N22 N23 N24 N25	
OeAD_01_029	Education systems	WS30	AT	N22 N23	
OeAD_01_030	Education systems	WS30	AT	N07 N08 N11 N17	
OeAD_01_031	Education systems	WS30	AT	N03 N18 N19 N25	
OeAD_01_032	Education systems	WS30	AT	N01 N10 N14 N24	
OeAD_01_064	Education systems	WS31	AT	N02	
OeAD_01_066	Education systems	WS31	AT	N01 N29	
OeAD_01_068	Education systems	WS31	AT		
OeAD_01_069	Education systems	WS31	AT	N01 N16 N24	
OeAD_01_071	Education systems	WS31	AT	N10 N11 N12	
OeAD_01_074	Education systems	WS31	AT	N10 N11	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
OeAD_01_075	Education systems	WS31	AT	N02 N12 N17 N29	
OeAD_01_076	Education systems	WS31	AT	N02 N03 N10 N19 N22	
CGSP_01_005	NGOs	WS19	INT	N02 N04 N10 N14 N15 N23 N25	INFERRED
CGSP_01_006	NGOs	WS19	INT	N08	INFERRED
CGSP_01_016	NGOs	WS19	INT	N03 N11 N17 N18	INFERRED
CGSP_02_008	NGOs	WS20	INT	N02 N06 N07 N10 N13 N14	INFERRED
ECSA_FSB_005	NGOs	WS11	DE	N05 N12	INFERRED
ECSA_FSB_006	NGOs	WS11	DE	N08 N14	INFERRED
ECSA_FSB_008	NGOs	WS11	DE	N09 N24	INFERRED
ECSA_FSB_015	NGOs	WS11	DE	N15	INFERRED
ECSA_FSB_016	NGOs	WS11	DE	N05 N07 N08 N09 N15	INFERRED
ECSA_FSB_017	NGOs	WS11	DE	N02 N22 N23 N29	INFERRED
ECSA_FSB_018	NGOs	WS11	DE	N05 N08	INFERRED
ECSA_FSB_019	NGOs	WS11	DE	N06 N08	INFERRED
ECSA_FSB_020	NGOs	WS11	DE	N08 N22	INFERRED
ECSA_FSB_021	NGOs	WS11	DE	N06 N09	INFERRED
ECSA_FSB_022	NGOs	WS11	DE	N06 N07 N08 N09	INFERRED
ECSA_FSB_023	NGOs	WS11	DE	N04 N06 N12 N14 N25	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
ECSA_FSB_024	NGOs	WS11	DE	N06 N19 N22 N24 N25	INFERRED
ECSA_NGO_001	NGOs	WS12	EU/online	N03 N10 N13 N24 N29	INFERRED
ECSA_NGO_003	NGOs	WS12	EU/online	N02 N08 N10 N14 N19 N22	INFERRED
ECSA_NGO_004	NGOs	WS12	EU/online	N08 N16	INFERRED
ECSA_NGO_005	NGOs	WS12	EU/online	N10 N12	INFERRED
ECSA_NGO_006	NGOs	WS12	EU/online		INFERRED
ECSA_NGO_007	NGOs	WS12	EU/online	N19 N25 N26	INFERRED
ECSA_NGO_008	NGOs	WS12	EU/online	N22 N23	INFERRED
ECSA_NGO_009	NGOs	WS12	EU/online	N03 N18 N21 N22 N23	INFERRED
ECSA_NGO_010	NGOs	WS12	EU/online	N03 N04 N11 N18 N20 N23 N26 N27	INFERRED
ECSA_NGO_011	NGOs	WS12	EU/online	N03 N04 N10 N27	INFERRED
ECSA_NGO_012	NGOs	WS12	EU/online	N02 N25	INFERRED
ECSA_NGO_013	NGOs	WS12	EU/online	N16 N20 N21	INFERRED
ECSA_NGO_014	NGOs	WS12	EU/online	N10 N12 N26	INFERRED
ECSA_NGO_015	NGOs	WS12	EU/online	N06 N07	INFERRED
ECSA_NGO_016	NGOs	WS12	EU/online	N03 N10 N23 N27	INFERRED
ECSA_NGO_017	NGOs	WS12	EU/online	N11 N12	INFERRED
ECSA_NGO_018	NGOs	WS12	EU/online	N07 N09 N18	INFERRED
ECSA_NGO_020	NGOs	WS12	EU/online	N02 N26	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
ECSA_NGO_021	NGOs	WS12	EU/online	N03 N13	INFERRED
ECSA_NGO_022	NGOs	WS12	EU/online	N22	INFERRED
ECSA_NGO_023	NGOs	WS12	EU/online	N10 N13 N14	INFERRED
ECSA_NGO_024	NGOs	WS12	EU/online	N10 N11 N16	INFERRED
ECSA_NGO_026	NGOs	WS12	EU/online	N10 N22	INFERRED
ECSA_NGO_027	NGOs	WS12	EU/online	N02 N10 N11 N17 N21 N22	INFERRED
ECSA_NGO_028	NGOs	WS12	EU/online	N10 N13 N16 N17 N27 N29	INFERRED
ECSA_NGO_029	NGOs	WS12	EU/online	N01 N02 N17 N23 N24	INFERRED
ECSA_NGO_030	NGOs	WS12	EU/online	N01 N10 N15 N26 N27	INFERRED
ECSA_NGO_031	NGOs	WS12	EU/online	N02 N06 N22	INFERRED
ECSA_NGO_032	NGOs	WS12	EU/online	N20	INFERRED
ECSA_NGO_033	NGOs	WS12	EU/online	N06 N20 N26	INFERRED
ECSA_NGO_034	NGOs	WS12	EU/online	N16 N29	INFERRED
ECSA_NGO_035	NGOs	WS12	EU/online	N06 N07 N08 N09 N26	INFERRED
ECSA_NGO_036	NGOs	WS12	EU/online	N04 N06 N07 N09	INFERRED
ECSA_NGO_037	NGOs	WS12	EU/online	N02 N10 N24 N27	INFERRED
ECSA_NGO_038	NGOs	WS12	EU/online	N01 N02 N22	INFERRED
ECSA_NGO_039	NGOs	WS12	EU/online	N10 N11 N12	INFERRED
ECSA_NGO_040	NGOs	WS12	EU/online	N02 N22 N23	INFERRED
ECSA_NGO_041	NGOs	WS12	EU/online	N02	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
ECSA_NGO_042	NGOs	WS12	EU/online	N02	INFERRED
ECSA_NGO_043	NGOs	WS12	EU/online	N03 N14 N15	INFERRED
ECSA_NGO_044	NGOs	WS12	EU/online	N02	INFERRED
ECSA_PW_004	NGOs	WS33	DE	N02 N16 N17 N23	INFERRED
ECSA_PW_013	NGOs	WS33	DE	N20 N26	INFERRED
IBE_CAPS_16	NGOs	WS03	ES	N06 N08 N23 N26	
IBE_OSF_15	NGOs	WS13	TZ	N19	
IBE_SW_056	NGOs	WS01	ES	N08 N10 N12 N17	
IBE_SW_057	NGOs	WS01	ES	N04 N25	
IBE_OQ_10	NGOs	SRC-OQ	ES	N11	
CGSP_01_002	Other	WS19	INT		
CGSP_01_004	Policy makers	WS19	INT	N03 N04 N10 N14 N16 N24 N25	INFERRED
CGSP_01_007	Policy makers	WS19	INT	N02 N12 N25 N26 N28	INFERRED
CGSP_01_009	Policy makers	WS19	INT		INFERRED
CGSP_01_010	Policy makers	WS19	INT	N05 N09 N11 N23	INFERRED
CGSP_01_013	Policy makers	WS19	INT	N06 N11	INFERRED
CGSP_01_014	Policy makers	WS19	INT	N04 N06 N23	INFERRED
CGSP_01_015	Policy makers	WS19	INT	N12 N25	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
