



Enforce
Empowering Citizens for Environmental Action

User uptake strategy and action plan - Initial

WP: WP5 User uptake & capacity building and policy recommendation

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Author(s): Francesca Piatto, Weronika Borejko, Leon Wiesner (EARSC)

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Author(s)	Francesca Piatto, Weronika Borejko, Leon Wiesner (EARSC)
Primary Contact and Email	Francesca.piatto@earsc.org
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Deliverable Abstract
The ENFORCE project strengthens the implementation and enforcement of EU environmental law by fostering cooperation, knowledge exchange, and capacity building among national and regional authorities. Through enhanced dialogue between competent authorities, stakeholders, and experts, the project seeks to improve the consistency, effectiveness, and overall governance of environmental compliance across Europe. This User Uptake Strategy (Action Plan 1) defines the approach for promoting the adoption and sustained use of ENFORCE tools, methodologies, and outputs, while outlining a framework for expanding and consolidating the project's user and stakeholder communities. The strategy introduces a multi-community engagement model that distinguishes between primary users, those directly involved in case study development and co-design, and secondary users operating in related or adjacent domains. Using a "nearest neighbour" approach, the methodology identifies opportunities for both deepening engagement within existing thematic areas and diversifying outreach to new stakeholder groups or policy domains. Insights were gathered through a user uptake workshop, targeted consultations with consortium members and case study representatives, as well as inputs from WP4 and networking and exploitation activities under WP6. The resulting analysis informs a structured Action Plan outlining concrete measures to be implemented throughout the project to strengthen user uptake, community building, and long-term impact. A refined and final version of this strategy will be delivered at the project's conclusion (M48).
Keywords
User uptake, taxonomy, ENFORCE Case studies, users, communities, user expansion, user diversification, stakeholders
Project Summary
Assuring environmental compliance requires a strong network of stakeholders, from citizens and researchers to governments and environmental organisations. Through creative toolkits and protocols, ENFORCE aims to tackle the frequent mismatch between the environmental data gathered by citizens and what authorities require for enforcement purposes. The project will address the challenges in data reporting coming from both the citizens side and the authorities' side, in order for the obtained data to be usable for environmental enforcement. In this line, ENFORCE introduces the concept of Data Readiness Level (DRL) to assess the maturity of data to be used as evidence in environmental compliance cases. In addition, the project will capitalize on the use of geo-spatial intelligence and AI-enhanced tools, strengthening their capacities, promoting good practices and preparing an inventory on geo-spatial intelligence and AI use. The proposed solution will ensure alignment with the Green Deal Data Space to ensure trustworthy data exchange among the relevant stakeholders. The project encompasses 8 case studies that involve all relevant actors including grassroots organizations, local and regional authorities and a diverse group of experienced researchers forming a scientifically robust interdisciplinary team. The lessons learnt and evaluation results from the case studies will feed the replication guidelines that will be promoted through the ENFORCE capacity building programme and associated policy recommendations to create a multiplier effect for the adoption of citizen science data to support environmental compliance.

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Abbreviations	Meaning
ACA	Agència Catalana de l'Aigua (Catalan Water Agency)
ARC	Agència de Residus de Catalunya (Waste Agency of Catalonia)
ARPA	Agenzia Regionale Protezione Ambientale (Regional Agency for Environmental Protection)
ASPB	Agència de Salut Pública de Barcelona (Public Health Agency of Barcelona)
BCASA	Barcelona Cicle de l'Aigua, S.A. (Barcelona Water Cycle, S.A.)
BIM Brussels	Brussels Institute for Environmental Management
CoPs	Communities of Practice
CS	Citizen science
CSIC	Consejo Superior de Investigaciones Científicas (Spanish National Research Council)
DG INTPA	European Commission Directorate-General for International Partnerships
DG DEFIS	European Commission Directorate-General for Defence Industry and Space
DG ENV	Directorate-General for Environment
DG CLIMA	Directorate-General for Climate Action
DSS	Decision Support System
EO	Earth observation
FEDCAS	Federació Catalana d'Activitats Subaquàtiques (Catalan Federation of Underwater Activities)
GEO	Group of Earth Observations
ICATMAR	Institut Català de Recerca per a la Governança del Mar (Catalan Institute of Research for the Governance of the Sea)
ICM-CSIC	Institut de Ciències del Mar - Consejo Superior de Investigaciones Científicas (Consejo Superior de Investigaciones Científicas, or Spanish National Research Council)
INDCS	Institutul Național de Cercetare-Dezvoltare în Silvicultură "Marin Drăcea" (The "Marin Drăcea" National Research-Development Institute in Silviculture / Forestry)
KER	Key Exploitable Result
KIS vzw	Kenniscentrum Innovatieve Saneringstechnieken (Knowledge Centre for Innovative Remediation Techniques)
LVVN	Landbouw, Visserij, Voedselzekerheid en Natuur (Agriculture, Fisheries, Food Security and Nature)

NGO	Non-Government Organisation
OVAM	Openbare Vlaamse Afvalstoffenmaatschappij (Public Waste Agency of Flanders)
RWS	Rijkswaterstaat (Directorate-General for Public Works and Water Management)
SCRAP	Sistema Colectivo de Responsabilidad Ampliada del Productor (Collective System of Extended Producer Responsibility)
SME	Small Medium Enterprise
SPW Agriculture	Service Public de Wallonie (SPW) Agriculture, Ressources naturelles et Environnement (Public Service of Wallonia - Agriculture, Natural Resources, and Environment)
UB	Universitat de Barcelona (University of Barcelona)
UN	United Nations
UnitBV	Trasilvania University Brasov
VMM	Vlaamse Milieumaatschappij (Flemish Environment Agency)
WWF	World Wildlife Fund

Table 1. List of Abbreviations

Executive Summary

The ENFORCE project aims to strengthen the implementation and enforcement of EU environmental law through enhanced cooperation, knowledge exchange, and capacity building among national and regional authorities. By fostering dialogue between competent authorities, stakeholders, and experts, ENFORCE contributes to improving the effectiveness and consistency of environmental compliance and governance across Europe.

Through the first user uptake workshop¹, targeted consultations with consortium partners and case study representatives, inputs gathered from WP4, and networking and exploitation activities conducted under WP6, each case study is assessed to identify current and potential user communities. These underpin this User Uptake Strategy (Action Plan 1) which:

- i) outlines the approach to facilitate the adoption and utilisation of the ENFORCE tools, methodologies, and outputs among various target groups, and
- ii) presents the methodology for expanding and consolidating the project's user and stakeholder communities.

Building on this rationale, the strategy first identifies, then characterises multiple user communities. These communities are defined as **primary communities** (existing users and partners directly involved in project case study (CS) service development activities and co-design actions) and **secondary communities** (other actors in the same or adjacent domains whose needs could be addressed by the ENFORCE Case studies outcomes).

Once these communities are defined, findings are analysed through two complementary dimensions. User **Expansion** refers to deeper engagement within existing thematic areas, while User Diversification refers to outreach to new stakeholder groups or policy domains. These dimensions provide a framework for understanding how each case study can both consolidate its core (primary) community and extend its reach toward secondary communities. Together, they guide the identification of opportunities for strengthening user uptake and broadening the project's impact.

In the context of ENFORCE, at a high level, primary users include policy makers and public administrations working in environmental management, waste management, agriculture, and forestry, as well as civil society organisations and public safety actors such as firefighters and police officers. Secondary users include similar organisations operating across wider geographical areas, along with educational institutions and business sectors including forestry owners, aquaculture companies, and farmers.

These insights directly inform the advancement of KER6 – User Uptake, Capacity Building and Policy Recommendations, which integrates co-creation practices, living labs, and exploitation activities.

This strategy sets out the next steps required to strengthen user engagement and adoption of ENFORCE services. These include deepening collaboration with case study leaders, refining secondary user communities, defining target levels of service uptake, organising seven further user uptake workshops, and

¹ The first user uptake workshop took part during the ENFORCE General Assembly, 10th October 2025 with the goal to gather the first inputs in terms of primary communities from the Case studies.

developing eight user uptake guidelines to guide external users through the solution testing process. These activities will support the expansion of ENFORCE solutions across markets and regions through to Month 48.

The strategy described is then applied in the “Action Plan” section, which details a set of concrete actions to be implemented throughout the project. The final version of this strategy will be published at the end of the project (M48).

1.0 Introduction

The overall aim of WP5 is the promotion of the [ENFORCE case study services](#) at national and international scale, amongst key user communities, thereby growing the pool of candidates for user uptake, making the ENFORCE case study services more globally accessible, and increasing the overall uptake of the project outputs.

This report outlines the strategy for engaging different user communities and the actions designed to support it. It provides background on user-uptake efforts, describing the overall approach to promoting and aligning Earth Observation (EO) assets and highlighting the role of the Copernicus services. In particular, it emphasises the importance of the EU’s Copernicus free and open data policy in enabling and strengthening these efforts.

Based on this rationale, the current strategy described in this document aims to increase the pool of potential users through the promotion of each ENFORCE case study services at the national, regional, local, international and ultimately at sectoral levels. This is to be achieved through a three-step approach:

- expanding the networks which have already been developed around the existing Case studies (CS) into nearby geographies.
- sectoral extension to communities closely aligned with existing user communities; and
- extension through national / international initiatives / programmes.

2.0 Methodology

The User Uptake strategy will be based on the Copernicus strategy², including a range of stakeholders identified at the consortium level (institutional, research & academia, private), useful initiatives that can be leveraged by this user uptake strategy, i.e., including the Group of Earth Observations (GEO), Directorate-General for Defence Industry and Space (DG DEFIS) -funded Copernicus building skills actions, etc.

² Copernicus. (2024, May). *Observer FPCup: Seven years strengthening Copernicus uptake across Europe and beyond*. Copernicus. <https://www.copernicus.eu/en/news/news/observer-fpcup-seven-years-strengthening-copernicus-uptake-across-europe-and-beyond>. Even if EO is not included in this project, EARSC has the mandate to promote the usage of the EO, and this will be done through the definition and application of the Copernicus uptake strategy.

The methodology of ENFORCE builds on the concept of the “user communities”³ which is explored and a methodology is presented to grow engagement from one to the other through the ‘nearest neighbour’ approach⁴. This nearest neighbour approach, based on the taxonomy approach will be explained in chapter 3.

To provide clarity, below we provide the potential definition of “User Communities” in the Copernicus Strategy:

Broad Interpretation of Users⁵

- In the 2016 Copernicus User Uptake foundational report, “user communities” essentially refers to both intermediate users and end users.
- Intermediate users are actors who take Copernicus data, add value (processing, analysis), and provide downstream services (e.g., geo-information companies, public service providers).
- End users are those who consume the information produced by intermediates: public institutions, policymakers, researchers, private sector users, civil society, etc.

Ecosystem Perspective⁵

- The strategy emphasizes creating an ecosystem of actors: not just data providers, but also downstream service providers and user communities who actually apply the data.
- This supports “last-mile” uptake — i.e., making data usable and actionable by non-expert end users.

Audience Segmentation (2023–2028 Strategy, EEA)⁶

- In the more recent “Communication & User Uptake Strategy 2023–2028” (EEA, Annex A), user communities are broken into five audience segments: general public; decision-makers; existing and

³ User communities in the Copernicus User Uptake Strategy are groups of actors (both intermediate and final) who engage with Copernicus data and services, including: 1) Downstream service providers (intermediate users) who process Copernicus data into value-added products. 2) End users such as public authorities, businesses, researchers, NGOs, and decision-makers who use those processed products. 3) Multipliers and awareness stakeholders (media, NGO networks). 4) Policy and institutional communities, often structured at national level via NCPs, who integrate Copernicus into their workflows.

⁴ Piatto. F. (2023) e-shape, User Uptake Strategy (a)

⁵ Copernicus. (2017, July). *Fostering the uptake of Copernicus and space applications*. Copernicus. https://www.copernicus.eu/sites/default/files/Fostering_the_uptake_of_Copernicus_and_Space_applications_July2017.pdf

⁶ European Commission. (2024). *Communication and User Uptake Strategy For COPERNICUS at the EEA 2023-2028*. https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/tender-details/docs/81f1f6fd-fd29-42bc-b841-6bade2d0fb53-CN/EEA.DIS.R0.24.007_Annex%206%20to%20TS_COM%20and%20UU%20Strategy_V1.pdf

potential users (e.g., industry, researchers, NGOs); multipliers (media, NGOs); and in-situ data stakeholders.

- These segments frame communities not just by their role (end user, intermediary) but also by their engagement journey (from unaware to active user): part of the strategy is to “facilitate the journey ... from uninformed/unaware to active users.”

National Collaboration / Policy Communities

- The strategy also identifies national user communities, particularly through National Collaboration Programmes (NCPs), which are structured networks in Member States to engage policy users, public institutions, and application stakeholders.⁷
- These communities help co-design the uptake of Copernicus data in national policy and operational contexts.

For the purpose of the ENFORCE deliverable, EARSC will refer to primary communities and secondary communities (user expansion vs user diversification) that can integrate typology of stakeholders defined by the Copernicus User Uptake Strategy described above. The goal of the first user uptake workshop on 10 October 2025 during the ENFORCE General Assembly in Crete and associated follow up calls for information, was to identify these communities (see outcomes in Annex). These user communities are defined as:

- primary user communities (user expansion), i.e. existing users of the data products (any type of data but in this case mostly citizen science data) who may be working on Copernicus services, who all can be addressed at co-design actions, that can be addressed at relevant events and be used as an entry point to
- secondary communities (user diversification), i.e. other players in the same sector, and neighbouring sectors that share some of the needs that could be solved by the ENFORCE case studies. These secondary communities are further divided into:
 - “near” geographical, some relevant organisations e.g. existing Copernicus User Uptake, European Commission ([DG ENVE](#), [DG CLIMA](#)...) and ESA promotional programmes, and the recently awarded EU Horizon projects, such as [Valorada](#), [EuroGEOSec](#) and [LandShift](#).
 - “far” geographical which can be developed through existing international networks/initiatives/agendas, such as the UN 2030 and post 2030; network of [GEO](#), DG INTPA fostering international cooperation to engage more with the private sector.

2.1 User Community Landscape

The ENFORCE user uptake strategy supports case studies by expanding their socio-economic benefits into new communities of users and geographies. The user uptake’s primary feature is the interaction with stakeholders at large. This builds on the stakeholder’s continuous liaison that lasts during the project’s lifetime and which is essential to ensure the success of the ENFORCE project engagement with users but also its uptake.

The project defines stakeholders as international bodies, public authorities, community groups, corporates, local health authorities, etc. interested in the outcomes of the project but not necessarily involved in WP4

⁷ European Centre for Medium-Range Weather Forecasts. (2025, July). *National collaboration programmes strengthen engagement through Copernicus*. <https://www.ecmwf.int/sites/default/files/elibrary/072025/81669-national-collaboration-programmes-strengthen-engagement-through-copernicus.pdf>

activity outcomes within the project timeline or after. Users are active stakeholders during but also after the project's lifetime.

This 3-step categorisation of user communities was developed under the e-shape project⁸ and constitutes the base of stakeholders' categorisation for EARSC. In the ENFORCE project, EARSC will use this identification system as an initial base to present to the case studies to the communities that can be of interest to start interacting with and continue the uptake exercise.