CGSP_02_014	Policy makers	WS20	INT	N02 N22 N24 N28	INFERRED
CGSP_02_017	Policy makers	WS20	INT	N08	
CGSP_03_001	Policy makers	SRC-OTHER	INT	N06 N12	
CGSP_03_002	Policy makers	SRC-OTHER	INT	N02 N18 N23	
CGSP_03_003	Policy makers	SRC-OTHER	INT	N04 N18 N25	
CGSP_03_004	Policy makers	SRC-OTHER	INT	N04 N07 N11 N14 N25	
CGSP_03_005	Policy makers	SRC-OTHER	INT	N02 N20 N23 N25	INFERRED
CGSP_03_006	Policy makers	SRC-OTHER	INT	N02 N18 N24	INFERRED
CGSP_03_007	Policy makers	WS21	FI	N03 N12 N14 N16 N22 N24 N25	
CGSP_04_005	Policy makers	WS20	INT	N02 N17 N22	
CGSP_04_006	Policy makers	WS20	INT	N10 N22 N23 N26	INFERRED
CSZ_UNIT_001	Policy makers	SRC-UN	INT	N04 N05 N06 N24 N25 N26	INFERRED
CSZ_UNIT_002	Policy makers	SRC-UN	INT	N04 N12 N25	INFERRED
CSZ_UNIT_003	Policy makers	SRC-UN	INT	N02 N10 N11 N29	INFERRED
CSZ_UNIT_004	Policy makers	SRC-UN	INT	N01 N04 N10 N14	INFERRED
CSZ_UNIT_005	Policy makers	SRC-UN	INT	N14 N24 N28	INFERRED
ECSA_FSB_014	Policy makers	WS11	DE	N10 N11 N23	INFERRED
ECSA_PW_014	Policy makers	WS33	DE	N01 N02 N22	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
IBE_AH_01	Policy makers	SRC-OTHER	INT	N02 N05 N10 N15	
IBE_AH_02	Policy makers	SRC-OTHER	INT	N02 N22 N23 N25	
IBE_CAPS_23	Policy makers	WS03	ES	N03 N12 N23 N24 N25 N27	
IBE_CAPS_25	Policy makers	WS03	ES	N19 N23	
IBE_OQ_12	Policy makers	SRC-OQ	ES	N05 N26	
IBE_OQ_31	Policy makers	SRC-OQ	ES	N10 N11 N12	
IBE_OSF_06	Policy makers	WS13	TZ	N08 N24 N25	
IBE_SW_006	Policy makers	WS01	ES	N10 N12 N14	
IBE_SW_015	Policy makers	WS01	ES	N12 N25	
IBE_SW_046	Policy makers	WS01	ES	N12 N19 N22 N23 N25	
IBE_SW_088	Policy makers	WS01	ES	N10 N12 N19 N23 N25	
IBE_SW_091	Policy makers	WS01	ES	N03 N13 N18	
IBE_SW_092	Policy makers	WS01	ES	N26	
Interview 1	Policy makers	SRC-OTHER	INT	N06 N20 N26	INFERRED
MAU_S01_022	Policy makers	WS06	SE	N12 N20	INFERRED
CGSP_02_005	Research infrastructures	WS20	INT	N10 N14 N28	INFERRED
CGSP_04_003	Research infrastructures	WS20	INT	N05 N08 N14	
ECSA_OCP_001	Research infrastructures	WS22	EU	N05 N10 N14 N24	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
ECSA_OCP_004	Research infrastructures	WS22	EU	N04 N05 N14	INFERRED
ECSA_OCP_009	Research infrastructures	WS22	EU	N04 N05 N12	INFERRED
ECSA_OCP_029	Research infrastructures	WS22	EU	N10 N11 N12 N16 N29	INFERRED
ECSA_OCP_032	Research infrastructures	WS22	EU	N03 N07 N12 N13 N23	INFERRED
ECSA_OCP_037	Research infrastructures	WS22	EU	N10	INFERRED
IBE_ECS_09	Research infrastructures	SRC-ECS	EU	N22	
IBE_SW_038	Research infrastructures	WS01	ES	N08 N22 N24 N25	
MAU_R01_005	Research infrastructures	WS07	SE	N10 N11 N12	INFERRED
CGSP_02_001	Researchers & scientists	WS20	INT	N07 N23	
CGSP_02_002	Researchers & scientists	WS22	EU	N05 N08 N09 N10 N11	
CGSP_02_003	Researchers & scientists	WS20	INT	N05 N07	INFERRED
CGSP_02_007	Researchers & scientists	WS20	INT	N11 N19 N25 N27	
CGSP_02_010	Researchers & scientists	WS20	INT	N10 N11 N12	
CGSP_02_015	Researchers & scientists	WS22	EU	N03 N05	
CGSP_02_016	Researchers & scientists	SRC-OTHER	INT	N02 N05 N08 N10 N25	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
CGSP_02_020	Researchers & scientists	WS20	INT	N22 N26 N29	INFERRED
CPN_02-SH01-001	Researchers & scientists	WS16	RS	N18 N20	
CPN_02-SH01-002	Researchers & scientists	WS16	RS	N02	
CPN_02-SH01-003	Researchers & scientists	WS16	RS	N02	
CPN_02-SH01-005	Researchers & scientists	WS16	RS	N16 N27	
CPN_02-SH01-007	Researchers & scientists	WS16	RS	N02 N03 N16 N18 N26	
CPN_02-SH01-010	Researchers & scientists	WS16	RS	N02 N21	
CPN_02-SH01-011	Researchers & scientists	WS16	RS	N10	
CPN_02-SH01-012	Researchers & scientists	WS16	RS	N05 N08 N10	
CPN_02-SH01-013	Researchers & scientists	WS16	RS	N12 N25	
CPN_02-SH01-015	Researchers & scientists	WS16	RS	N03 N06 N08 N16 N18 N20	
CPN_02-SH01-016	Researchers & scientists	WS16	RS	N02 N18 N23 N27	
CPN_02-SH01-017	Researchers & scientists	WS16	RS	N03 N18 N19 N23	
CPN_02-SH01-019	Researchers & scientists	WS16	RS	N16 N17	
CPN_02-SH01-021	Researchers & scientists	WS16	RS	N02 N12 N18	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
CPN_02-SH01-024	Researchers & scientists	WS16	RS	N10 N11 N12 N13	
CPN_02-SH01-025	Researchers & scientists	WS16	RS	N01 N02 N10 N17 N18	
CPN_02-SH01-026	Researchers & scientists	WS16	RS	N02 N11 N13 N16 N29	
CS4H_ZH_001	Researchers & scientists	WS02	CH	N02 N10 N24 N29	INFERRED
CS4H_ZH_004	Researchers & scientists	WS02	CH	N04	INFERRED
CS4H_ZH_006	Researchers & scientists	WS02	CH	N01 N02 N03 N29	INFERRED
CS4H_ZH_008	Researchers & scientists	WS02	CH	N12 N18	INFERRED
CS4H_ZH_016	Researchers & scientists	WS02	CH	N02 N10 N18 N22 N29	INFERRED
CS4H_ZH_020	Researchers & scientists	WS02	CH	N07 N08	INFERRED
CS4H_ZH_021	Researchers & scientists	WS02	CH	N01 N16 N18	INFERRED
CS4H_ZH_023	Researchers & scientists	WS02	CH	N26	INFERRED
CS4H_ZH_024	Researchers & scientists	WS02	CH	N02 N23 N29	INFERRED
CSZ_CS4H_001	Researchers & scientists	WS02	CH	N02 N03 N14 N15 N16 N21 N23 N29	INFERRED
CSZ_CS4H_011	Researchers & scientists	WS02	CH	N04	INFERRED
CSZ_CS4H_014	Researchers & scientists	WS02	CH	N16 N26 N29	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
CSZ_CS4H_021	Researchers & scientists	WS02	CH	N05 N07 N29	INFERRED
CSZ_CS4H_024	Researchers & scientists	WS02	CH	N11 N12	INFERRED
CSZ_CS4H_028	Researchers & scientists	WS02	CH	N02	INFERRED
CSZ_CS4H_031	Researchers & scientists	WS02	CH	N08 N10 N12 N24	INFERRED
CSZ_CS4H_034	Researchers & scientists	WS02	CH	N16 N29	INFERRED
CSZ_CS4H_040	Researchers & scientists	WS02	CH	N02 N10 N27	INFERRED
CSZ_CS4H_043	Researchers & scientists	WS02	CH	N02 N11	INFERRED
CSZ_CS4H_047	Researchers & scientists	WS02	CH		INFERRED
CSZ_CS4H_056	Researchers & scientists	WS02	CH	N01 N02	INFERRED
CSZ_CS4H_062	Researchers & scientists	WS02	CH	N10 N25	INFERRED
CSZ_CS4H_065	Researchers & scientists	WS02	CH	N07 N08 N12	INFERRED
CSZ_CS4H_069	Researchers & scientists	WS02	CH	N16 N24	INFERRED
CSZ_CS4H_074	Researchers & scientists	WS02	CH	N05 N06 N08 N20 N26	INFERRED
CSZ_CS4H_076	Researchers & scientists	WS02	CH	N02	INFERRED
CSZ_SG_001	Researchers & scientists	WS02	CH	N10 N11 N18	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
CSZ_SG_003	Researchers & scientists	WS02	CH	N21	INFERRED
CSZ_SG_004	Researchers & scientists	WS02	CH	N02 N10 N26 N27 N29	INFERRED
CSZ_SG_005	Researchers & scientists	WS02	CH	N10 N11 N12	INFERRED
CSZ_SG_006	Researchers & scientists	WS02	CH	N10 N15	INFERRED
CSZ_SG_007	Researchers & scientists	WS02	CH	N10 N18 N20 N28	INFERRED
CSZ_SG_009	Researchers & scientists	WS02	CH	N01 N02 N10 N17 N20	INFERRED
CSZ_SG_010	Researchers & scientists	WS02	CH	N08 N26	INFERRED
CSZ_SG_013	Researchers & scientists	WS02	CH	N10 N11	INFERRED
CSZ_SG_014	Researchers & scientists	WS02	CH	N01 N05 N17 N22 N23	INFERRED
CSZ_SG_015	Researchers & scientists	WS02	CH	N03 N21 N23	INFERRED
CSZ_SG_016	Researchers & scientists	WS02	CH	N10	INFERRED
CSZ_SG_017	Researchers & scientists	WS02	CH	N23	INFERRED
CSZ_SG_018	Researchers & scientists	WS02	CH	N01 N02 N22 N27	INFERRED
CSZ_SG_019	Researchers & scientists	WS02	CH	N13 N18	INFERRED
CSZ_SG_020	Researchers & scientists	WS02	CH	N02 N03 N18	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
ECSA_CCC_005	Researchers & scientists	WS14	DE	N06 N12	INFERRED
ECSA_CSF_013	Researchers & scientists	SRC-OTHER	INT	N11	INFERRED
ECSA_OCP_005	Researchers & scientists	WS22	EU	N04 N06 N08 N12	INFERRED
ECSA_OCP_008	Researchers & scientists	WS22	EU	N01 N08 N16 N29	INFERRED
ECSA_OCP_011	Researchers & scientists	WS22	EU	N01 N02	INFERRED
ECSA_OCP_030	Researchers & scientists	WS22	EU	N02 N29	INFERRED
ECSA_OCP_031	Researchers & scientists	WS22	EU	N05 N10 N24 N26 N28 N29	INFERRED
ECSA_PW_002	Researchers & scientists	WS33	DE	N02 N07 N08 N10 N16 N18 N22 N29	INFERRED
ECSA_PW_007	Researchers & scientists	WS33	DE	N01 N08 N24	INFERRED
ECSA_PW_008	Researchers & scientists	WS33	DE	N05 N10 N14	INFERRED
ECSA_PW_009	Researchers & scientists	WS33	DE	N04 N12 N14 N17	INFERRED
ECSA_PW_011	Researchers & scientists	WS33	DE	N05 N25	INFERRED
IBE_CAPS_03	Researchers & scientists	WS03	ES	N05 N06 N19	
IBE_CIR_01	Researchers & scientists	WS04	ES	N04	
IBE_CIR_04	Researchers & scientists	WS04	ES	N04 N10 N15 N20	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
IBE_CIR_05	Researchers & scientists	WS04	ES	N04 N23 N27 N29	
IBE_CIR_06	Researchers & scientists	WS04	ES	N02 N18	
IBE_CIR_08	Researchers & scientists	WS04	ES	N03 N18 N23 N27	
IBE_CIR_09	Researchers & scientists	WS04	ES	N18	
IBE_CIR_10	Researchers & scientists	WS04	ES	N25	
IBE_CS4H_01	Researchers & scientists	WS02	CH	N01 N03 N16 N24	
IBE_CS4H_05	Researchers & scientists	WS02	CH	N03 N16 N17 N29	
IBE_CS4H_06	Researchers & scientists	WS02	CH	N01 N02 N10	
IBE_CS4H_07	Researchers & scientists	WS02	CH	N15 N29	
IBE_CS4H_08	Researchers & scientists	WS02	CH	N11 N20 N28	
IBE_CS4H_11	Researchers & scientists	WS02	CH	N26 N29	
IBE_CS4H_14	Researchers & scientists	WS02	CH	N02 N03 N16	
IBE_CS4H_15	Researchers & scientists	WS02	CH	N10 N11 N12	
IBE_CS4H_16	Researchers & scientists	WS02	CH	N11	
IBE_CS4H_20	Researchers & scientists	WS02	CH	N07 N09 N23	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
IBE_CS4H_21	Researchers & scientists	WS02	CH	N16	