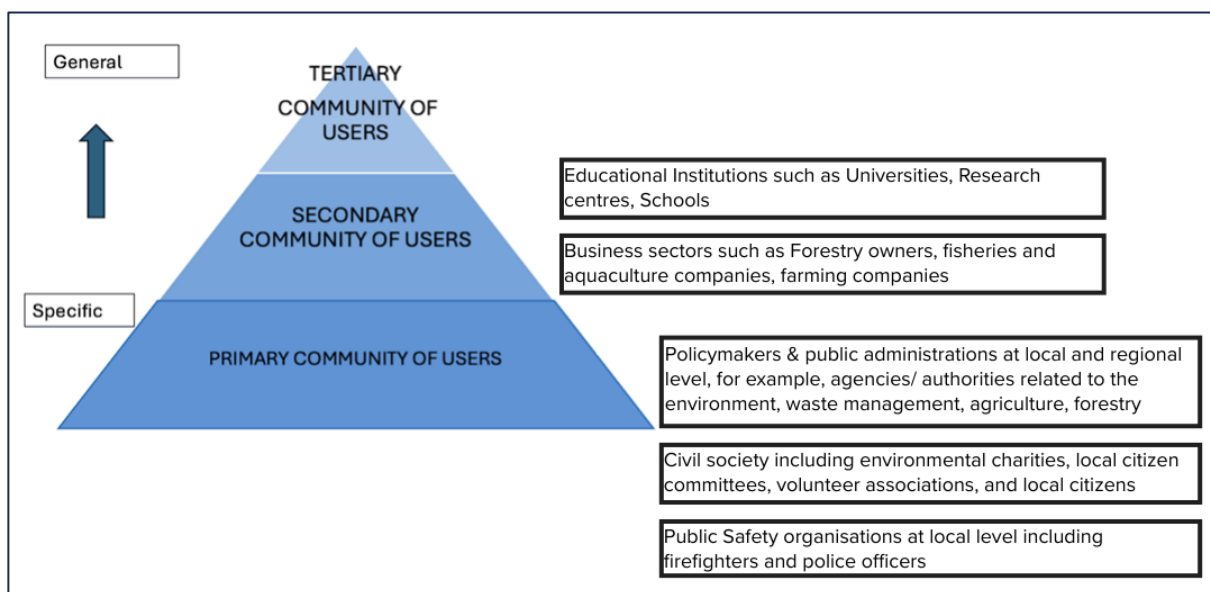


Figure 1 Categorisation of community of users at case study level

The landscape of user communities is based on the development of services from eight pilot CSs, which seek to enable the aggregation of datasets from innovative technologies and citizen science for the purposes of facilitating environmental compliance monitoring activities.

As seen in Figure 1, primary users mainly encompass policymakers on local, regional, state and national level, civil society and public emergency service organisations at local level. Secondary users are mainly educational institutions, and various business sectors, which benefit through novel data insights supporting research and innovation activities, in addition to geographic expansion of primary users within regions beyond case study areas. Within the ENFORCE project, no tertiary users have been identified at this time, but this may change as the project evolves.

2.2 Definition of the Typology of Communities Identified

Different stakeholder groups can bring knowledge and ideas to the different projects' phases. Various types of communities will be engaged within different stages of the ENFORCE project, to promote evidence-based decision-making, knowledge sharing and cross-sectoral collaboration. Table 2 categorises stakeholders by their respective roles and influence. On a high level, important community typologies include:

- **Policy:** Includes EU, national, regional, and local authorities, as well as compliance and enforcement bodies, as they play a central role in shaping and implementing policies.

⁸ e-shape. *User Uptake* supporting pilots to reach the next level.

<https://e-shape.eu/index.php/user-uptake>

- **Research & Academia:** Includes research institutions and academic stakeholders which generate, analyse, and disseminate scientific knowledge.
- **Commercial:** Includes companies, industry associations, and technology providers which can adopt, test, and scale project results.
- **Network Associations:** Includes networks, associations, and collaborative platforms enable knowledge exchange and dissemination.

<i>Stakeholder category</i>	<i>Description of their role</i>
<i>Policy</i>	This includes public policy stakeholders who shape, implement, and oversee environmental, climate, and sustainability policies at European, national, and regional levels. Engagement with these actors ensures that project outputs are aligned with policy priorities, support evidence-based decision-making, and facilitate uptake across governance levels. • European Policy Makers and Institutions: EU-level decision-makers and legislative bodies that set policy agendas, develop regulations, and ensure cross-sectoral compliance. • National and Regional Authorities: Ministries, environmental agencies, and regional administrations responsible for implementing and monitoring policies at national and subnational levels. • Legal, Compliance, and Enforcement Organisations: Judicial bodies, inspectorates, and enforcement networks that oversee regulatory compliance and support the application of environmental laws. • Science Policy Interface Bodies: Advisory boards, competence centres, and technical agencies that provide scientific assessments and expertise to inform evidence-based policymaking. • Policy Coordination and Collaborative Networks: Multi-level and cross-sectoral forums and platforms that facilitate knowledge exchange, harmonisation, and coordinated policy action.
<i>Research and academia</i>	Includes research and academic stakeholders who generate, analyse, and disseminate scientific knowledge, ensuring that project outcomes are

<i>Stakeholder category</i>	<i>Description of their role</i>
	underpinned by robust evidence, innovative methodologies, and cross-disciplinary expertise: • Universities and Academic Institutions: Higher education institutions conducting fundamental and applied research across environmental, climate, and sustainability domains. • Research Consortia and Networks: Collaborative networks of research organisations working on joint projects, data sharing, and cross-disciplinary studies. • Research Infrastructures and Observatories: Facilities, monitoring systems, and data platforms that provide scientific measurements, datasets, and long-term observations. • Scientific Advisory and Expert Bodies: Independent boards, panels, and committees that synthesise research findings to support policy or practice. • Knowledge Transfer and Innovation Hubs: Centres and initiatives that translate research outcomes into practical applications, tools, and policy-relevant recommendations.
<i>Commercial</i>	This category includes commercial stakeholders such as companies, industry associations, and technology providers that can adopt, test, and scale project outcomes, facilitating real-world implementation and uptake across key sectors. • Large Corporations and Industry Leaders: Established companies providing technological solutions, infrastructure, and expertise in sectors such as energy, food, forest and wood processing, water management, fisheries, and digital technologies. • Small and Medium Enterprises (SMEs): Agile businesses that can pilot innovations and contribute specialized services or products in these key sectors. • Technology and Service Providers: Companies offering tools, platforms, and services that enable the practical application of project outputs, including

<i>Stakeholder category</i>	<i>Description of their role</i>
	monitoring, data management, and analytics. Investors and Innovation Hubs: Entities that support scaling, commercialization, and wider market adoption of project results, particularly in sustainable technologies and green solutions.
<i>Network Associations</i>	Includes stakeholder networks, associations, and collaborative platforms that facilitate knowledge exchange, dissemination, and uptake of project outcomes across sectors and regions. Sectoral and Industry Networks: Networks representing key sectors such as energy, food, forestry, water management, fisheries, and digital/smart city technologies, promoting best practice sharing and sector-specific collaboration. Communities of Practice (CoPs): Groups of practitioners and experts who exchange knowledge, lessons learned, and practical experiences to accelerate uptake of project results. Policy and Research Networks: Platforms connecting policy actors, research institutions, and civil society to ensure alignment between innovation, research outputs, and governance frameworks. Regional and Local Networks: Networks of municipalities, regional authorities, and local initiatives supporting dissemination and user engagement at subnational levels. International and Pan-European Associations: Multi-country networks that promote cross-border collaboration, awareness raising, and the replication of project results at a European scale.

Table 2. Typology of Relevant Stakeholders and Their Role

2.3 Example Categories per ENFORCE Case Studies

From the ENFORCE perspective, the user communities to engage with are identified below within Table 3. All ENFORCE case studies deliver tailored services to public authorities, ranging from

local and municipal administrations to regional and national government bodies, mainly focusing on departments dealing with environmental, agricultural, and waste management topics. These organisations benefit from actionable insights, data-driven intelligence, and monitoring tools that support evidence-based decision-making, improve compliance and enforcement, and enhance the effectiveness of policy implementation. Each CS also engages additional stakeholder communities, which vary depending on the specific thematic focus and local context. Foundations and volunteer associations play a key role in 4 of the 8 case studies. Passionate volunteers, including local citizens, drive these communities by contributing valuable insights that enhance the case studies' data collection and analysis. In turn, they benefit from the environmental insights and outcomes generated, which support their personal initiatives to promote civil justice and monitor environmental health (e.g., air quality), ultimately contributing to their own well-being. Emergency service organisations, including local police (e.g., Forest Guard) and firefighters, play a critical role in several case studies. They benefit from these services because the case studies provide actionable intelligence and situational awareness, enabling them to prevent environmental crimes, respond more effectively to emergencies such as wildfires or illegal dumping, and prioritise interventions based on real-time data and risk assessments. This includes farmers operating in terrestrial or marine environments, who benefit from the insights provided by ENFORCE services, allowing them to optimise their land and resource.

<i>Case studies</i>	<i>Users</i>
Case study 1 - Addressing environmental and health challenges in the Valle Galeria in Italy	Users include: Local environment authorities, judicial authorities, local residents, farmers and public emergency service organisations, environmental protection associations
Case study 2 - Enhancing sustainable forest management in Brasov, Romania	Users include: Forest Protection and Environmental Authorities, Research Institutions and Environmental NGOs, Emergency Services organisations
Case study 3 - Preventing land clearing in Crete, Greece	Users include: Local Citizens, civil society organisations, Public regional environment, spatial planning and agriculture administrations
Case study 4 - Safeguarding Barcelona Urban Beaches through citizen engagement in Spain	Users include: Public National, regional, metropolitan and municipal agencies related to waste management and health, SMEs, NGOs, research institutions and civil society
Case study 5 - Mitigating agricultural impacts on water quality in the East Devon Catchment, UK	Users include: Foundations, National Public Environment Agencies, Regional Counties, Research Institutions, National Road Operators
Case study 6 - Combating waste dumping and uncontrolled fires in the Puglia Region, Italy	Users include: Local police, waste collection companies, farming companies, volunteer landcare associations, fire fighters, citizens, volunteer associations, research institutions
Case study 7 - Enhancing biodiversity and ecosystem services in Amsterdam, Netherlands	Users include: Fishers and fishing companies, aquaculture farmers, Transport shipping companies, oil and gas companies, energy companies, foundations, Nature protection

	organisations, Public Agriculture, Fisheries and Nature Organisations
Case study 8 - Improving soil remediation in Flanders, Belgium	Users include: Citizens, public waste management and environment agencies, farmers and farmer associations, environmental NGOs, organisations producing chemical waste, not-for-profit knowledge centers

Table 3. Types of User Communities of Relevance to ENFORCE Case studies

This Chapter highlighted the user landscape and user communities of the ENFORCE case study services; it provided the definitions of the primary and secondary community of users from an ENFORCE perspective and overall, the stakeholder community's typology are policy, research/academy, commercial, network and associations. Also, some initial examples of communities' categories that each ENFORCE case study shall interact with.

3.0 User Uptake Strategy and ENFORCE Strategy

Based on the concept of user communities at the core of the methodology for the User Uptake strategy, this chapter describes the taxonomic approach used to identify these user communities that may overlap across several ENFORCE case study services. Chapter 3 and subchapter 3.1 present the ENFORCE User Uptake Strategy, which builds on the taxonomy approach to identify primary and secondary communities and that applies to each case study.

The ENFORCE user uptake approach aims to promote the utilisation and adoption of the project's tools, methodologies, and best practices at sectoral, national/regional, and international levels, ensuring that the specific needs of each case study are addressed. To do so, EARSC developed the user uptake workshop in October 2025¹ to identify and create their respective primary and secondary community of users. The approach used built on the "nearest-neighbour" assessment of each case study's existing user communities and uses these as a pathway towards thematic and geographical expansion. The key input to this strategy is the user taxonomy⁹, which is a classification system that describes and standardizes the Earth Observation (EO) services and products provided by the industry. It offers a structured view of EO thematic and market domains by bringing together the products and services offered by service providers. A major advantage of using the EARSC Taxonomy is the ability to link the ENFORCE case study services and assess crossovers, helping identify potential communities of interest that can support the expansion of existing user communities and the uptake of new products or services.

Throughout the workshop, EARSC supported the case studies carrying out a two dimensions exercise to identify their primary user community identification: the thematic dimension (user expansion) and the geographic dimension (user diversification), (see Figure 3 to 8 and Annex).

From the identified primary communities relevant to each ENFORCE case study, we will build a network of similar profiles, other actors operating in the same or neighbouring domains who share common challenges that could be addressed by the ENFORCE outcomes, referred to as secondary connection communities. The user diversification was not object of the workshop itself, but it will be part of the strategy at a second stage.

⁹ EARSC. *EO Taxonomy*. <https://earsc-portal.eu/display/EOwiki/EO+Taxonomy>

EARSC started this and will consolidate it with the case studies representative at a second stage (see Table 4 - Table 11).

The user uptake strategy builds on 'D5.1 Liaison Strategy', 'D6.5 Dissemination and Networking Plan and Activities Report – Initial', and 'D6.9 Exploitation and Activities Report – Initial', which define requirements for ENFORCE's six Key Exploitable Results (KERs). ENFORCE introduced a total of six KERs, each designed to address specific challenges and provide valuable solutions within the project's scope. These KERs represent the core innovations and outcomes that have the potential to be adopted and exploited.

Among them, 'KER6 – User Uptake, Capacity Building, and Policy Recommendations' is central to the project's exploitation strategy. It ensures that ENFORCE's solutions and methodologies are adopted, adapted, and scaled by diverse user communities. KER6 promotes best practices in co-creation and demonstrates the wider applicability of ENFORCE outputs through targeted engagement, validation, and shared learning. It focuses on multipliers identified through use cases and consortium partners, including research bodies, academia, industry, municipalities, public institutions, and associations, who extend the reach of project results. User uptake is supported through workshops, participation in external events, guided interaction with tools, and scientific and non-scientific publications.

Case studies with multipliers and Communities of Practice (CoPs) provide co-creation environments to test and refine solutions. Insights feed into best-practice guidelines and policy recommendations. These co-creation environments enable users to articulate needs, test project tools, and validate methodologies. Lessons from these interactions will be synthesised into best-practice guidelines and policy recommendations that support adoption within and beyond the project community.

To strengthen this process and achieve effective co-design practices, user uptake activities work closely with leaders of key ENFORCE tasks, including 'T2.4 Methodology and capacity building for Living Lab setup and iterative co-creation process in each CS', 'T4.2 Iterative ECCI tool and Living Lab implementation', 'T4.3 Monitoring, review, validation, replicability, and upscaling' and 'T5.3 Capacity Building'. T2.4, T4.2, and T4.3 contribute co-design expertise and help identify the wider stakeholder community of relevance, while T5.3 delivers capacity-building workshops that may reveal additional primary and secondary user groups beyond those initially defined.

3.1 The ENFORCE Community of Users

In the following sub-sections, the outcome of the ENFORCE case study services mapping against EARSC's taxonomy is presented. The tables in each subsection present summarised information for the EARSC Theme and EARSC diversification for each of the case study and their primary and secondary users. The user communities are presented at ENFORCE service level and will be refined through the execution of the strategy. The secondary users in the tables will be updated in the next deliverable D5.3 User Uptake strategy and action plan, expected in month 36.

Figure 2 titled "Community of users vs taxonomy", presents the initial identification of the overall user community for the ENFORCE case studies. It builds on the pyramidal user matrix shown in Figure 1, and categorises communities into three main types—policy, research, and commercial—which are common across all case studies. The figure uses black and red squares to convey distinct information: black squares indicate each case study's primary thematic focus and the main community they currently serve. Red squares, on the other hand, illustrate a projected diversification of users, highlighting the potential for each case study to engage with multiple communities and address a broader range of needs beyond their initial focus.

Figure 3 - Figure 10 repeat this exercise, at the level of individual case studies, providing a more detailed view of their user communities. This approach makes it clear that while each case study has a primary thematic

focus (black frame), the consortium recognizes the multifaceted nature of end users and plans for broader engagement and impact (red squares).

WP5 - T5.2 - Community of Users vs Taxonomy

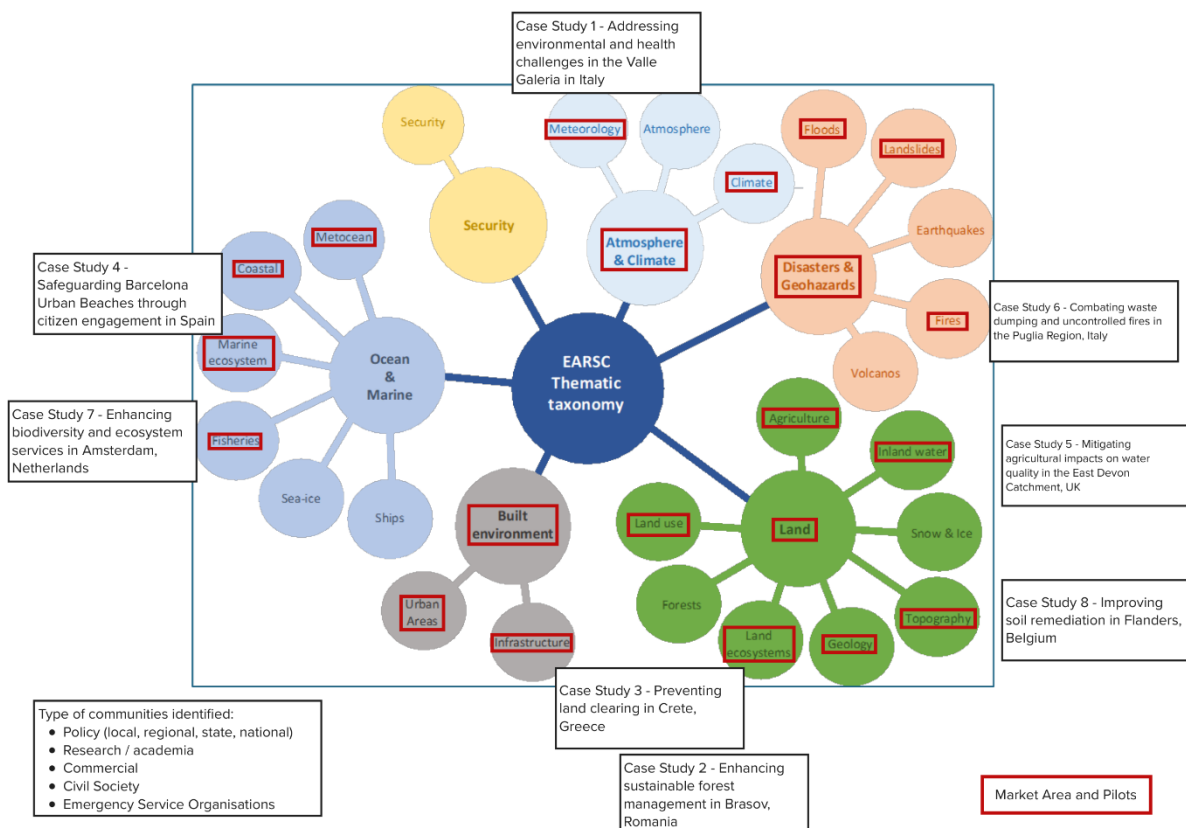


Figure 2: Summary Insights of Identified User Communities

3.1.1 Case Study 1 - Rome, Italy: User Community and User Expansion

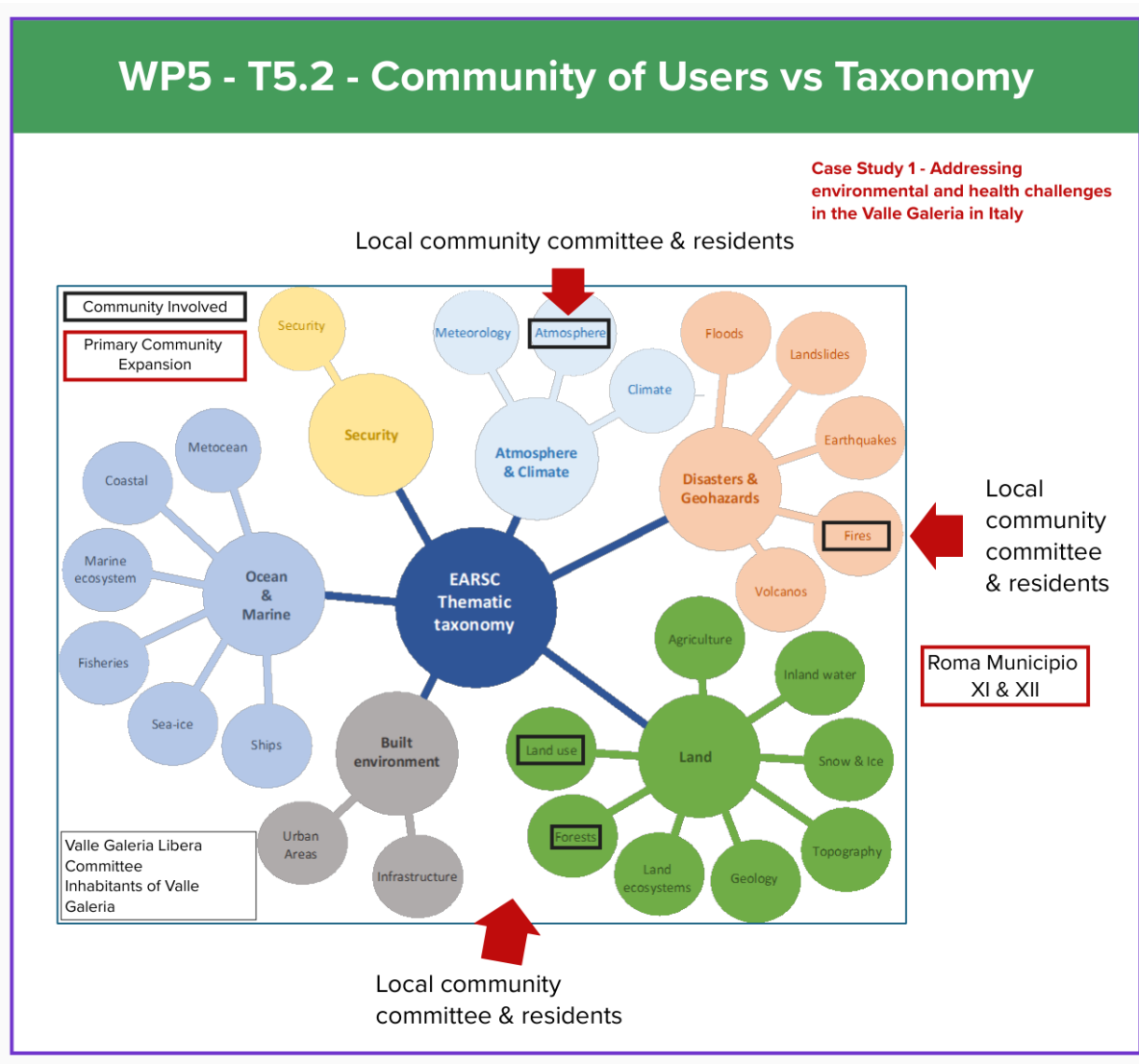


Figure 3. Case study 1 - Rome, Italy: User Community and User Expansion

Valle Galeria, northwest of Rome, is one of Italy's most environmentally compromised areas, where decades of landfilling, petrochemical activity, and waste treatment operations have created severe and long-standing environmental and health pressures. In response, the case study will map existing environmental and health data, identify critical gaps, and co-develop targeted data-collection strategies with local committees, scientists, and authorities. For case study 1¹⁰, the main service for uptake by users is the Athena Platform¹¹, tailored to the Valle Galeria context, providing a protocol for

¹⁰ ENFORCE. *Case Study 1 : Addressing environmental and health challenges in the Valle Galeria in Italy*. <https://join-enforce.eu/case-study-1/>

¹¹ Comitato Valle Galeria Libera. (2025). *Athena – La piattaforma civica partecipata*. <https://segnalazioni.vallegalerialibera.it/>

gathering civic data which serves official enforcement purposes. As Figure 3 showcases, the common EARSC taxonomy themes are Land (Land Use & Forests) & Atmosphere & Climate (Atmosphere) & Disasters & Geohazards (Fires). The primary user community is primarily the Valle Galeria Libera Committee and citizens of the Valle Galeria region, while a priority secondary user community are local institutions such as Roma Municipio XI and XII, among other secondary communities such as local farmers, journalists, academic institutions, environmental protection associations or protected area managers such as the Agenzia Regionale Protezione Ambientale del Lazio (ARPA LAZIO).

Case study	EARSC User expansion (thematic primary community)	EARSC User diversification (market secondary community)	
Case study 1 - Addressing environmental and health challenges in the Valle Galeria in Italy	Disasters & Geohazards (Fires) Atmosphere & Climate (Atmosphere) Land (Land use, Land Ecosystems, Forests, Inland Water)	Public Authorities (Emergency Services) Public Authorities (Local & Regional Planners) Industry (Utilities)	
Primary Users		Secondary Users	
Public	Private	Public	Private
Valle Galeria Libera Committee	Citizens of Valle Galeria	Roma Municipio XI & XII ARPA Lazio (Agenzia Regionale Protezione Ambientale)	Local farmers Journalists Academic researchers Protected area managers Environmental protection associations Judicial Authorities

Table 4. Case study 1 - Rome, Italy: Thematic, Primary and Secondary Community of Users

3.1.2 Case Study 2 – Brasov, Romania: User Community and User Expansion

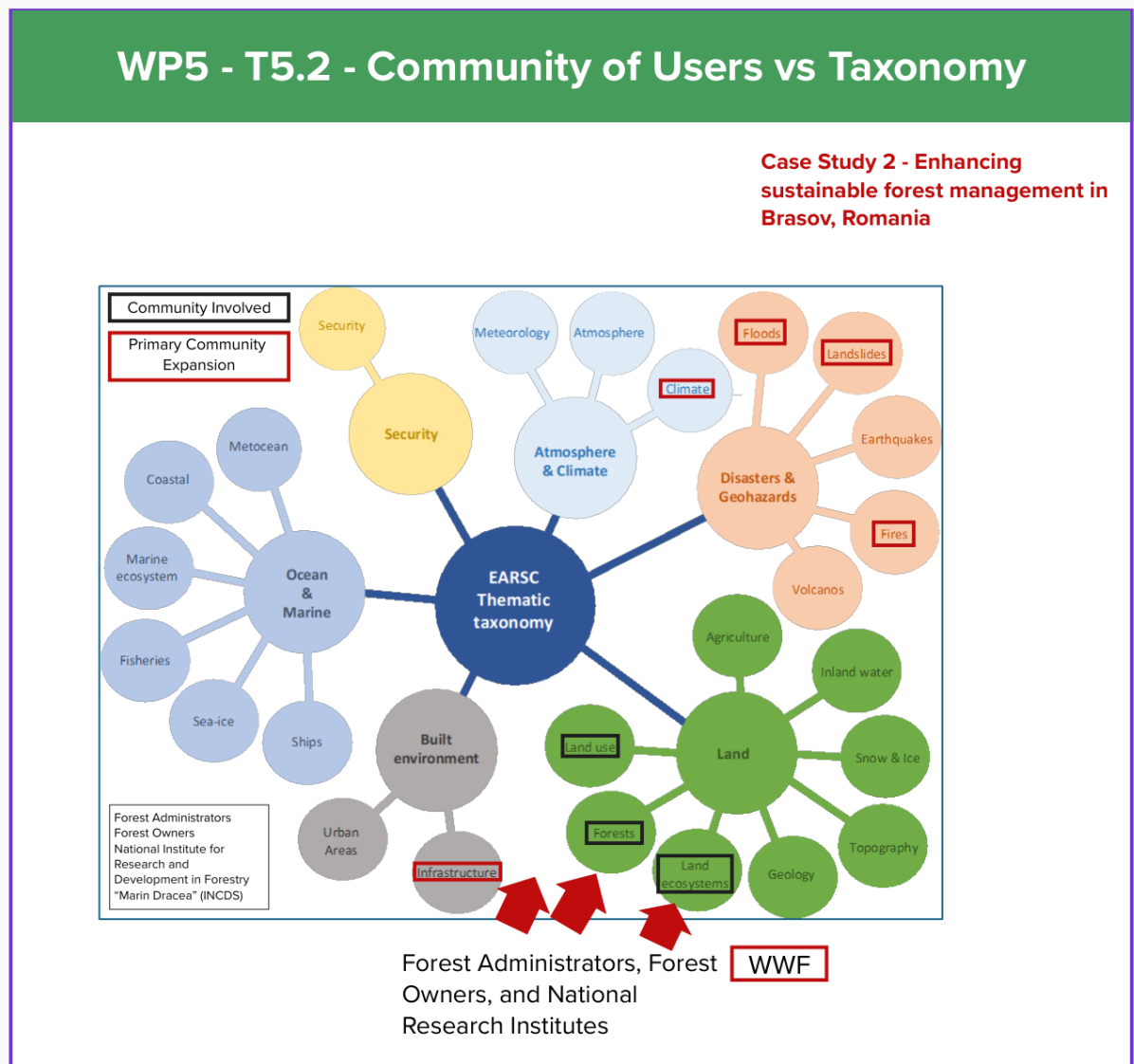


Figure 4. Case study 2 - Brasov, Romania: User Community

Braşov, located in central Romania, is one of the country's most important forested regions, where rich biodiversity and substantial economic dependence on tourism, agriculture, and wood processing intersect with growing pressures from conflicting public and private land interests. In this context, the case study will map and assess existing decision support systems (DSS) used in sustainable forest management, evaluate their functionality and compatibility, and integrate new datasets and tools to better address illegal or unsustainable forestry practices. For case study 2¹², the main service is a mobile application for citizen science data collection to inform sustainable forest management. As Figure 4 demonstrates, the common EARSC taxonomy themes are Land (Land use, Forests, Land Ecosystems), Disasters & Geohazards (Fires, Landslides,

¹² ENFORCE. Case study 2: Enhancing sustainable forest management in Brasov, Romania.
<https://join-enforce.eu/case-study-2/>

Floods), Built Environment (Infrastructure), Atmosphere & Climate (Climate). The primary user community are forest administrators, forest owners and INCDS, while priority secondary user communities are environmental protection associations including WWF and Greenpeace, as well as the Romanian Environmental Protection Agency. A priority is to expand services to be applicable for fires, landfills, floods and intelligence on built infrastructure.

Case study	EARSC User expansion (thematic primary community)	EARSC User diversification (market secondary community)	
Case study 2 - Enhancing sustainable forest management in Brasov, Romania	Land (Land use, Forests, Land Ecosystems) Disasters & Geohazards (Fires, Landslides, Floods) Built Environment (Infrastructure) Atmosphere & Climate (Climate)	Managed Living Resources (Forestry) Public Authorities (Local & Regional Planners, Emergency Services)	
Primary Users		Secondary Users	
Public	Private	Public	Private
Forest Administrators, e.g. Regia Publică Locală a Pădurilor Kronstadt R.A (Local Public Forestry Administration Kronstadt R.A.) "Marin Drăcea" National Institute for Research and Development in Forestry	Forest Administrators	Brasov Municipality Local Environmental Authority Romanian Environmental Protection Agency (Agenția Națională pentru Protecția Mediului) Forest Guard	WWF Greenpeace University of Transilvania

Table 5. Case study 2 – Brasov, Romania: Thematic, Primary and Secondary Community of Users

3.1.3 Case Study 3 – Crete, Greece: User Community and User Expansion

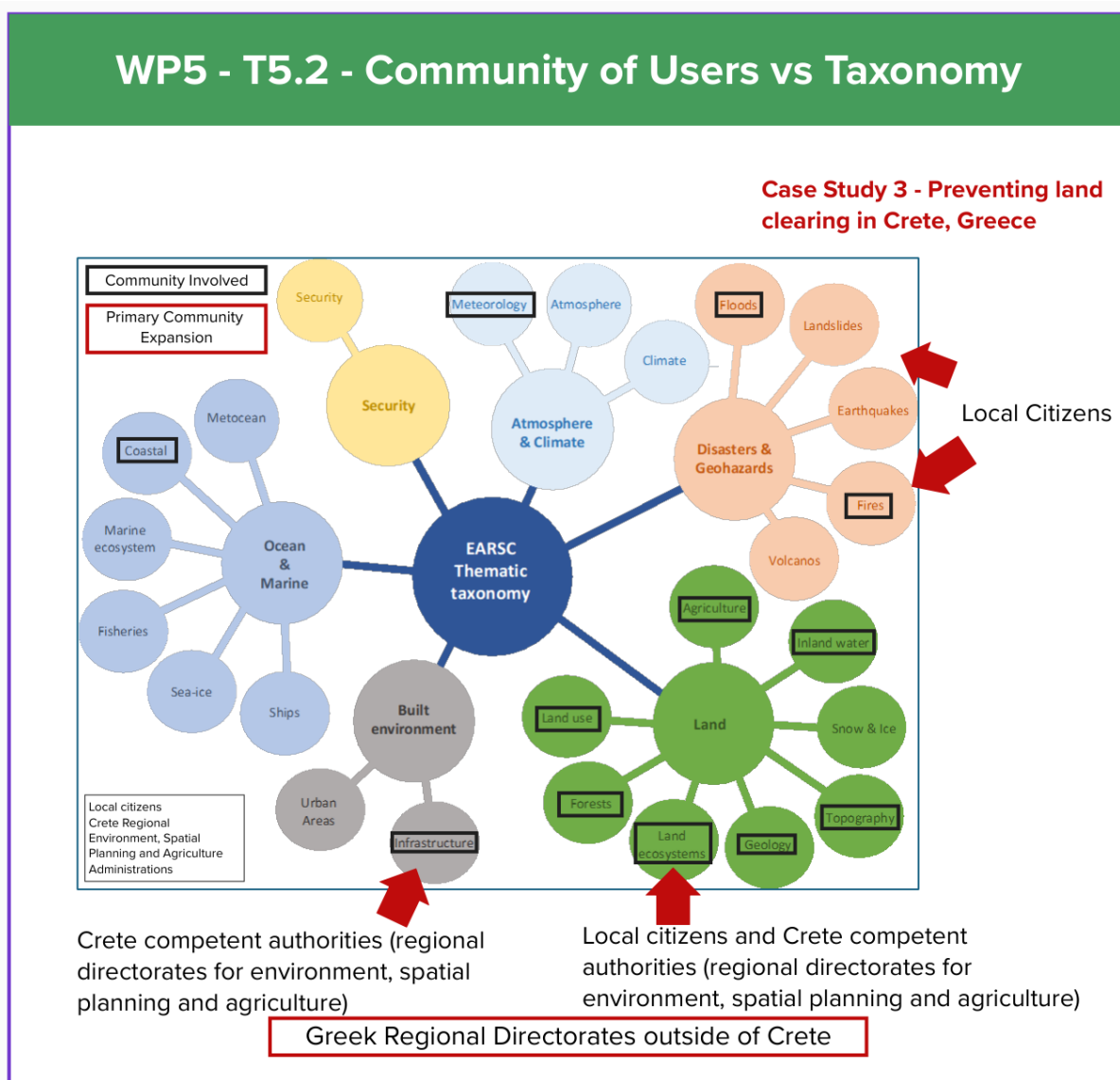


Figure 5. Case study 3 - Crete, Greece: User Community

Crete, Greece's southernmost island and a major Mediterranean destination, faces mounting environmental pressures from tourism, energy projects, illegal quarrying, and unregulated land clearing that threaten its biodiversity and reshape both public and private lands. To address these issues, the case study will strengthen communication across the prosecution chain, enhance monitoring through tools such as a smartphone reporting app and environmental crime database, and support citizens and authorities with practical technical guides. For case study 3¹³, the primary uptake service is the THEMIS app, a dedicated reporting tool for environmental crimes, particularly land clearing, though it also supports a broader range of incident reporting. As Figure 5 shows, the common taxonomy themes are Land (Land use, Forests, Land Ecosystems, Geology, Topography, Inland Water,