IBE_CS4H_23	Researchers & scientists	WS02	CH	N10 N11	
IBE_CS4H_24	Researchers & scientists	WS02	CH	N11	
IBE_ECS_03	Researchers & scientists	SRC-ECS	EU	N04	
IBE_OQ_04	Researchers & scientists	SRC-OQ	ES	N20	
IBE_OQ_07	Researchers & scientists	SRC-OQ	ES	N01 N05 N07 N12	
IBE_OQ_11	Researchers & scientists	SRC-OQ	ES	N02 N04 N07 N10 N12	
IBE_OQ_13	Researchers & scientists	SRC-OQ	ES	N08 N16 N17 N28	
IBE_OQ_16	Researchers & scientists	SRC-OQ	ES	N10	
IBE_OQ_17	Researchers & scientists	SRC-OQ	ES	N10 N18 N20	
IBE_OQ_18	Researchers & scientists	SRC-OQ	ES	N05 N12 N14	
IBE_OQ_19	Researchers & scientists	SRC-OQ	ES	N16 N20 N29	
IBE_OQ_20	Researchers & scientists	SRC-OQ	ES	N01 N02 N05 N10 N11	
IBE_OQ_22	Researchers & scientists	SRC-OQ	ES	N11	
IBE_OQ_25	Researchers & scientists	SRC-OQ	ES	N11 N18 N28	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
IBE_OQ_26	Researchers & scientists	SRC-OQ	ES	N05 N08 N28	
IBE_OQ_28	Researchers & scientists	SRC-OQ	ES	N02 N07 N09	
IBE_OQ_29	Researchers & scientists	SRC-OQ	ES	N04 N10 N11	
IBE_OQ_32	Researchers & scientists	SRC-OQ	ES	N10	
IBE_OQ_33	Researchers & scientists	SRC-OQ	ES	N16	
IBE_SW_005	Researchers & scientists	WS01	ES	N04 N05	
IBE_SW_010	Researchers & scientists	WS01	ES		
IBE_SW_011	Researchers & scientists	WS01	ES	N19	
IBE_SW_032	Researchers & scientists	WS01	ES	N04 N06 N11	
IBE_SW_039	Researchers & scientists	WS01	ES	N05 N08 N14	
IBE_SW_047	Researchers & scientists	WS01	ES		
IBE_SW_048	Researchers & scientists	WS01	ES	N10 N12 N13	
IBE_SW_071	Researchers & scientists	WS01	ES	N05 N27	
IBE_SW_089	Researchers & scientists	WS01	ES	N10	
MAU_R01_001	Researchers & scientists	WS07	SE	N02 N20 N25	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
MAU_R01_002	Researchers & scientists	WS07	SE	N10	INFERRED
MAU_R01_003	Researchers & scientists	WS07	SE	N10 N11 N12 N14	INFERRED
MAU_R01_007	Researchers & scientists	WS07	SE	N11	INFERRED
MAU_R01_011	Researchers & scientists	WS07	SE	N05	INFERRED
MAU_R01_012	Researchers & scientists	WS07	SE	N08 N12	INFERRED
MAU_R01_013	Researchers & scientists	WS07	SE	N02 N11 N28	INFERRED
MAU_R01_014	Researchers & scientists	WS07	SE	N10	INFERRED
MAU_R01_016	Researchers & scientists	WS07	SE	N03	INFERRED
MAU_R01_020	Researchers & scientists	WS07	SE	N04 N10 N11	INFERRED
MAU_R01_021	Researchers & scientists	WS07	SE		INFERRED
MAU_R01_022	Researchers & scientists	WS07	SE	N13	INFERRED
OeAD_01_055	Researchers & scientists	WS32	AT	N01 N16 N21 N29	
OeAD_01_056	Researchers & scientists	WS32	AT	N02 N12 N15 N27	
OeAD_01_057	Researchers & scientists	WS32	AT	N04 N06	
Other – Researcher Alumni	Researchers & scientists	SRC-OTHER	INT	N10 N11 N12	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
Community Manager					
VT_01-RS01-001	Researchers & scientists	WS41	LT	N04	
VT_01-RS01-002	Researchers & scientists	WS41	LT	N04 N12	
VT_01-RS01-003	Researchers & scientists	WS41	LT	N14	
VT_01-RS01-004	Researchers & scientists	WS41	LT	N06 N07 N19 N27	
VT_01-RS01-005	Researchers & scientists	WS41	LT	N02 N04 N13 N18 N29	
VT_01-RS01-006	Researchers & scientists	WS41	LT	N02 N05 N27	
VT_01-RS01-007	Researchers & scientists	WS41	LT	N11 N12 N25	
VT_01-RS01-008	Researchers & scientists	WS41	LT	N10 N11 N12	
VT_01-RS01-009	Researchers & scientists	WS41	LT	N04 N12 N24 N26	
VT_01-RS01-010	Researchers & scientists	WS41	LT	N02 N26	
VT_02-RS02-001	Researchers & scientists	WS38	LT	N02 N12 N16	
VT_02-RS02-002	Researchers & scientists	WS38	LT	N02 N04 N19 N22	
VT_02-RS02-003	Researchers & scientists	WS38	LT	N11	
VT_02-RS02-004	Researchers & scientists	WS38	LT	N11 N13 N26 N28	
VT_02-RS02-005	Researchers & scientists	WS38	LT	N12 N13 N18 N20 N21 N22	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
VT_02-RS02-006	Researchers & scientists	WS38	LT	N01 N18 N21 N23	
VT_02-RS02-007	Researchers & scientists	WS38	LT	N10 N12	
VT_02-RS02-008	Researchers & scientists	WS38	LT		
VT_02-RS02-009	Researchers & scientists	WS38	LT	N11	
VT_02-RS02-010	Researchers & scientists	WS38	LT	N08 N20 N24	
CPN_03-SH09-003	Researchers & scientists	WS17	RS	N11 N16	
CSZ_CS4H_051	Researchers & scientists	WS02	CH	N11 N24	INFERRED
CSZ_CS4H_037	Researchers & scientists	WS02	CH	N08	INFERRED
ECSA_CCC_017	Researchers & scientists	WS14	DE	N10 N11 N24	INFERRED
OeAD_01_035	Researchers & scientists	WS26	AT	N06 N10 N16 N18	
IBE_SW_045	Researchers & scientists	WS01	ES	N10	
CPN_04-SH09-006	Researchers & scientists	WS18	RS	N01 N14 N05	
IBE_CS4H_18	Researchers & scientists	WS02	CH	N16 N21	
IBE_OQ_08	Researchers & scientists	SRC-OQ	ES	N08 N10 N14	
ECSA_CCC_001	Technology providers	WS14	DE	N05 N14 N25	INFERRED



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
ECSA_CCC_002	Technology providers	WS14	DE	N11 N19	INFERRED
ECSA_CCC_003	Technology providers	WS14	DE	N10	INFERRED
ECSA_CCC_004	Technology providers	WS14	DE	N11	INFERRED
ECSA_FSB_003	Technology providers	WS11	DE	N02 N22	INFERRED
ECSA_FSB_004	Technology providers	WS11	DE	N08 N24	INFERRED
ECSA_FSB_007	Technology providers	WS11	DE	N12	INFERRED
ECSA_FSB_009	Technology providers	WS11	DE	N14 N15	INFERRED
ECSA_FSB_010	Technology providers	WS11	DE	N05 N06 N07 N14	INFERRED
ECSA_FSB_011	Technology providers	WS11	DE	N08 N10 N14 N15 N22 N27	INFERRED
ECSA_FSB_012	Technology providers	WS11	DE	N05 N10 N15	INFERRED
ECSA_NGO_019	Technology providers	WS12	EU/online	N02 N24	INFERRED
ECSA_OCP_027	Technology providers	WS22	EU	N14 N15	INFERRED
IBE_CAPS_09	Technology providers	WS03	ES	N14	
IBE_CAPS_10	Technology providers	WS03	ES	N04 N05 N07 N08 N10 N11	
IBE_OQ_05	Technology providers	SRC-OQ	ES	N06 N10 N12	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
IBE_OQ_09	Technology providers	SRC-OQ	ES	N11	
IBE_OSF_04	Technology providers	WS13	TZ	N12	
IBE_OSF_07	Technology providers	WS13	TZ	N14 N10	
IBE_SW_020	Technology providers	WS01	ES	N10 N14 N24 N05	
IBE_SW_043	Technology providers	WS01	ES	N05 N14 N22	
IBE_SW_067	Technology providers	WS01	ES	N05 N07 N15	
IBE_SW_074	Technology providers	WS01	ES	N05 N14	
IBE_SW_093	Technology providers	WS01	ES	N04 N16	
IBE_SW_095	Technology providers	WS01	ES	N19 N23 N24 N25	
IBE_SW_097	Technology providers	WS01	ES	N10 N13	
IBE_CAPS_07	CS practitioner	WS03	ES	N05 N10 N11 N12 N13 N14	
IBE_OQ_06	Citizens	SRC-OQ	ES	N02 N23 N24	
IBE_CS4H_02	Citizens	WS02	CH	N12	
CPN_01-SH09-017	Citizens	WS15	RS	N16	
CPN_04-SH09-002	Citizens	WS18	RS	N16 N29 N12	
OeAD_01_052	Citizens	WS28	AT	N19 N20	