¹³ ENFORCE. Case study 3: Preventing land clearing in Crete, Greece. <https://join-enforce.eu/case-study-3/>

Agriculture), Disasters & Geohazards (Fires, Floods) and Built Environment (Infrastructure). The primary user community are the Crete Region Unit Directorate of Environment and Spatial Planning and the Region Unit Directorate of Rural Development and citizens of the region unit of Heraklion. Key secondary user communities are region unit directorates of environment, spatial planning and agriculture across regions throughout Greece, especially if these regions experience significant tourism. A key priority for user expansion is to Greek Regional Directorates outside of Crete.

Case study	EARSC User expansion (thematic primary community)	EARSC User diversification (market secondary community)	
Case study 3 - Preventing land clearing in Crete, Greece	Land (Land use, Forests, Land Ecosystems, Geology, Topography, Inland Water, Agriculture)	Public Authorities (Local & Regional Planners)	
		Managed Living Resources (Agriculture)	
		Industry (Utilities)	
	Disasters & Geohazards (Fires, Floods)		
	Built Environment (Infrastructure)		
Primary Users		Secondary Users	
Public	Private	Public	Private
Crete Region Unit Directorate of: - Environment and Spatial Planning - Rural Development	Citizens of Region unit of Heraklion	Other Region Unit Directorates of Environment, Spatial Planning and Agriculture throughout Greece	Citizens in other region units throughout Greece

Table 6. Case study 3 – Crete, Greece: Thematic, Primary and Secondary Community of Users

3.1.4 Case Study 4 – Barcelona, Spain: User Community and User Expansion

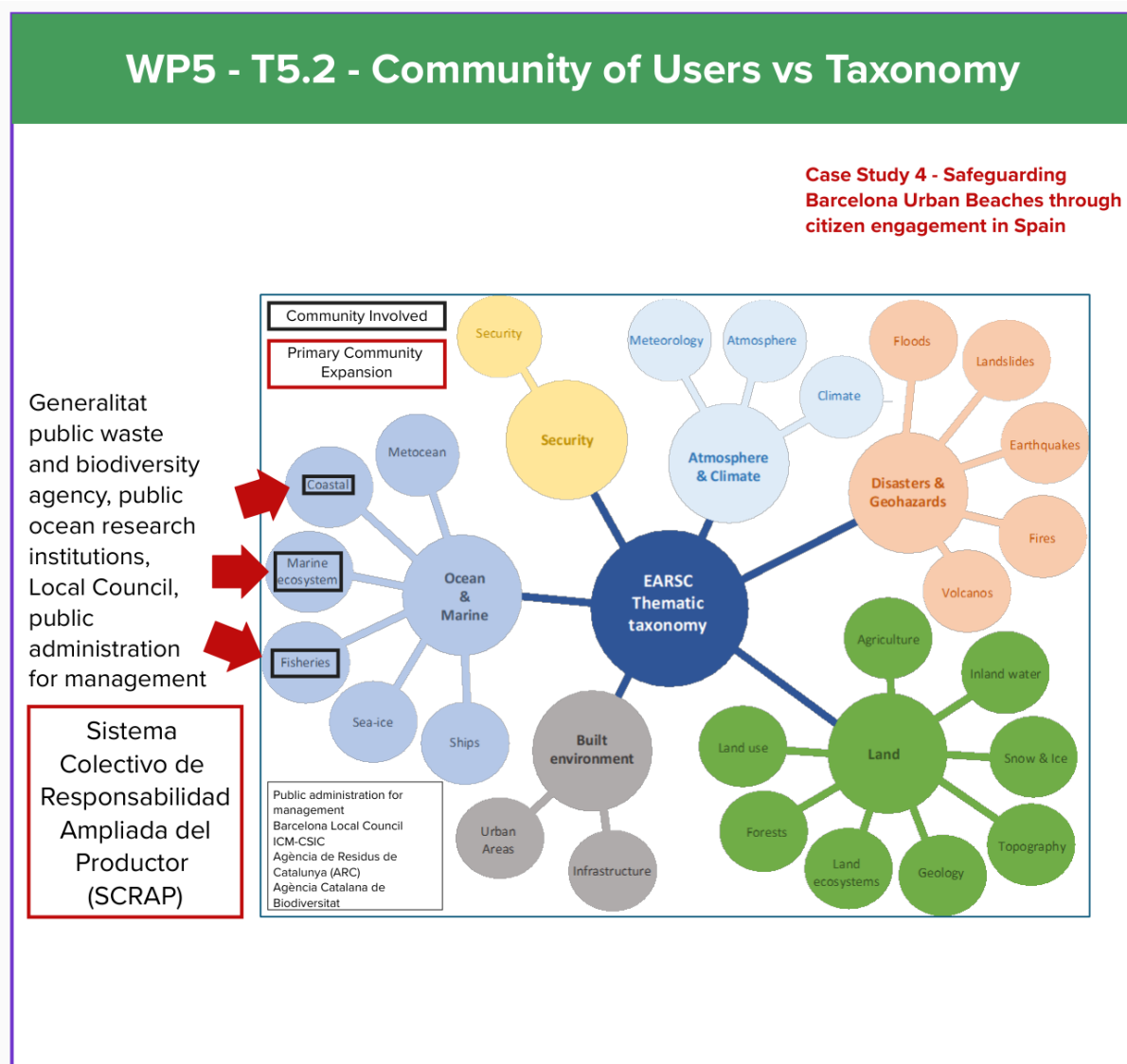


Figure 6. Case study 4 - Barcelona, Spain: User Community

Barcelona's 30 km urban coastline, shaped by tourism, transport, and dense coastal infrastructure, faces persistent challenges including marine litter, noise pollution, and water quality degradation, despite recent gains in underwater ecosystem restoration and citizen-driven biodiversity mapping. To strengthen coastal environmental governance, case study 4¹⁴ will expand participatory monitoring through the MINKA citizen science observatory, case study pathways for integrating citizen-generated data into Marine Strategy Framework Directive and Water Framework Directive reporting and develop guidelines for data validation and maturity assessment in collaboration with local

¹⁴ ENFORCE. Case study 4: Safeguarding Barcelona Urban Beaches through citizen engagement in Spain. <https://join-enforce.eu/case-study-4/>

authorities and researchers. The MINKA application¹⁵ is case study 4's service that requires uptake, which enables individuals to record and share georeferenced environmental observations, turning local data into validated insights for collective sustainability action. As Figure 6 demonstrates, the common taxonomy themes are Ocean & Marine (Coastal, Marine Ecosystem, Fisheries, Urban Ecosystems and Transitional Water). The primary user community are the Ajuntament de Barcelona, ICM-CSIC, Agència de Residus de Catalunya (Waste Agency of Catalonia) and Agència Catalana de la Natura (Environment Agency of Catalonia). Primary expansion occurs through the development of the Sistema Colective de Responsabilidad Ampliada del Productor (SCRAP), which serves as a case study framework to analyse and define effective methods for involving citizens in the collection of harmonised data.

Case study	EARSC User expansion (thematic primary community)	EARSC User diversification (market secondary community)	
Case study 4 - Safeguarding Barcelona Urban Beaches through citizen engagement in Spain	Ocean & Marine (Coastal, Marine Ecosystem, Fisheries, Urban Ecosystems, Transitional Water)	Managed Living Resources (Fisheries)	Public Authorities (Local & Regional Planners; Education, Training and Research)
		Industry (Utilities)	
Primary Users		Secondary Users	
Public	Private	Public	Private
Ajuntament de Barcelona ICM-CSIC Agència de Residus de Catalunya (Waste Agency of Catalonia) Agència Catalana de la Natura (Environment Agency of Catalonia)	/	Spain autonomous communities outside of Catalonia, including respective waste and environment agencies Research Institutions	Researchers Citizens

Table 7. Case study 4 – Barcelona, Spain: Thematic, Primary and Secondary Community of Users

¹⁵ MINKA. *Take action for a Sustainable future!*. <https://minka-sdg.org/>

3.1.5 Case Study 5 – East Devon Catchment, UK: User Community and User Expansion

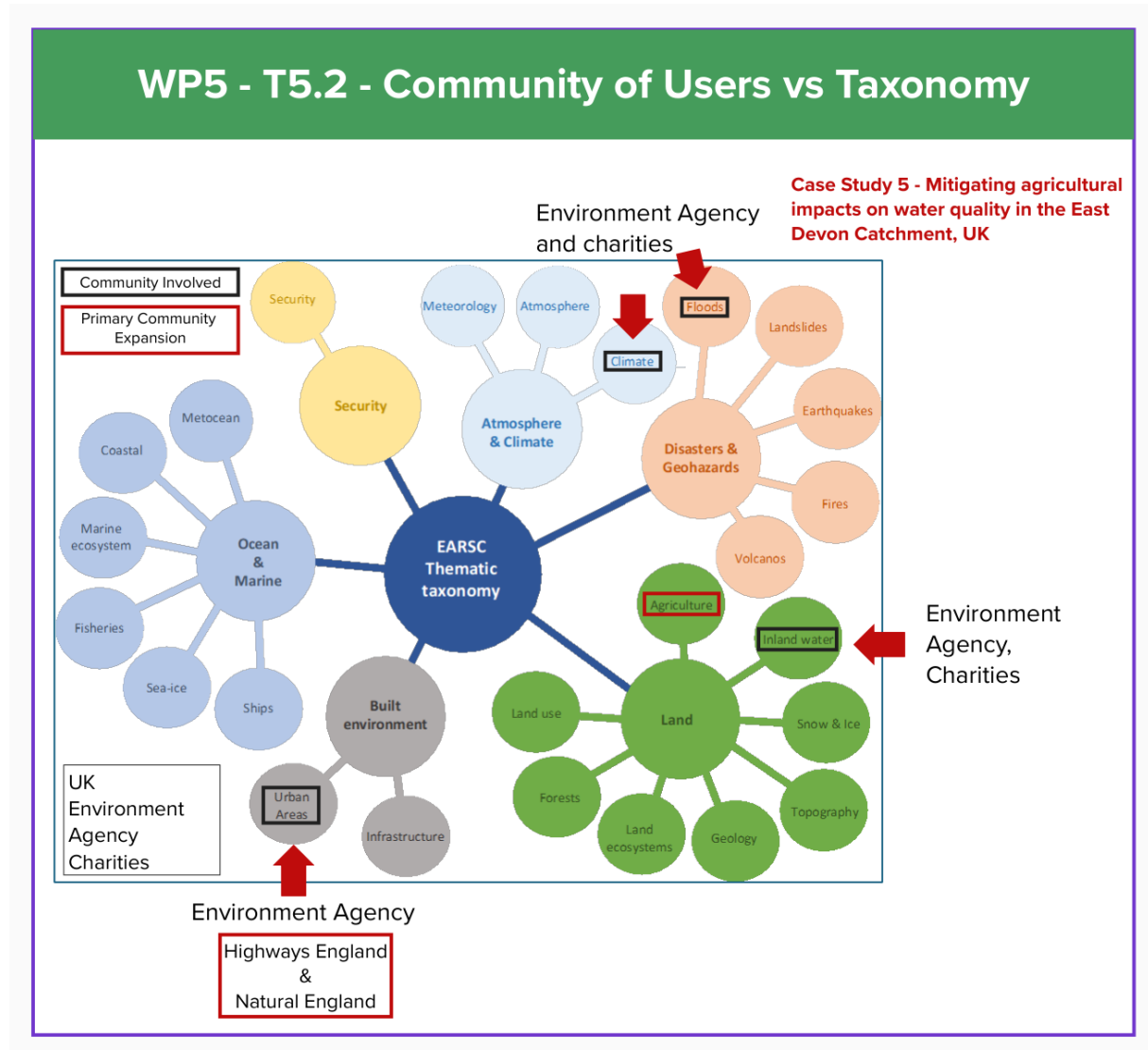


Figure 7. Case study 5 - East Devon, UK: User Community

The East Devon Catchment, supported by a long-standing civil society-led partnership, faces significant water quality challenges driven by underfunded enforcement systems and persistent agricultural and sewage pollution, with most local rivers failing to meet Water Framework Directive standards. To address these issues, the case study will apply a Weight of Evidence approach that combines remote sensing, GIS land-cover analysis, citizen-science water quality investigations, and serious-gaming tools to improve how regulatory resources are targeted. For case study 5¹⁶, the main service for uptake by users in short is therefore a remote sensing tool and a pollution

¹⁶ ENFORCE. *Case Study 5: Mitigating agricultural impacts on water quality in the East Devon Catchment, UK.* <https://join-enforce.eu/case-study-5/>

and erosion risk detection tool. As Figure 7 showcases, the common taxonomy themes are Land (Agriculture, Inland Water, Topography, Land Ecosystems, Forests, Land Use), Atmosphere & Climate (Climate) and Built Environment (Urban Areas, Infrastructure). The primary user community are the UK Environment Agency, and charity organisations, while key secondary user communities are Highways England, Natural England, Devon County Council, Environment Agencies and University Researchers.

The key secondary user community for expansion are public bodies including:

- Highways England: The government-owned company that operates, maintains and improves England's motorways and major A-roads;
- Natural England: The government body that acts as an adviser for England's natural environment.