Story ID	SH group	Workshop	Workshop host country	Need clusters	Flags
IBE_SW_024	Citizens	WS01	ES	N14 N24 N08	
CPN_04-SH09-003	Citizens	WS18	RS	N02 N26	

Annex B — Needs frequency across stakeholder groups

Total number of in-scope stakeholder user stories mentioning each need (across the eight stakeholder groups). Corrected June 2026 labelling.

Table 8. Needs frequency across stakeholder groups.

Need ID	Need_name	Definition	Number of mentions
N01	Project discovery and matchmaking	A single place to find ongoing CS projects, events and calls, and to match volunteers, schools and researchers to projects relevant to them.	44
N02	Networking and collaboration spaces	Spaces and mechanisms to connect coordinators, researchers, volunteers and organisations across projects, disciplines and countries.	87
N03	Low-barrier, accessible participation	Participation paths that work regardless of language, disability, age, digital skills or location.	47
N04	Data quality control and validation	Quality assurance, validation and calibration pipelines so citizen-generated data can be trusted and reused by science and policy.	41
N05	Shared data and metadata standards	Common data/metadata standards and standardisation support enabling cross-project and cross-domain reuse.	49
N06	Trust, transparency and provenance	Visibility of where data goes, who uses it and how decisions are made; provenance records that build mutual trust.	31
N07	Data ownership, privacy and consent	Clear rules on who owns contributed data, privacy protection, consent management and handling of sensitive data.	27
N08	Open Science, FAIR and CARE compliance	FAIR/CARE-aligned, openly licensed data, software and outputs as the default mode of operation.	47



N09	Legal clarity and digital sovereignty	Legal certainty for data use across borders and public/European control over infrastructure and data.	14
N10	Shared digital infrastructure and hosting	Common hosting, storage, repositories and computing so projects do not have to build and maintain their own stack.	106
N11	Data collection and crowdsourcing tools	Mobile/field data-collection tools, crowdsourcing workflows and sensor support for contributors.	66
N12	Analysis, visualisation and decision support	Online analysis and visualisation of project data, including AI-assisted tooling and outputs usable for decision-making.	68
N13	Usability and user-centred design	Interfaces designed for non-experts, with workflows that fit how volunteers actually work.	23
N14	Interoperability and platform integration	Connecting existing CS platforms, apps and repositories through APIs and shared interfaces rather than replacing them.	52
N15	Federated, modular and secure architecture	A federated/modular technical design with shared identity and access management, security and reliability.	21
N28	Scalability and performance	The infrastructure must scale across users, data volumes, computation and geography.	13
N16	Training materials and documentation	Ready-to-use training, manuals, templates and documentation for participants, teachers and coordinators.	60
N17	Support services and expertise access	Helpdesk-style support, peer-to-peer learning, expert/organisation databases and proposal support.	19
N18	Scientific literacy and public engagement	Outreach, literacy-building and engagement formats that bring new audiences into citizen science.	45
N29	Shared resource and materials library	A curated library of reusable resources — protocols, worksheets, equipment guides, best-practice examples — that projects and citizens can draw on.	43
N19	Recognition and credit for contributions	Acknowledgement, certification and credit mechanisms for citizen contributions, including non-institutional expertise.	24
N20	Feedback and communication of results	Closing the loop: participants see what happened with their data and what the project achieved.	30
N21	Volunteer recruitment and retention	Sustainable recruitment of new participants and strategies to keep them engaged over years.	11
N22	Long-term funding and institutional support	Funding models and durable institutional backing so projects and platforms survive beyond project grants.	41



N23	Participatory and equitable governance	Citizens and stakeholders represented in decision-making, with co-creation and equitable participation protocols.	43
N24	A public European resource against fragmentation	RIECS as a public, Europe-wide resource that connects rather than duplicates the fragmented CS landscape.	37
N25	Policy readiness and evidence pipelines	Making citizen-generated evidence usable by policy-makers: quality seals, official-statistics integration, policy interfaces.	38
N26	Impact assessment and valuation	Methods and indicators to assess and demonstrate the scientific and societal impact of citizen science.	37
N27	Cross-domain and transdisciplinary research	Linking datasets, methods and communities across domains and disciplines.	24
N30	AI transparency/algorithm accountability	Support for embedding recognised scientific standards — including reproducibility, peer review and disciplinary rigour — into citizen science practice, so that CS outputs are accepted as legitimate contributions to knowledge.	4
N31	Career recognition for researchers	Formal recognition of citizen science contributions within academic evaluation frameworks, including publication pathways, funding criteria and professional development systems, so that engaging in CS does not disadvantage researchers' careers.	1
N32	Feedback mechanism from policy, how CS data influenced policy	A return channel informing citizen contributors when and how their data has shaped a policy decision, regulatory action or official reporting process, closing the loop between scientific contribution and societal outcome.	0
N33	Scientific principles	Support for embedding recognised scientific standards — including reproducibility, peer review and disciplinary rigour — into citizen science practice, so that CS outputs are accepted as legitimate contributions to knowledge.	3
N34	Physical infrastructures	Access to shared physical resources such as laboratory spaces, field equipment, sensors and hardware that participants and projects can borrow or use without needing to own or maintain them independently.	5
N35	Quick availability	Resources, tools, support and data that can be accessed immediately/as quickly as possible when needed, without lengthy application processes, waiting periods or technical barriers, so that participants and projects can act on opportunities in real time.	2
N36	Data storage	Secure, reliable and long-term storage of project data in a trusted environment, ensuring that citizen-generated	3



		datasets remain accessible, preserved and reusable beyond the lifetime of individual projects.	
N37	Ethics framework / guidelines	Practical guidance, templates and support for implementing ethical principles in citizen science projects, covering informed consent, participant rights, responsible data use and compliance with relevant regulations.	5

Annex C — The RIECS labelbook

The consortium labelbook as revised on 28 May 2026: 19 label groups (17 thematic content groups and two structural facets) and 166 sublabels. Source: 20260528_labelbook_revised.xlsx; full per-sublabel descriptions are held in that file.

Table 9. The RIECS labelbook.

Label group	Type	Sublabels
Architecture & Modularity	Thematic	Interoperability; Flexibility & Modular Design; Distributed & Federated Design; Architecture interfaces & Middleware; Security; Reliability; Platform integration; Identity and Access Management (IAM / AAI)
Scalability & Performance	Thematic	User Scalability; Data Scalability; Computational Scalability; Geographic Scalability; Performance Optimization
Data and Software Standards	Thematic	Community standards; Data & Metadata standards; Open-source software; Data standardization; API and service integration; Legacy system integration
Infrastructure and connectivity	Thematic	Digital Infrastructures; Physical Infrastructures; Network connectivity; Computing & Cloud infrastructures; Data & Server infrastructure; Citizens' resources; Independent project hosting; Real-time community reporting; Collaborative innovation spaces; Participatory prototyping; Repository infrastructure; Participatory data ecosystems; Community-centered infrastructure; Audio data infrastructures
Hardware and sensor technology	Thematic	Sensor accuracy, reliability and calibration; Environmental durability; Hardware Failures; Device compatibility; Installation difficulties; Hardware; Sensors
Software and application development	Thematic	Cross-platform development; Application stability; Feature limitations
Data quality and management	Thematic	Data quality control; Data completeness; Data processing; Metadata management; validation and calibration procedures
Human capacity and training	Thematic	Technical skills requirements; User support needs; Enhanced learning / interactive engagement; Training & Documentation; expert database; organisation database; Peer-to-peer learning; Scientific proposal support



Workflows and user experience	Thematic	User interface & usability; Collaboration; Project discovery; Resource collection; Onsite data collection; Crowdsourcing; Online data analysis and visualization; Networking; decision support; Workflow management; Low-barrier participation; Participant onboarding; User-centered design; Participation metrics; Feedback loops & mutual learning
To Be Classified	Thematic	CS Insight platform; Impact; Policy readiness; Geospatial mapping; Platform independence; Impact indicators for project assessment; Impact assessment methods
Governance	Thematic	financial sustainability; Cost & Resource Scalability; legal frameworks; funding models; long-term institutional support; representation in decision making; public resource; Platform misuse policy; Technology evolution; Geographical distribution; Fragmentation, superfluous redundancy; Digital sovereignty; tools for transparency; Participation governance; Stakeholder engagement; Citizen science mainstreaming; Equitable participation protocols; Participatory infrastructure monitoring; Public value recognition; Co-creation; Sustainable participant recruitment; Accessible participation support; Official statistics integration; Non-institutional expertise recognition; Volunteer retention strategies; Shared terminology frameworks; project funding; Cross-framework alignment; National support nodes
Data governance	Thematic	Data ownership rights; Data Privacy; Data Consent; Sensitive Data; Data provenance
Inclusivity and participation	Thematic	barriers to entry to CS; accessibility; multi-language support; outreach programs; scientific literacy; digital divide; Participant research agency
Scientific principles and practices	Thematic	Valuations of citizen science; Transdisciplinarity and interdisciplinarity; Communication; Open Science; recognition mechanisms; TRUST; FAIR; CARE; Public engagement; Collaborative calibration and validation; Qualitative-quantitative integration
Domain focus	Thematic	Health data; Climate Change; Environment; Biodiversity; Earth Observation; Social Sciences and Humanities; Technology; Other domain; Domain neutral
Ethics	Thematic	AI ethics framework; Ethics Committee Support; Ethical Sandbox
AI and advanced analytics	Thematic	Machine learning implementation; Process automation; AI data validation support; AI assisted species or object identification; Automated Decision support system; Human in the loop review; Capacity building for AI use
Target user in story	Facet	Citizen (scientist); Citizen science practitioner; Researchers & scientists; CS Networks; NGOs; Technology providers; Companies; Policy Makers; Other EU RIs; Primary and Secondary Education; Post-secondary Education
User Story Concept	Facet	Challenge; Solution; Technical requirement; Resource; Service; Functionality

Source: 20260528_labelbook_revised.xlsx (Revised Labelbook + New Labels sheets). Generated 2026



Annex D — Labelbook crosswalk

The table below is a crosswalk between the labelbook and the nine needs themes for the stakeholder strand: the labels that most co-occur with each theme and the number of in-scope D4.3 stories per theme. [AI-DRAFT]

Table 10. Labelbook-to-needs crosswalk.

Theme	Needs in theme	Source labels (group – sublabel → theme)	Stakeholder stories
Tools, platforms and infrastructure	N10 Shared digital infrastructure and hosting; N11 Data collection and crowdsourcing tools; N12 Analysis, visualisation and decision support; N13 Usability and user-centred design; N14 Interoperability and platform integration; N15 Federated, modular and secure architecture; N28 Scalability and performance; N34 Physical infrastructures; N35 Quick availability; N36 Data storage	Infrastructure and connectivity – Digital Infrastructures (93); Workflows and user experience – Crowdsourcing (69); Workflows and user experience – Online data analysis and visualization (41); Architecture & Modularity – Interoperability (41); Infrastructure and connectivity – Data & Server infrastructure (28)	257
Access and discoverability	N01 Project discovery and matchmaking; N02 Networking and collaboration spaces; N03 Low-barrier, accessible participation	Workflows and user experience – Collaboration (66); Workflows and user experience – Networking (62); Workflows and user experience – Project discovery (35); Human capacity and training – Training & Documentation (34); Inclusivity and participation – accessibility (30)	173
Training and capacity building	N16 Training materials and documentation; N17 Support services and expertise access; N18 Scientific literacy and public engagement; N29 Shared resource and materials library	Human capacity and training – Training & Documentation (65); Workflows and user experience – Resource collection (43); Workflows and user experience – Networking (32); Workflows and user experience – Collaboration (31); Workflows and user experience – Project discovery (23)	150
Data quality and trust	N04 Data quality control and validation; N05 Shared data and metadata standards; N06 Trust, transparency and provenance	Data and Software Standards – Data & Metadata standards (37); Architecture & Modularity – Interoperability (23); Data and Software Standards – Data standardization (23); Data quality and management – Data quality control (23); Scientific principles and practices – TRUST (22)	119
Governance and sustainability	N22 Long-term funding and institutional support; N23 Participatory and equitable	Governance – long-term institutional support (30); Workflows and user experience – Networking (24); Workflows and user	115