Case study	EARSC User expansion (thematic primary community)	EARSC User diversification (market secondary community)	
Study 5 - Mitigating agricultural impacts on water quality in the East Devon Catchment, UK	Land (Agriculture, Inland Water, Topography, Land Ecosystems, Forests, Land Use)	Managing Living Resources (Agriculture)	
	Atmosphere & Climate (Climate)	Public Authorities (Local & Regional Planners; Education, Training and Research)	
	Built Environment (Urban Areas, Infrastructure)		
Primary Users		Secondary Users	
Public	Private	Public	Private
UK Environment Agency	Westcountry Rivers Trust Devon Wildlife Trust South West Water	Highways England Natural England Devon County Council Environment Agencies	University Researchers

Table 8. Case study 5 – East Devon, UK: Thematic, Primary and Secondary Community of Users

3.1.6 Case Study 6 – Puglia Region, Italy: User Community and User Expansion

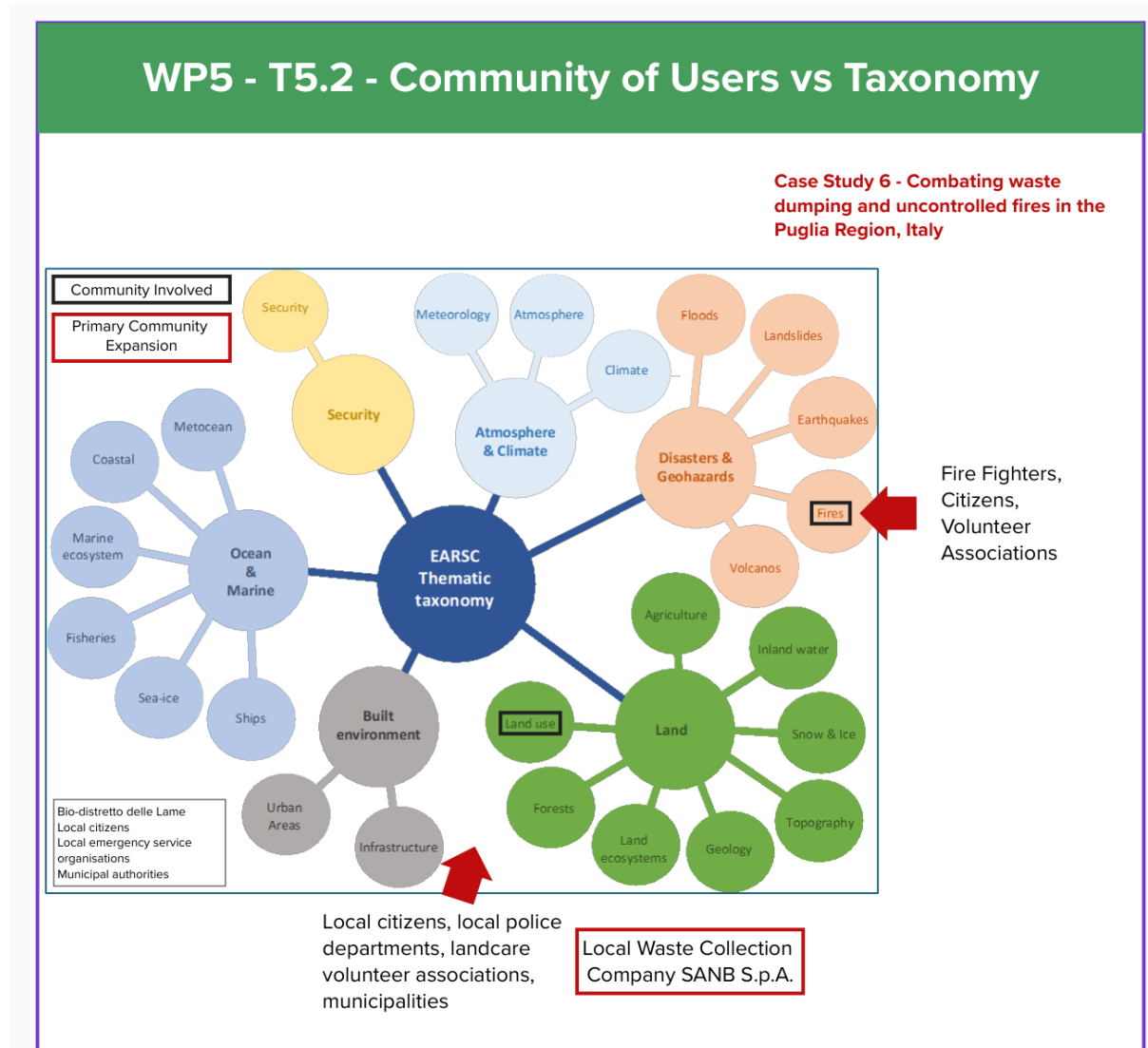


Figure 8. Case study 6 - Puglia, Portugal: User Community

The Bio-distretto delle Lame in the Puglia Region brings together rural communities, agricultural producers, cultural institutions, and local authorities to manage the area as an integrated agroecosystem shaped by the unique geography between the Alta Murgia plateau and the Adriatic coast. To address persistent issues such as illegal waste dumping, particularly plastics, and uncontrolled stubble burning, the case study will mobilize the Bio-distretto's network to develop coordinated prevention actions and introduce new monitoring practices designed to detect and deter environmental violations. For case study 6¹⁷, the service for users to uptake is an application that enables citizens to make georeferenced reports on criminal activities related to fires and illegal waste dumping. The common taxonomy themes are Disasters &

¹⁷ ENFORCE. *Case study 6: Combating waste dumping and uncontrolled fires in the Puglia Region, Italy*
<https://join-enforce.eu/case-study-6/>

Geohazards (Fires) and Land (Land Use, Land Ecosystems, Agriculture). The primary user community are citizens of the territory, and local police departments, and municipalities Bio-Distretto Delle Lame's, local police and municipalities. The primary expansion community is the local waste collection company SAND S.p.A..

Case study	EARSC User expansion (thematic primary community)	EARSC User diversification (market secondary community)	
Case study 6 - Combating waste dumping and uncontrolled fires in the Puglia Region, Italy	Disasters & Geohazards (Fires) Land (Land Use, Land Ecosystems, Agriculture)	Managing Living Resources (Agriculture) Industry (Waste) Public Authorities (Local & Regional Planners; Education, Training and Research)	
Primary Users		Secondary Users	
Public	Private	Public	Private
Local Police Department Municipalities	Citizens of the Territory Bio-Distretto Delle Lame's	Schools	Local Waste Collection Company (SANB) Farming Companies Tertiary Educational Institutions

Table 9. Case study 6 - Puglia, Italy: Thematic, Primary and Secondary Community of Users

3.1.7 Case Study 7 – Amsterdam, Netherlands: User Community and User Expansion

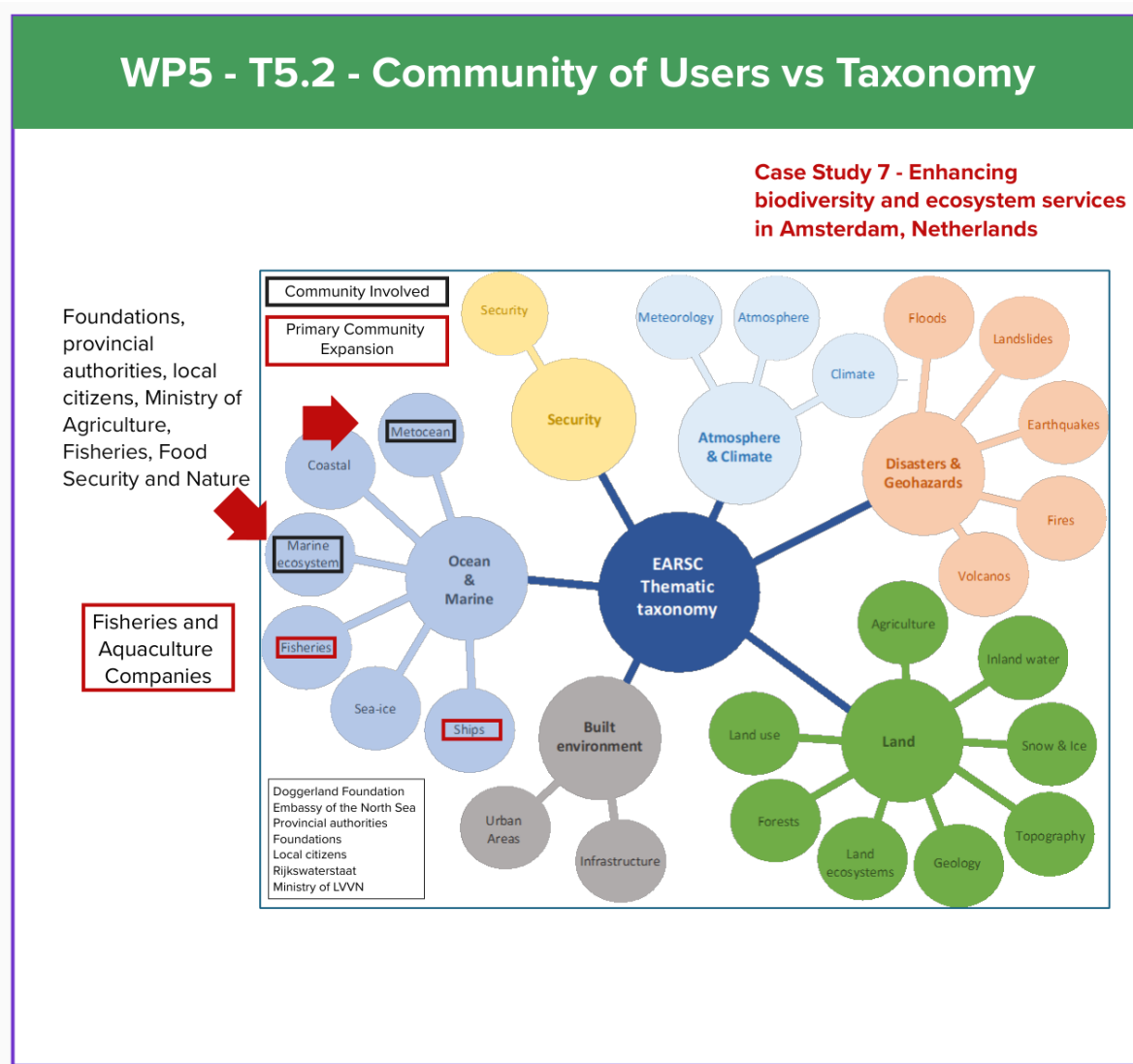


Figure 9. Case study 7 - Amsterdam, Netherlands: User Community

Amsterdam Oost is a rapidly developing district where new housing, major infrastructure projects, and the Amsterdam Science Park intersect with the city's Main Green Structure, creating both opportunities and pressures for local biodiversity. To support ecosystem health amid these changes, the case study will implement collaborative data-collection practices that equip citizens with tools and skills, using the Making Sense methodology, existing sensing platforms, Waarneming.nl, and the Urban Ecology Field Atlas, to record, value, and share biodiversity information. For case study 7¹⁸, the main service for user uptake is an accessible web and mobile platform that integrates oceanographic data, including water quality, composition (pollutants), biodiversity, and earth

¹⁸ ENFORCE. Case study 7: Enhancing biodiversity and ecosystem services in Amsterdam, Netherlands. <https://join-enforce.eu/case-study-7/>

observation inputs, into a single interface where citizens, scientists, industry, and government can report activities or anomalies and access relevant data. As Figure 9 showcases, the common taxonomy themes are Ocean & Marine (Metocean, Marine Ecosystem, Fisheries, Ships). The primary user community are the Embassy of the North Sea, Nature Protection Organisations, coastal provinces and foundations while the primary expansion community is fisheries and aquaculture companies.

Case study	EARSC User expansion (thematic primary community)	EARSC User diversification (market secondary community)	
Case study 7 - Enhancing Biodiversity and Ecosystem Services in Amsterdam, Netherlands	Ocean & Marine (Metocean, Marine Ecosystem, Fisheries, Ships)	Managing Living Resources (Fisheries) Industry (Maritime) Public Authorities (Local & Regional Planners; Education, Training and Research)	
Primary Users		Secondary Users	
Public	Private	Public	Private
Nature Protection Organisations Ministry of Luun Coastal Provinces	Citizens Doggerland Foundation Nature Protection Organisations Embassy of the North Sea		Fisheries and Aquaculture companies Transport and Energy Companies

Table 10. Case study 7 – Amsterdam, Netherlands: Thematic, Primary and Secondary Community of Users

3.1.8 Case Study 8 – Flanders, Belgium: User Community and User Expansion

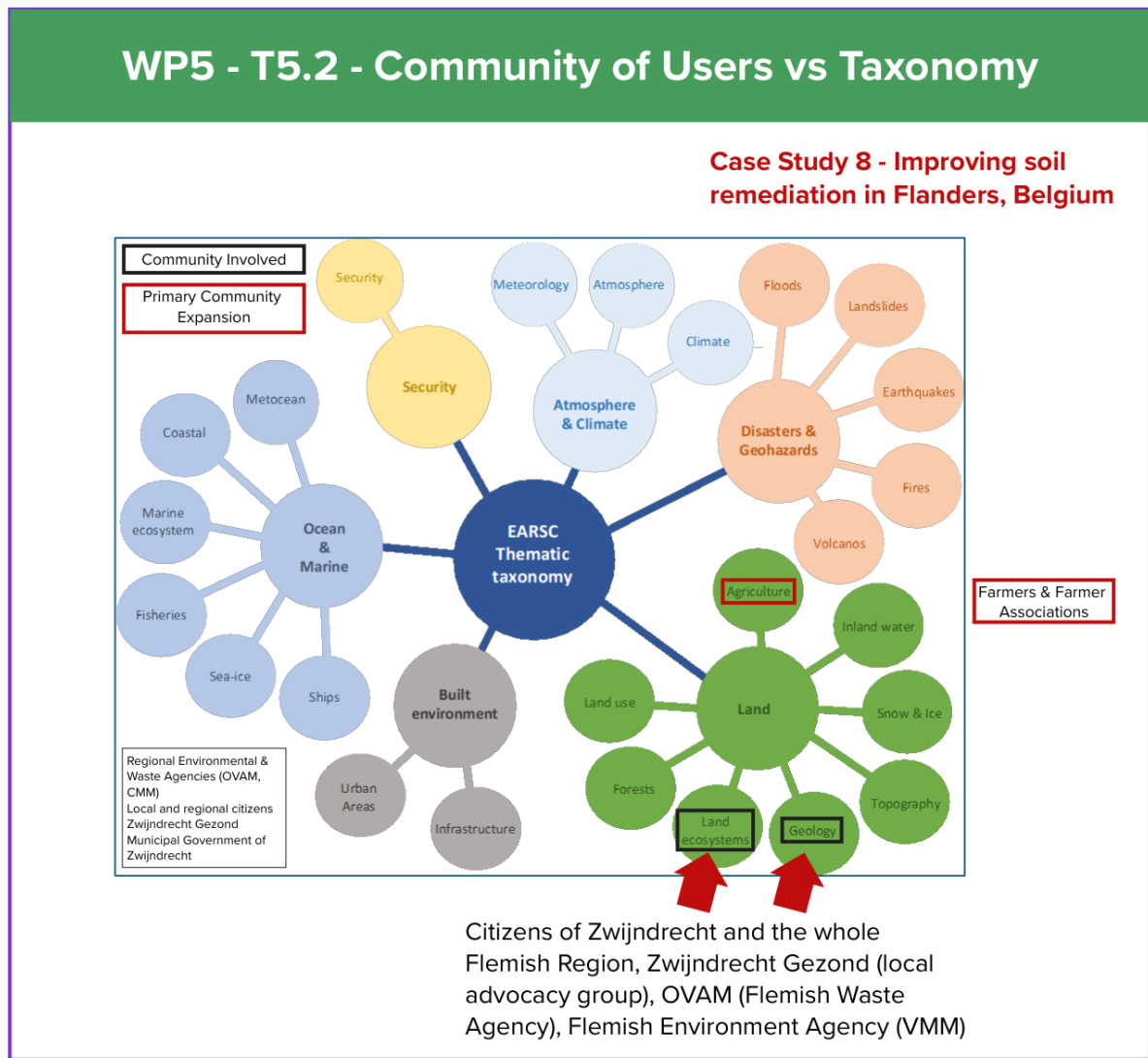


Figure 10. Case study 8 - Flanders, Belgium: User Community

In Flanders, particularly around Antwerp, private gardens near industrial areas are at risk of contamination from PFAS and heavy metals such as cadmium and nickel, raising concerns about soil health and pollutant transfer to plants. To address this, the case study will engage citizens in planting selected crops and greens, deploying soil moisture and temperature sensors, and collecting plant and soil samples to monitor contaminant uptake and transfer dynamics. For case study 8¹⁹, the service for users to uptake is the soil phytoremediation data platform, which compiles results from remediation trials and feeds them into DOV Flanders (the Flanders Subsurface Database), enabling citizens to access soil quality data, fostering environmental transparency, and supporting strategies for

¹⁹ ENFORCE. Case study 8: Improving soil remediation in Flanders, Belgium. <https://join-enforce.eu/case-study-8/>

chemical pollution cleanup. The common taxonomy themes are Land (Agriculture, Land Ecosystem). The primary user community are Employees of competent Flemish authorities such as OVAM Public Waste Agency of Flanders and VMM Flanders Environment Agency, the Municipal government of Zwijndrecht and the Zwijndrecht Gezond (local advocacy group) and concerned citizens throughout Belgium while the primary expansion communities are farmers and farmer associations.

Case study	EARSC User expansion (thematic primary community)	EARSC User diversification (market secondary community)	
Case study 8 - Improving soil remediation in Flanders, Belgium	Land (Agriculture, Land Ecosystem)	Managing Living Resources (Agriculture) Industry (Maritime) Public Authorities (Local & Regional Planners; Education, Training and Research)	
Primary Users		Secondary Users	
Public	Private	Public	Private
Employees of Competent Flemish Authorities OVAM Public Waste Agency of Flanders VMM Flanders Environment Agency Municipal government of Zwijndrecht Zwijndrecht Gezond (local advocacy group)	Citizens of Zwijndrecht and the entire Flemish Region Concerned Citizens throughout Belgium	Environmental Agencies of the other two Belgian regions (Leefmilieu Brussel - BIM & Portail de l'agriculture Wallonne - SPW Agriculture) Ressources naturelles et Environnement in Wallonia Citizen Science Vlaanderen	Environmental NGOs (e.g. Natuurpunt) Farmers & their Associations, Industries with Chemical (or specifically PFAS) Emissions onto Soil and Water "KIS vzw" Working group (Flemish knowledge soil remediation center)

Table 11. Case study 8 – Flanders, Belgium: Thematic, Primary and Secondary Community of Users

3.2 Thematic and User Diversification Analysis

The above taxonomy approach exercise helped identifying the primary and secondary user communities of the ENFORCE case studies. The ENFORCE project groups 8 case studies into 5

thematic areas. As many of these case studies target similar user communities, we have looked at these communities through the EARSC taxonomy (Section 3.0).

Connected to the ENFORCE project, Figure 11 shows the distribution of the ENFORCE case studies to each of the thematic taxonomy (user expansion). The user expansion is important to address which potential thematic area the case studies can relate to. At user expansion scale which includes identified primary and secondary users, 6 out of 8 ENFORCE case studies cover Land, followed by Disasters & Geohazards (5) and Atmosphere & Climate (4), a positive sign, showcasing how the user expansion is on the direction of fostering resilience in the face of environmental challenges.

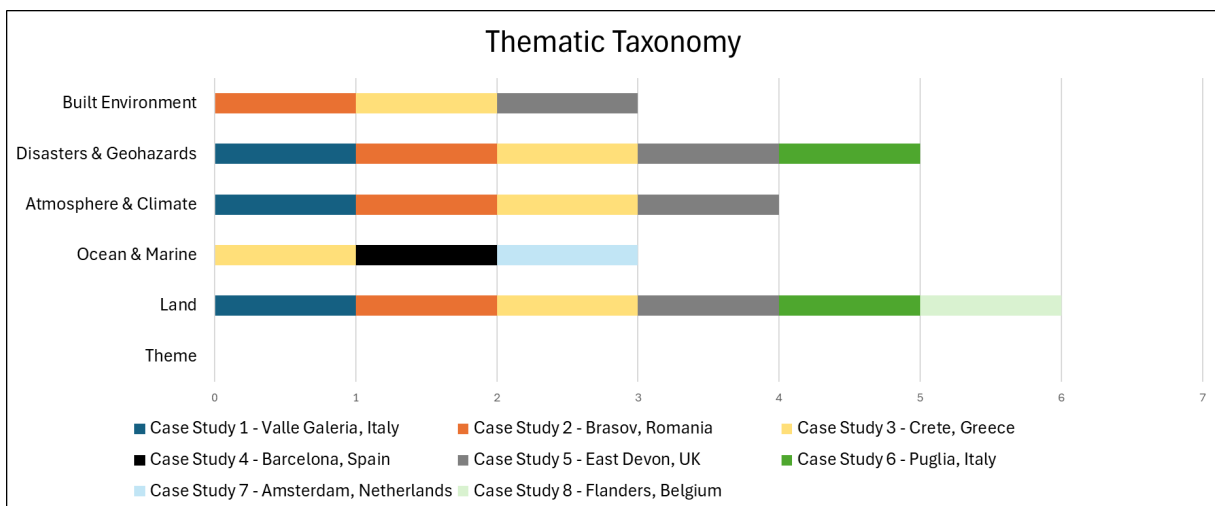


Figure 11. User expansion of ENFORCE Case studies

Figure 12 shows the distribution of the ENFORCE Case studies to each of the market sector (user diversification approach)²⁰. The diversification approach is very important to reach to the secondary community of users (Chapter 1 User Uptake Strategy), meaning those market communities that can share similar needs and challenges to the current primary users. At the diversification scale, the case studies can be classified into more than one market theme. For example, users of case study 1 involve both public authorities including emergency services and local and regional planners, as well as utility industries. Crossovers are very useful in identifying other similar types of users in the execution of the user uptake strategy. As shown below, public authorities are applicable to all case studies, industry is applicable to all except case study 5 and 2, while managed living resources is applicable to all except case study 1.

²⁰ EARSC. (2015). *A Taxonomy for the EO Services Market*. <https://earsc.org/wp-content/uploads/2020/08/2.-Taxonomy-for-the-EO-Services-Market-issue-2.pdf>

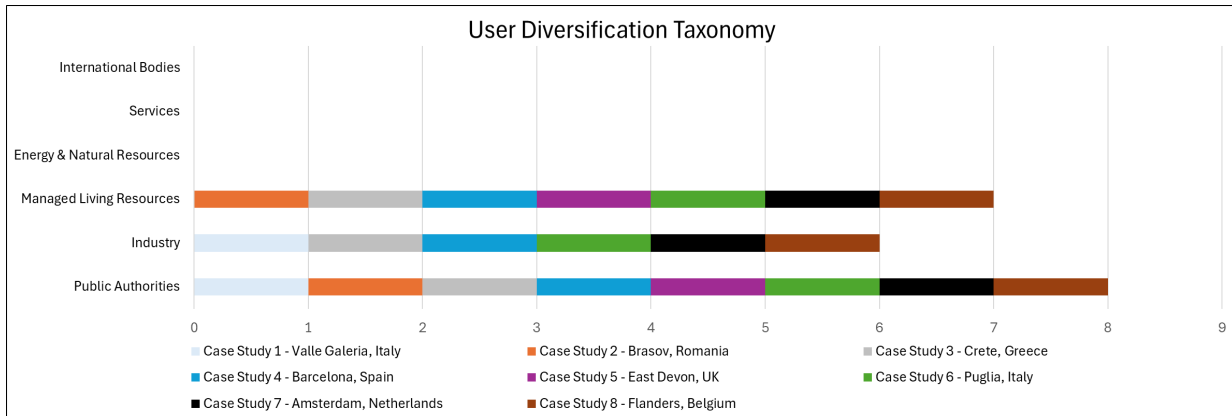


Figure 12. User diversification of the ENFORCE Case studies

3.3 Assessing Needs and Capacities

Identifying the highest priority targets of the Case studies through the nearest neighbour approach is the first step of this user-uptake strategy. The second step is to analyse the specific needs and abilities to incorporate services based on citizen science and innovative data sources into daily workflows within each of these communities. This step will be addressed by bringing the WP4 and WP2 co-design expertise into contact with the users in dedicated user uptake workshops to collate specific services that they are already using, promote closely related existing solutions, identify pain points and workflow specific needs and pinpoint real opportunities to exploit.

These aspects will be incorporated into the user uptake workshops to ensure that the experience is streamlined for potential new users. These will be reported in D5.3 User Uptake Strategy and Action Plan – Updated M36 (i.e., they only must attend one event to see what is available and feed back into the development roadmap of new services).

This Chapter described the taxonomic approach that is being used to identify user communities and the ENFORCE uptake strategy which builds on this background. This approach suggests that customers of a product or service that falls close to another in either the Thematic or Market approaches are potential customers or vectors to other potential customers. Therefore, these customers should be targeted for user uptake, targeted promotional or capacity-building activities. Analysing where each case study falls in relation to the customers and suppliers gives us a view of the relevant target communities and potential users.

4.0 Action Plan

The first step in realising the user uptake strategy is to ensure that all data, insights and input is obtained from all ENFORCE Case studies. Once this is achieved the next action will be to split the identified users across relevant ENFORCE services. Inputs provided by ENFORCE case studies within the first User Uptake workshop on 10 October 2025 in Crete (see Annex), will be analysed in close collaboration with each of the service Case studies' leaders to identify communities of users that cross these thematic borders, and in other ways make promising targets for promotion of the ENFORCE service capabilities. These discussions will allow the identification of the most relevant events for each service where the ENFORCE user uptake workshops can target the most potential communities of end users.

Case studies within the ENFORCE project progress differently along their service development journey, particularly regarding holistic outreach to relevant stakeholder communities, identification of service users, and co-development of services with the project's technical partners. Therefore, the proposed services and user communities for each case study may be slightly adjusted throughout the project.

Community and stakeholder engagement is central to ENFORCE, extending beyond local communities to include broader groups such as not-for-profits, academia, and government agencies, as outlined in D6.5 – Dissemination Plan and Networking Plan and Activities Report – Initial and D5.3 – Liaison Strategy. These deliverables define the requirements for achieving key exploitable results, which, in the context of user uptake, involve identifying best practices in co-creation and ensuring the broader applicability of project solutions, contributing to societal and environmental objectives. Relevant user uptake activities include workshops, external events, online tools, scientific publications, and non-scientific publications.

4.1 Specific Actions

In this section we present concrete actions to be performed according to a timeline to ensure the success of the implementation of the user uptake strategy and the promotion of the uptake of the ENFORCE services and their solutions. This approach identifies who should be involved, what should they focus on, how they go about implementing these actions and the timeframe for these actions.

Below we provide key recommendations and a toolbox of concrete actions.

N.	Task	Outcome	Schedule	KPI
	A1 Primary user communities			

A1.1	Liaise with ENFORCE case study Leaders	Identify communities of users of each case study, identify those thematic crossovers that could be used to target multiple clients in the most efficient way possible and other primary/secondary communities that in other ways make promising targets for promotion of case studies capabilities. The list of potential users will be split across Case studies.	September 2025-Feb 2026	No. of potential primary user communities (to complete by February 2026)
A1.2	Identify secondary community of users	Analyse ENFORCE Case studies' taxonomy's exercise results, ENOLL and exploitations' stakeholders and identify further communities of users.	February-April 2026	No. of secondary communities of users identified
A1.3	Liaise with ENFORCE case study leaders	Discuss with ENFORCE services leaders if the above communities are of interest to them to liaise with.	April-May 2026	No. of communities of users identified
A1.4	Liaise with ENFORCE case study leaders	Liaise with the identified community of users through bilateral meetings and interviews; and what kind of uptake is needed by the ENFORCE service. Based on e-shape user uptake methodology ²¹ developed by EARSC, 3 levels of uptake are possible (to finetune for the ENFORCE case studies): 1. User uptake level 1 (L1): User's feedback, to finetune the service 2. User uptake level 2 (L2): User of the service, meaning the integration of data from the potential user (beta testing-evaluation) 3. User uptake level 3 (L3): Recurrent user, meaning as ultimate goal the adoption of the	June-September 2026	No. of communities of users identified Typology of user uptake

²¹ <https://e-shape.eu/index.php/user-uptake>

		service from the user (sustainability).		
A1.4	Kick off ENFORCE services guidelines	User uptake guidelines to develop in cooperation with the consortium partners that provide background information and step-by-step instructions to help external users carry out their testing of the services.	September-December 2026	8 user uptake guidelines (1 per case study)
A2.1	Start the concept of the user uptake workshops	Invite above mentioned community of users to the online user uptake workshops.	March 2027	No. of user uptake meetings
A2.2	Engage with selected communities of users	Inject ENFORCE services demo within selected community of users.	September-December 2027	No. of ENFORCE services "integrated" in selected communities.

This chapter outlines the next steps of the user uptake strategy, including clear pathways and internal KPIs to monitor progress in defining users and assessing the uptake of the ENFORCE case studies. This deliverable — and the present section — are conceived as living documents and will be updated as the project evolves.

5.0 Conclusion

In conclusion, the ENFORCE user uptake strategy is grounded in the Copernicus User-Driven Approach, which provides the structural foundation for identifying, engaging, and supporting the communities that will benefit most from the project's outcomes. Building on this framework, user communities were first mapped during the initial User Uptake Workshop held on 10 October 2025 in Heraklion, Crete, as part of the ENFORCE General Assembly.

This process confirmed that primary users are predominantly policy makers and public administrations working in environmental management, waste management, agriculture, and forestry at local and regional levels. Additional primary users include civil society organisations and public safety actors, particularly

firefighters and police officers, directly relevant to the ENFORCE case studies. Secondary users comprise similar organisations across broader geographical areas, as well as education and training institutions, and business sectors such as forestry owners, aquaculture companies, and farmers.

Insights from the thematic taxonomy analysis demonstrated that the most relevant user domains align with land, disasters & geohazards, and atmosphere & climate. Complementing this, the EARSC User Diversification Taxonomy highlighted managed living resources, industry, and public authorities as key market sectors, reinforcing the importance of linking ENFORCE solutions to actionable operational needs.

Advancing outcomes under ‘KER6 – User Uptake, Capacity Building and Policy Recommendations’, together with living labs and exploitation activities, will continue to guide ENFORCE’s engagement pathway. User uptake actions will be delivered through a range of mechanisms including workshops, participation in external events, interaction with online tools, and the production of scientific and non-scientific publications.

The next phase of work, outlined in Section 4.1, emphasises closer coordination with case study leaders to refine the definition of secondary user communities, incorporate insights from living labs, and align with ongoing exploitation and stakeholder analyses. Key upcoming priorities include determining the required level of service uptake per case study, organising seven additional user uptake workshops (eight in total), and preparing user uptake guidelines to facilitate wider market and geographical expansion. Engagement with selected secondary user communities will be essential to support continued uptake of ENFORCE services through to Month 48, the conclusion of the project.

Finally, these efforts will be consolidated in the forthcoming deliverables:

- D5.3 – User Uptake Strategy and Action Plan – Updated (M36)
- D5.4 – User Uptake Strategy and Action Plan – Final (M48)

Together, these outputs will ensure that ENFORCE maintains a user-centred trajectory, maximising the societal, operational, and environmental value of the project’s results.