	governance; N24 A public European resource against fragmentation	experience – Collaboration (23); Infrastructure and connectivity – Digital Infrastructures (22); Human capacity and training – Training & Documentation (19)	
Data governance and compliance	N07 Data ownership, privacy and consent; N08 Open Science, FAIR and CARE compliance; N09 Legal clarity and digital sovereignty; N30 AI transparency/algorithm accountability; N37 Ethics framework / guidelines	Scientific principles and practices – FAIR (30); Scientific principles and practices – Open Science (19); Data and Software Standards – Data & Metadata standards (15); Data governance – Data Privacy (15); Data governance – Data ownership rights (14)	84
Policy and impact	N25 Policy readiness and evidence pipelines; N26 Impact assessment and valuation; N32 Feedback mechanism from policy, how CS data influenced policy	Scientific principles and practices – Valuations of citizen science (17); Workflows and user experience – Online data analysis and visualization (11); Scientific principles and practices – Communication (10); Infrastructure and connectivity – Digital Infrastructures (10); Human capacity and training – Training & Documentation (9)	77
Recognition and engagement	N19 Recognition and credit for contributions; N20 Feedback and communication of results; N21 Volunteer recruitment and retention; N31 Career recognition for researchers	Scientific principles and practices – Communication (30); Scientific principles and practices – recognition mechanisms (17); Workflows and user experience – Collaboration (14); Governance – Public value recognition (13); Governance – Sustainable participant recruitment (9)	76
Scientific practice	N27 Cross-domain and transdisciplinary research; N33 Scientific principles	Scientific principles and practices – Transdisciplinarity and interdisciplinarity (20); Infrastructure and connectivity – Digital Infrastructures (8); Human capacity and training – Training & Documentation (5); Data quality and management – validation and calibration procedures (5); Workflows and user experience – Collaboration (5)	31

Annex E — Frequency of need mentions by stakeholder group

Table 11. Frequency of need mentions by stakeholder group.

Theme	ID	Need	Re s	CSne t	NG O	Tec h	Co	Ed u	Po l	RI	Ot h	Tota l	Pri o
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Access and discoverability	N01	Project discovery and matchmaking	17	6	3	0	3	13	2	0	0	44	M
Access and discoverability	N02	Networking and collaboration spaces	40	5	16	2	2	10	10	0	2	87	H
Access and discoverability	N03	Low-barrier, accessible participation	13	4	8	0	0	17	4	1	0	47	H
Data quality and trust	N04	Data quality control and validation	19	1	6	2	4	0	7	2	0	41	M
Data quality and trust	N05	Shared data and metadata standards	22	1	3	8	5	1	4	4	1	49	M
Data quality and trust	N06	Trust, transparency and provenance	9	1	12	2	2	0	5	0	0	31	M
Data governance and compliance	N07	Data ownership, privacy and consent	11	0	7	3	2	2	1	1	0	27	M
Data governance and compliance	N08	Open Science, FAIR and CARE compliance	20	1	12	3	3	3	2	2	1	47	M
Data governance and compliance	N09	Legal clarity and digital sovereignty	3	1	7	0	2	0	1	0	0	14	L
Data governance and compliance	N30	AI transparency/algo rithm accountability	1	0	0	2	0	0	0	1	0	4	L
Data governance and compliance	N37	Ethics framework / guidelines	4	0	0	0	1	0	0	0	0	5	L



Tools, platforms and infrastructure	N10	Shared digital infrastructure and hosting	46	7	17	8	3	10	9	5	1	106	H
Tools, platforms and infrastructure	N11	Data collection and crowdsourcing tools	34	1	7	4	4	7	6	2	1	66	H
Tools, platforms and infrastructure	N12	Analysis, visualisation and decision support	28	1	7	3	6	4	12	4	3	68	H
Tools, platforms and infrastructure	N13	Usability and user-centred design	8	1	5	1	3	2	1	1	1	23	M
Tools, platforms and infrastructure	N14	Interoperability and platform integration	9	5	7	10	5	4	6	4	2	52	M
Tools, platforms and infrastructure	N15	Federated, modular and secure architecture	5	2	5	5	3	0	1	0	0	21	L
Tools, platforms and infrastructure	N28	Scalability and performance	8	1	0	0	0	0	3	1	0	13	L
Tools, platforms and infrastructure	N34	Physical infrastructures	0	0	1	4	0	0	0	0	0	5	L
Tools, platforms and infrastructure	N35	Quick availability	0	0	0	0	0	2	0	0	0	2	L



infrastructure													
Tools, platforms and infrastructure	N36	Data storage	0	2	0	0	1	0	0	0	0	3	L
Training and capacity building	N16	Training materials and documentation	24	4	6	1	1	19	2	1	2	60	H
Training and capacity building	N17	Support services and expertise access	7	1	6	0	1	3	1	0	0	19	M
Training and capacity building	N18	Scientific literacy and public engagement	24	2	4	0	0	11	4	0	0	45	M
Training and capacity building	N29	Shared resource and materials library	22	5	4	0	2	7	1	1	1	43	M
Recognition and engagement	N19	Recognition and credit for contributions	6	1	4	2	0	7	3	0	1	24	M
Recognition and engagement	N20	Feedback and communication of results	13	3	5	0	1	4	3	0	1	30	M
Recognition and engagement	N21	Volunteer recruitment and retention	8	0	3	0	0	0	0	0	0	11	L
Recognition and engagement	N31	Career recognition for researchers	1	0	0	0	0	0	0	0	0	1	L
Governance and sustainability	N22	Long-term funding and institutional support	7	2	12	3	2	6	7	2	0	41	M
Governance and sustainability	N23	Participatory and equitable governance	12	0	10	1	1	6	11	1	1	43	M



Governance and sustainability	N24	A public European resource against fragmentation	10	0	5	4	0	6	8	2	2	37	M
Policy and impact	N25	Policy readiness and evidence pipelines	8	0	6	2	3	3	15	1	0	38	M
Policy and impact	N26	Impact assessment and valuation	12	2	9	0	3	4	6	0	1	37	M
Policy and impact	N32	Feedback mechanism from policy, how CS data influenced policy	0	0	0	0	0	0	0	0	0	0	L
Scientific practice	N27	Cross-domain and transdisciplinary research	12	0	6	1	3	1	1	0	0	24	M
Scientific practice	N33	Scientific principles	2	0	0	0	0	0	0	0	1	3	L
		TOTAL stories / group	171	20	65	26	22	51	40	11	9	415	

Number of in-scope stakeholder user stories (n=415, corrected June 2026 labelling) mentioning each need, broken down by stakeholder group. Group abbreviations: Res = Researchers & scientists; CSnet = CS networks; NGO = NGOs; Tech = Technology providers; Co = Companies; Edu = Education systems; Pol = Policy makers; RI = Research infrastructures; Oth = Other.