6.0 Annex : Taxonomy Input from ENFORCE Case Study From First User Uptake Workshop on 10 October

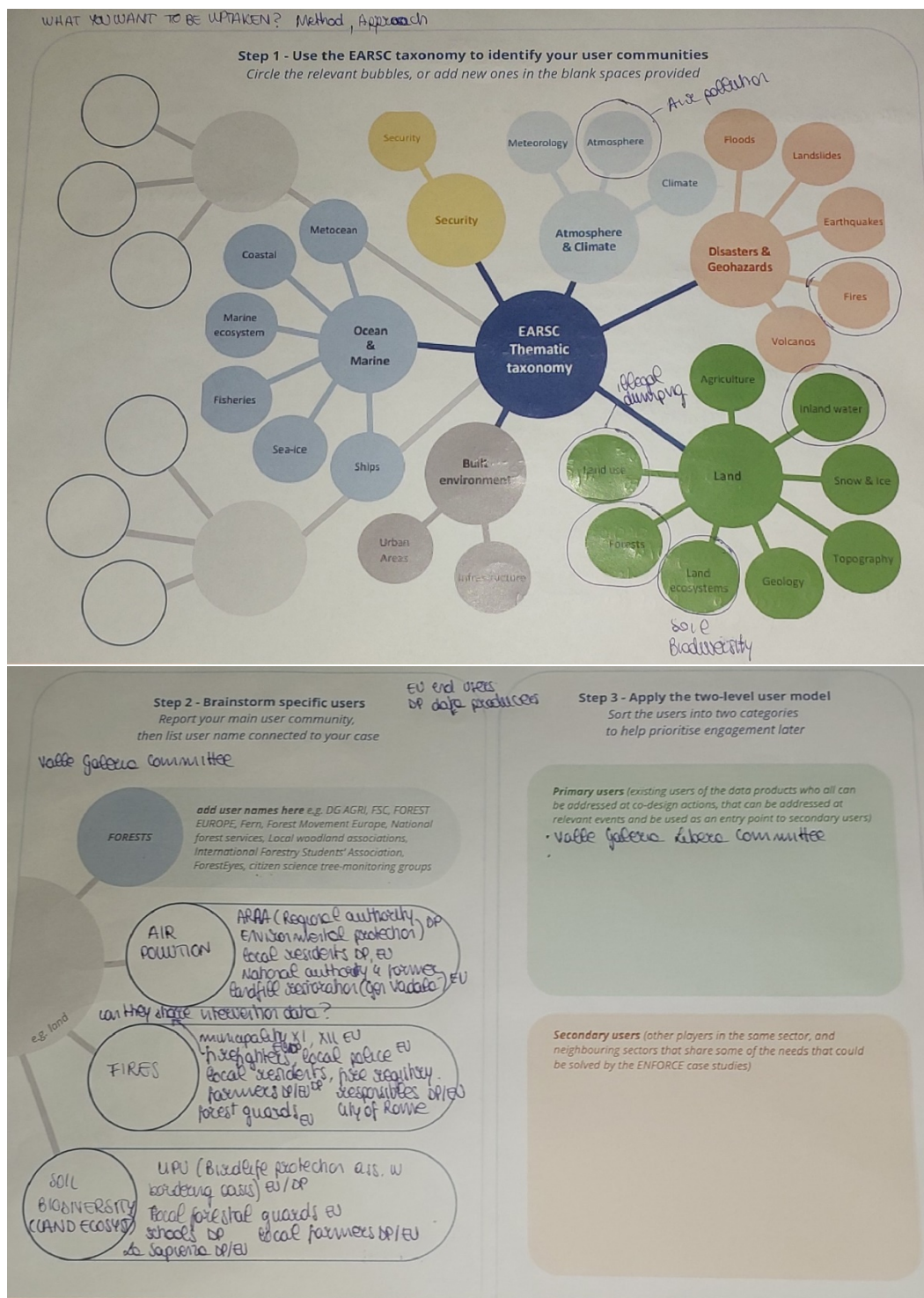


Figure 13. User Uptake Workshop: Case study 1 worksheets

Case Study #1 - Valle Galleria, Italy	
Name and description of the Service, Application, Dataset, Algorithm, etc. developed by the case study for users to uptake	Athena Platform(platform tailored to the Valle Galleria context tha could be adapted to other extremely polluted contexts with multiple criticalities)
Thematic Users	Air Pollution: ARPA Lazio (Agenzia Regionale Protezione Ambientale del Lazio); Local Residents, data producers, Government and judicial authorities (former landfill of Malagrotta) Fires: Municipality XI & XII (Local authorities governing these two areas of Rome, since Rome is a big city there are different local authorities that report to the general municipality, Valle Galleria is locate between these two municipalities); local police, farmers, local residents, forest guards, Soil Biodiversity (Land Ecosystem): Local Farmers, Local Forestry Guards
Primary Users	Valle Galleria Libera Committee, Inhabitants of Valle Galleria
Secondary Users	Local istitutions, local farmers, journalists, academic researchers, local schools, managers of neighbouring protected areas, environmental protection associations

Figure 14. User Uptake Workshop outcomes in digital format: Identification of case study 1 user communities

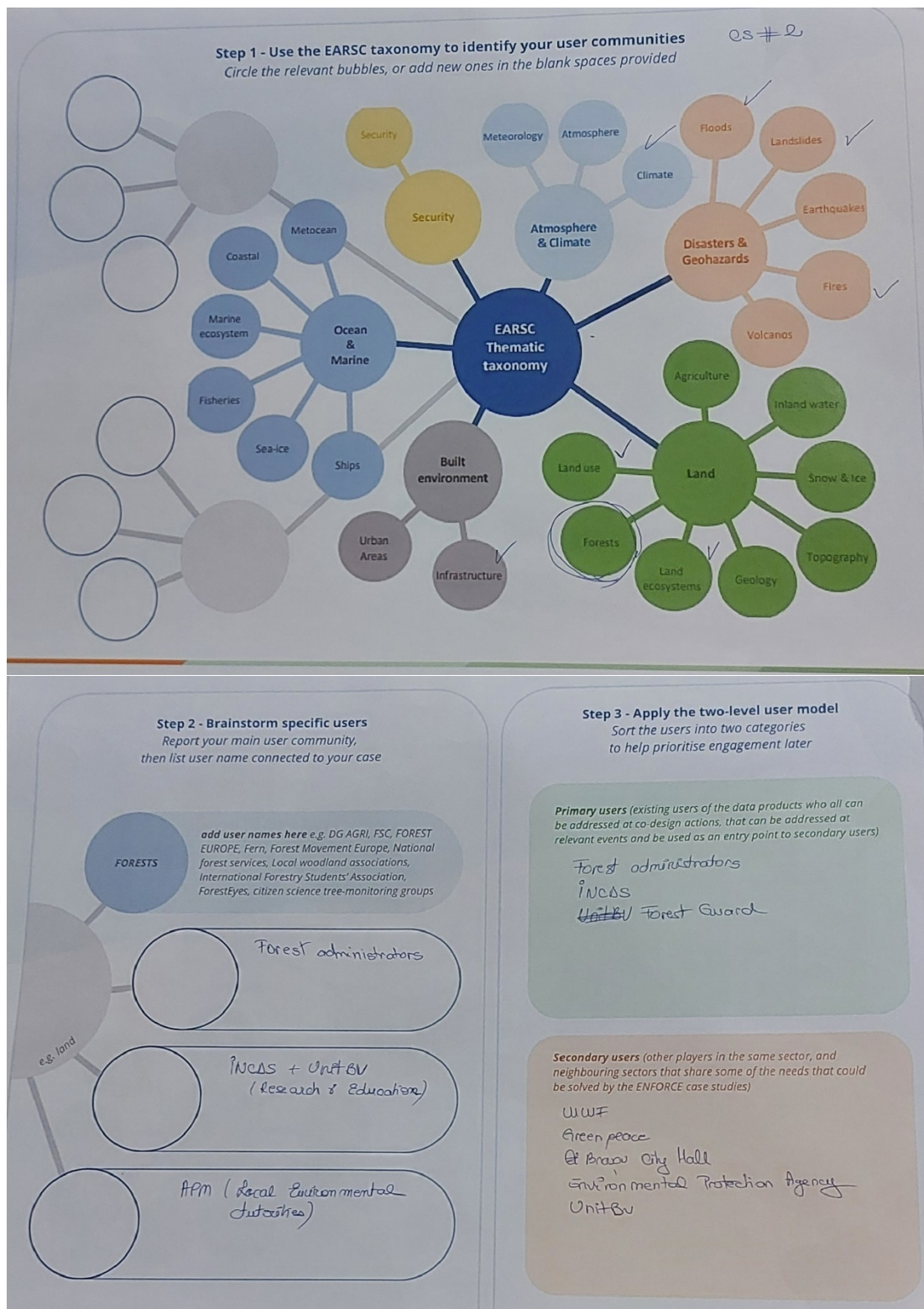


Figure 15. User Uptake Workshop: Case study 2 worksheets

Case Study #2 - Brasov, Romania	
Name and description of the Service, Application, Dataset, Algorithm, etc. developed by the case study for users to uptake	Primary Service needs to be connected with <u>forests</u> (illegal logging) + (sustainable forest management). Secondary services can be: forest fires
	Land Use, Forests, Land Ecosystems: Forest Administrators, INCDS (National Institute for Research and Development in Forestry Marin Dracea) and Transilvania University of Brasov (UnitBV), Forest Guard
Thematic Users	Other thematics: Infrastructure, Fires, Landslides, Floods, Climate
Primary Users	Forest Administrators, INCDS, Forest owners
Secondary Users	WWF, Greenpeace, Environmental Protection Agency, UnitBV, Forest Guard

Figure 16. User Uptake Workshop outcomes in digital format: Identification of case study 2 user communities

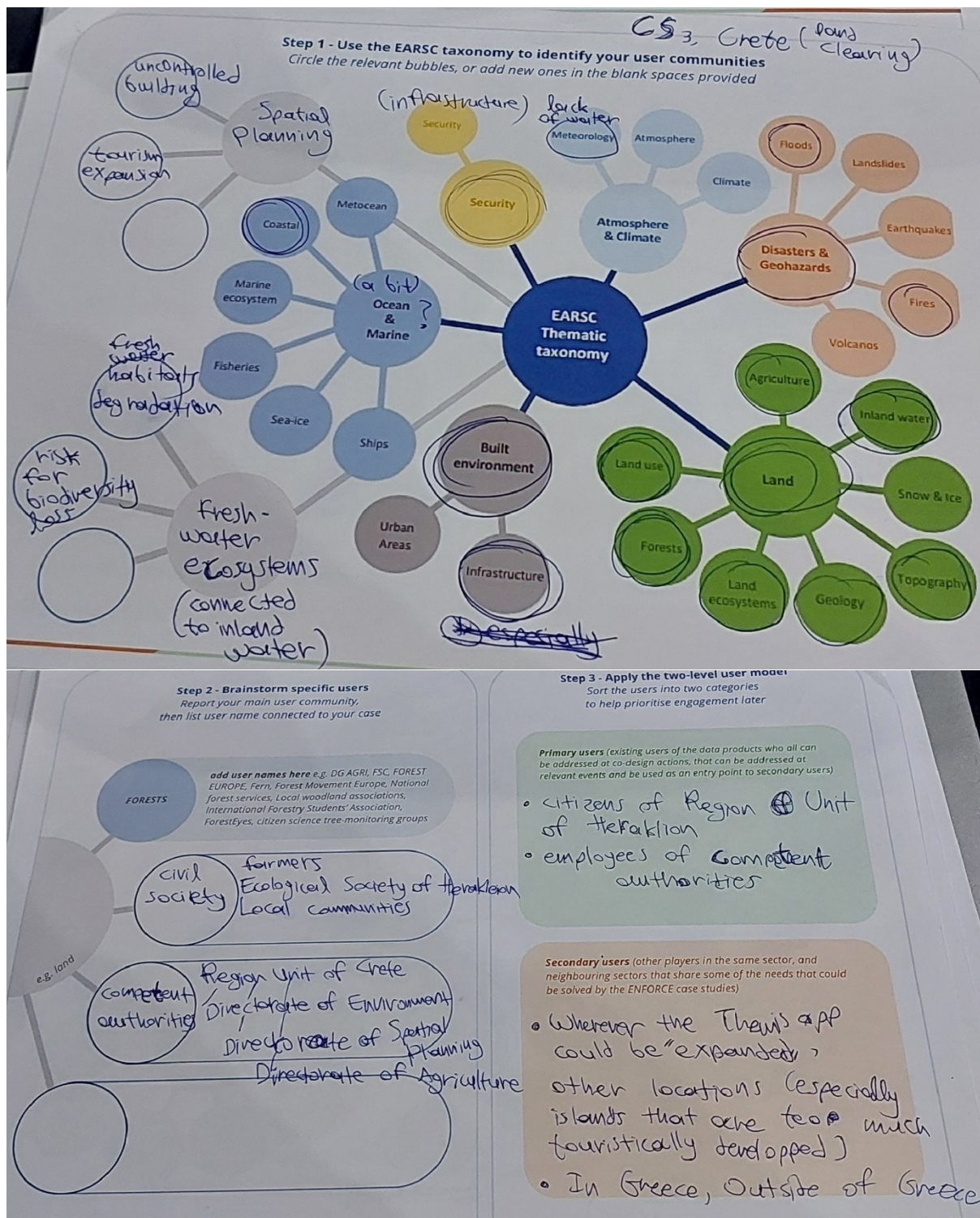


Figure 17. User Uptake Workshop: Case study 3 worksheets

Case Study #3 - Crete, Greece	
Name and description of the Service, Application, Dataset, Algorithm, etc. developed by the case study for users to uptake	THEMIS app reporting tool for environmental crime, specifically land clearing reports, and increasing number of users
Thematic Users	Civil Society: Local communities, Ecological Society of Heraklion, Natural Environment and Climate Change Agency (Crete) Farmers Region Unit of Crete, Directorate of Environment, Directorate of Spatial Planning, Directorate of Agriculture
Primary Users	Citizens of Region Unit of Heraklion, Employees of Competent Authorities
Secondary Users	THEMIS App can be expanded to other locations (especially islands that once had much tourism activity), locations within and outside of Greece

Figure 18. User Uptake Workshop outcomes in digital format: Identification of case study 3 user communities

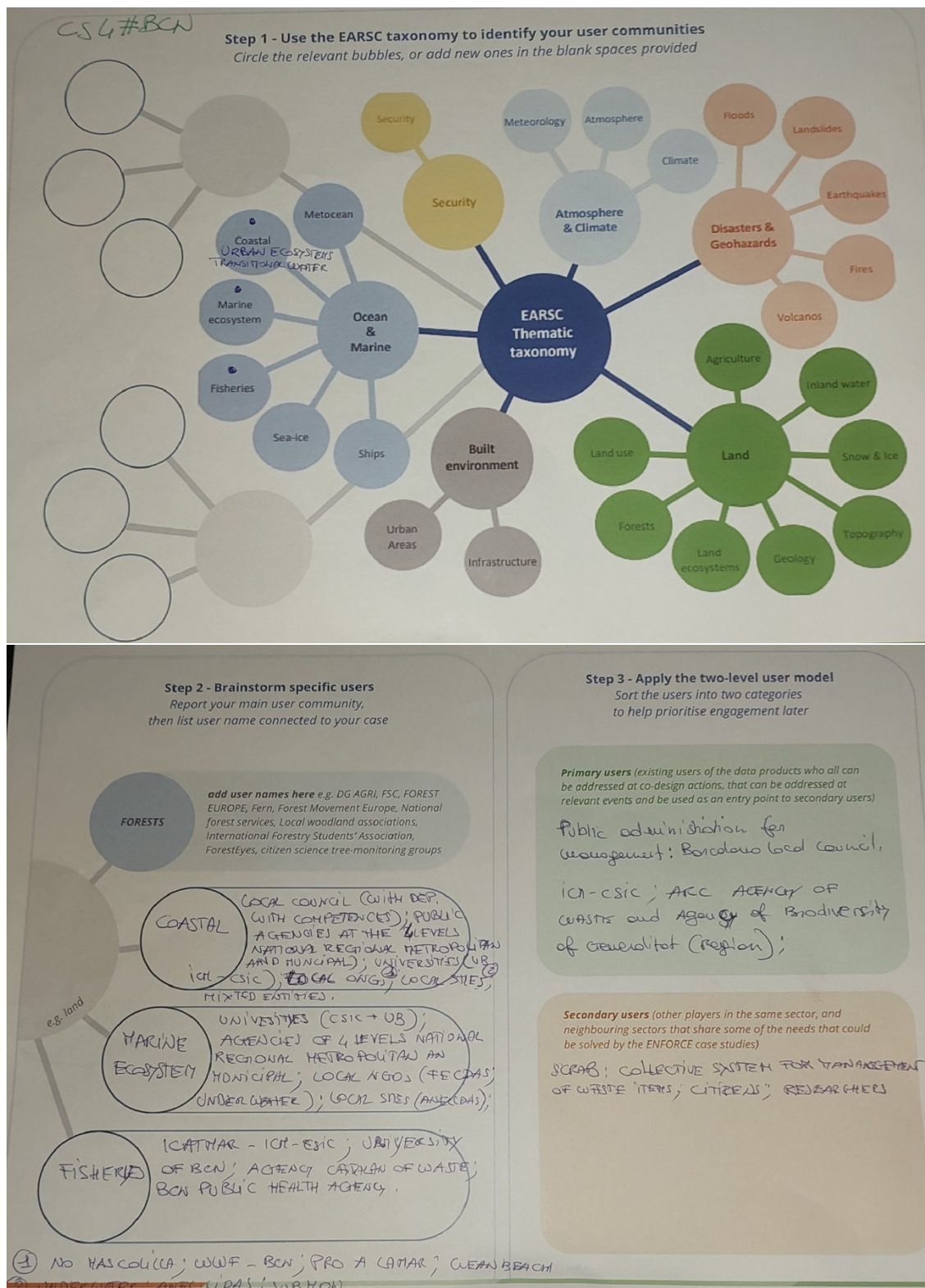


Figure 19. User Uptake Workshop: Case study 4 worksheets

Case Study #4 - Barcelona, Spain

Name and description of the Service, Application, Dataset, Algorithm, etc. developed by the case study for users to uptake	MINKA https://minka-sdg.org
	Coastal: Local Council (with Department with competencies), public agencies at the 4 levels (national, regional, metropolitan and municipal), Universities Marine Ecosystem: Universities (CSIC + UB), Agencies at 4 Levels (see above), Local NGOs (FECIDAS, Underwater), Local SMEs, WG 1: Marine Biodiversity ICM-CSIC; BCASA; FECIDAS; Anèl·lides; SUBMON; Atlesde biodiversidad; Fundació Barcelona Capital Nàutica. WG 2: Cigarette Butts ICM-CSIC; BCASA; Centre de la Platja; ASPB; WWF; CleanIncitatives; No más colillas en el suelo; Proa a la Mar. WG 3: Wet Wips ICM-CSIC; BCASA; ARC; ACA; FECIDAS; Underwater; ICATMAR; UB; Fundació Barcelona Capital Nàutica
Thematic Users	
Primary Users	Public administration for management, Barcelona Local Council, ICM-CSIC, Agency of Waste and Agency of Biodiversity
Secondary Users	SCRAB, Collective System for management of waste items, citizens, researchers

Figure 20. User Uptake Workshop outcomes in digital format: Identification of case study 4 user communities

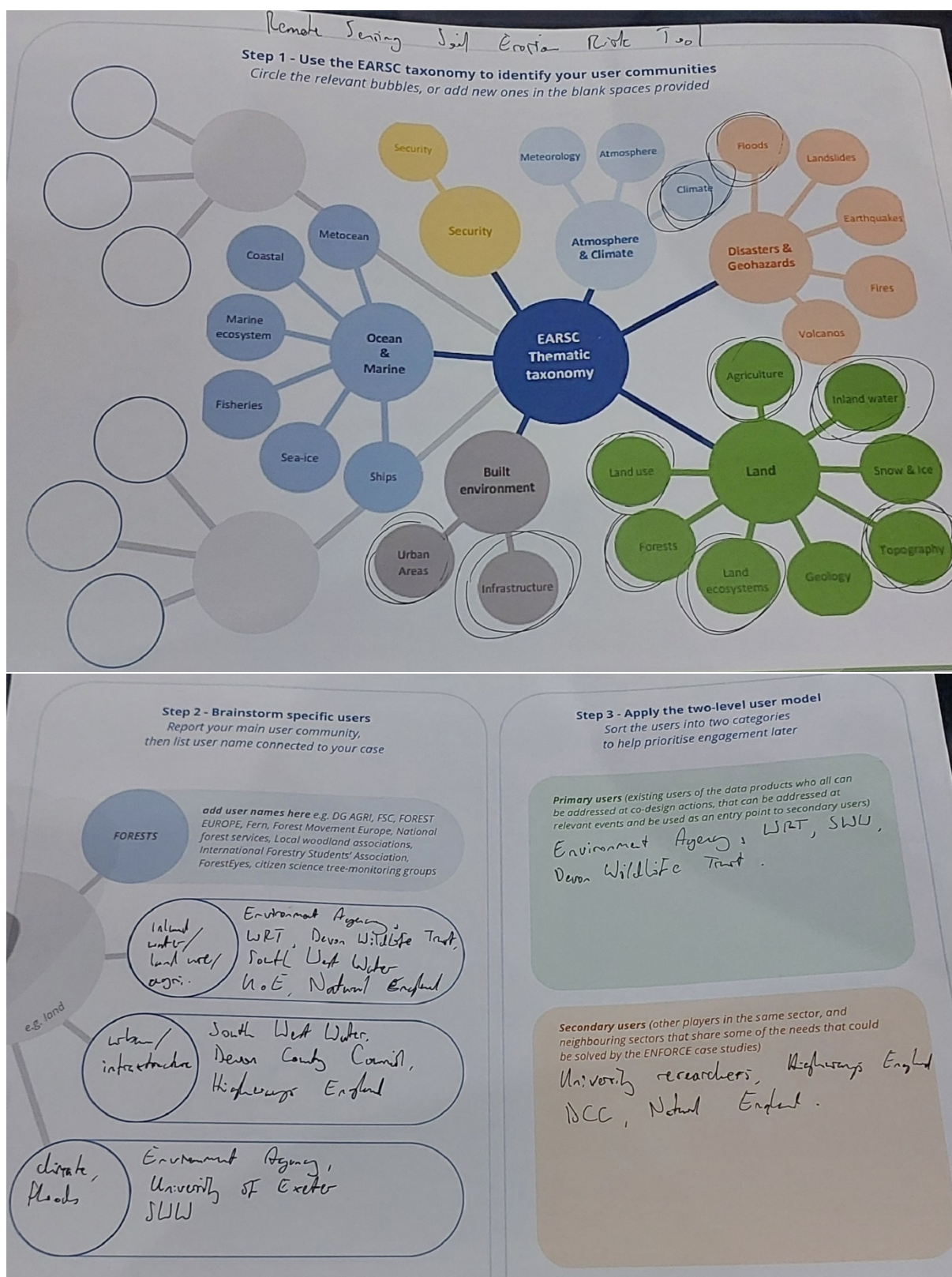


Figure 21. User Uptake Workshop: Case study 5 worksheets

Case Study #5 - East Devon, UK	
Name and description of the Service, Application, Dataset, Algorithm, etc. developed by the case study for users to uptake	Remote Sensing & Erosion Risk Tool
	Inland Water/ Land Use/ Agriculture: Environment Agency, Devon Wildlife Trust, University of Exeter, Natural England
	Urban Infrastructure: Devon County Council
Thematic Users	Climate Floods: Environment Agency, University of Exeter, Southwest Water
Primary Users	Environment Agency, Westcountry Rivers Trust, South West Water, Devon Wildlife Trust
Secondary Users	University Researchers, Highways England, Natural England, Devon County Council

Figure 22. User Uptake Workshop outcomes in digital format: Identification of case study 5 user communities

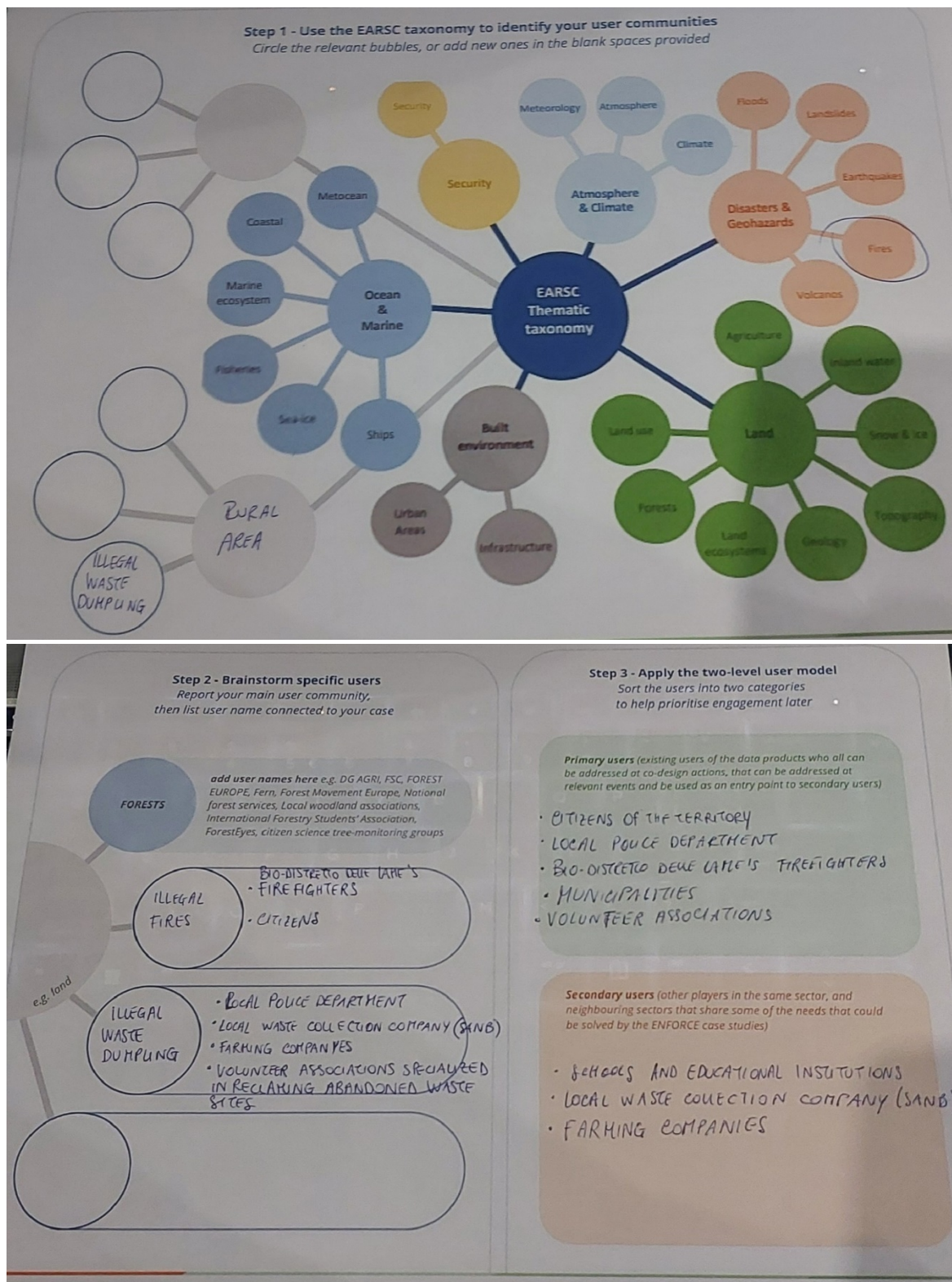


Figure 23 User Uptake Workshop: Case study 6 worksheets

Case Study #6 - East Devon, UK	
Name and description of the Service, Application, Dataset, Algorithm, etc. developed by the case study for users to uptake	Digital Tool using innovative data sources to identify illegal fires and waste
Thematic Users	Illegal Fires: Bio-distretto delle Lame, Fire Fighters, citizens Illegal Waste Dumping: Local Police Department, Local Waste Collection Company (SANB), Farming Companies, Volunteer Associations Specialised in Reclaiming Abandoned Waste Sites
Primary Users	Citizens of the Territory, Local Policy Department, Bio-distretto delle Lame, Firefighters, Municipalities, Volunteer Associations
Secondary Users	Schools and Educational Institutions, Local Waste Collection Company (SANB), Farming Companies

Figure 24. User Uptake Workshop outcomes in digital format: Identification of case study 6 user communities

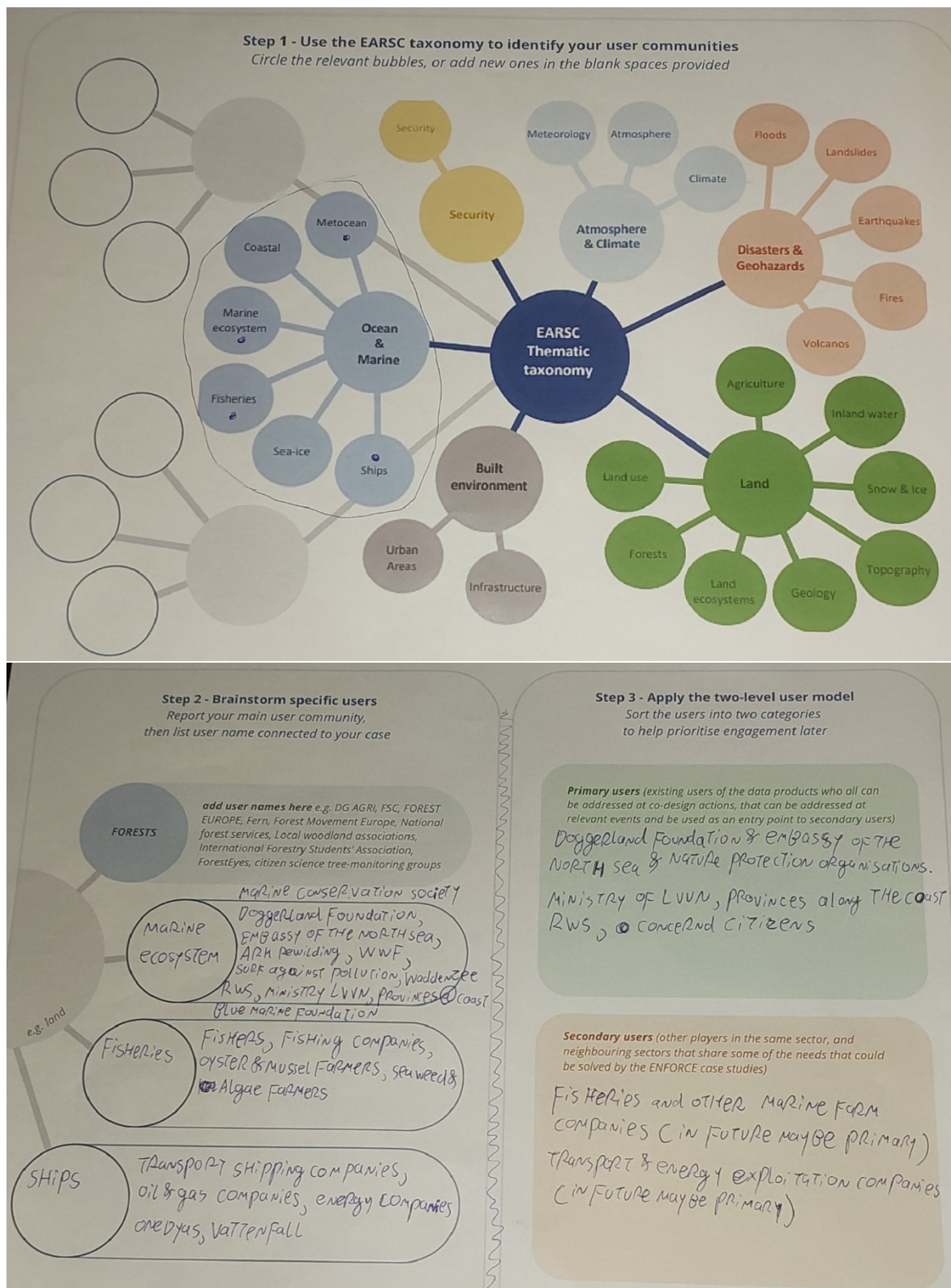


Figure 25. User Uptake Workshop: Case study 7 worksheets

Case Study #7 - Amsterdam, Netherlands	
Name and description of the Service, Application, Dataset, Algorithm, etc. developed by the case study for users to uptake	A platform accessible through pc and mobile combining oceanographic data: ideally water quality, water composition (pollutants), biodiversity and EO, into a platform where citizens, scientists, industry & government can look at to report activity, anomalies and retrieve the data.
Thematic Users	Metoccean & Marine: Doggerland Foundation, Embassy of the North Sea, Nature Protection Organisation & Concerned Citizens, Government: Ministry of LNVN, Rijkswaterstaat, provinces at the coast
Primary Users	Doggerland Foundation, Embassy of the North Sea, Nature Protection Organisations, concerned citizens, Ministry of LNVN, Provinces along the coast, RWS,
Secondary Users	Fisheries and other aquaculture companies, transport & energy exploitation companies

Figure 26. User Uptake Workshop outcomes in digital format: Identification of case study 7 user communities

Case Study #8 - Flanders, Belgium	
Name and description of the Service, Application, Dataset, Algorithm, etc. developed by the case study for users to uptake	Soil phytoremediation trials will lead to scientific data. This data will be sent to DOV Flanders (Flanders Subsurface Database) where all citizens can consult Flanders soil quality data, honoring environmental transparency and promoting chemical pollution cleanup strategies.
Thematic Users	Agriculture: Local Farmers, Farmers Associations, e.g. Boerenbond (Flanders Farmers Association) Land Ecosystem (Soil health, protection, and biodiversity): Local Farmers, Farmers Associations, e.g. Boerenbond (Flanders Farmers Association), 3M Industry, OVAM (Flemish Waste Agency), Flemish Environment Agency (VMM)
Primary Users	Citizens of Zwijndrecht and the whole Flemish Region, Employees of competent Flemish authorities (OVAM, VMM), Municipal government of Zwijndrecht, Zwijndrecht Gezond (local advocacy group), concerned citizens in the whole country
Secondary Users	Farmers & their associations, environmental NGOs (e.g. Natuurpunt), Industries with chemical (or specifically PFAS) emissions onto soil and water, Environmental Agencies of the other two Belgian regions (Leefmilieu Brussel - BIM & SPW Agriculture, Ressources naturelles et Environnement in Wallonia), Citizen Science Vlaanderen, KIS-working group (Flemish knowledge soil remediation center).

Figure 27. User Uptake Workshop outcomes: Identification of case study 8 user communities. Information was provided via email after the workshop.



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