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WP03 - Setup of Wildfire Prevention systems for Case Study 1

D3.1: Fire-Related Interviews

Due date of submission: 31/12/2025

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List of participants

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Deliverable specifications

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Author	M. Doval (UVIGO), B. Martins (UVIGO) and T. Lago (UVIGO)

Abstract

Version	Date	Description
V0	**01/12/2025**	**Table of Contents**
V1	**11/12/2025**	**First Draft**
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Abstract of the deliverable
This deliverable presents the conceptual, methodological, and empirical foundation for analyzing rural communities' perception of wildfire in Galicia (Spain) and selected regions of Greece, as part of the STORCITO project. Within a multi-stakeholder approach, 100 in-depth interviews were conducted with rural stakeholders to assess their resource management needs, the psychology of fire, and how they perceive forests and wildfire risk. The interviews were supported by UVIGO, INORDE (Spain), and AUA (Greece).

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The deliverable synthesizes socio-territorial factors influencing wildfire perception, highlighting the effects of rural depopulation, land abandonment, traditional land-use practices, and institutional responses. Stakeholders expressed the socio-emotional dimensions of wildfire, emphasizing the relevance of inclusive governance, trauma-aware approaches, and recognition of traditional ecological knowledge. erritorial differences between Atlantic and Mediterranean rural contexts are considered, but the objective is not to conduct a comparative analysis between countries or regions; rather, it focuses on building a shared understanding of wildfire perception in rural communities.

The methodological and participatory approach provides the empirical basis for a wildfire prevention sandbox which will be delivered in deliverable *D3.3 Fire-prevention sandbox*.

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1. Executive Summary

This report presents the methodology, implementation, and main outcomes of Deliverable *D3.1 Fire-related Interviews*, within Task 3.1 of the STORCITO project's WP3. The deliverable forms the first empirical milestone towards the co-creation of a wildfire prevention sandbox, aligned with Objective 3.2, which focuses on assessing the forest perception of rural communities to inform participatory fire prevention strategies.

Between May and December 2025, a total of 100 in-depth interviews were conducted with rural stakeholders in Spain (Galicia, n = 70) and Greece (various regions, n = 30). These interviews focused on stakeholders' perceptions of forest and land management, their psychological experiences with fire events, and their practical needs for prevention, recovery, and support systems. The research was designed as a qualitative, multi-sited exploration, involving a diverse array of rural actors: farmers, livestock owners, civil protection agents, foresters, mayors, environmentalists, women's associations, youth, and knowledge holders. Interviewees were identified using a multi-actor and snowball sampling strategy, grounded in prior EU projects (e.g., GRANULAR, FIREPOCTEP+), and further diversified through local contacts and fieldwork outreach in both countries.

To accommodate stakeholder availability and regional differences, the interviews were conducted through a mix of modalities**:** Online (Teams, Zoom), Face-to-face, and Telephone. Languages used included Galician, Spanish, and Greek, with all transcripts translated into English for analysis. Interviews were transcribed using *MaxQDA* for in-person sessions and Teams transcription or detailed notes for online or telephone-based interviews. The analysis followed a hybrid inductive–deductive approach. Initial coding was informed by the research questions, while additional categories emerged iteratively from the interview data during the coding process.

While the fieldwork covered two countries and four distinct rural settings, the report does not aim to provide comparative analysis. The sample size and non-random selection preclude generalization. Instead, the goal is to construct a joint, cross-territorial understanding of wildfire-related perceptions and needs, with some illustrative contrasts noted when relevant. This deliverable is foundational for upcoming participatory activities in WP3. It provides not only data, but also context, diversity of voices, and the ethical foundation for future co-creation activities, and to design effective and inclusive solutions. It includes:

- A detailed account of the methodological design, including stakeholder selection, ethical protocols, and pilot testing.

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- A characterisation of the interviewed population, including age, gender, sectoral affiliation, and geographical diversity.
- Thematic results along key axes.
- A review of challenges encountered during fieldwork.
- Link with the development of the wildfire prevention sandbox.
- Annexes.

While anonymised, the dataset may be made available upon request for auditing purposes.

2. Introduction

Wildfires are increasingly recognised not only as environmental hazards, but as complex socio-territorial phenomena shaped by demographic shifts, land use dynamics, institutional responses, and local cultural perceptions. In Mediterranean and Atlantic rural regions, where climate change, land abandonment, and rural depopulation converge, the risk of severe wildfires is intensifying, and so is the need for inclusive, context-sensitive prevention strategies.Galicia is one of Spain's regions most severely affected by wildfires. In 2025, the wildfire season was exceptionally intense: over 118,966 hectares were estimated to have burned, with approximately 1,500 fire outbreaks recorded, and autonomous authorities reported that around 70 % of these were set deliberately (Cadena SER, 2025). Moreover, historically the region has been among those with the highest number of fires and the most extensive burnt areas in Spain (Maqueda, 2024).

Similarly, Greece also faces a very high risk of wildfires, particularly during the summer months, due to its Mediterranean climate and frequent conditions of high temperatures and prolonged droughts. Large-scale fires have occurred in recent years; for example, in 2023 thousands of hectares were burned (Rhoden-Paul, 2023).

In both regions, it is notable that many wildfires are caused by human factors, such as negligence or deliberate ignition. Moreover, across Europe, it has been recorded that around 90 % of wildfires are directly or indirectly linked to human activities, including carelessness, agricultural practices, accidents and intentional provocations. (European Comission, 2022). Where underlying territorial and socio-economic factors, such as rural depopulation and land abandonment, have contributed to this situation.

The interaction between land use and rural management is therefore crucial. The abandonment of traditional practices, such as grazing, controlled burning and landscape fragmentation, has encouraged vegetation homogenisation and the accumulation of

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highly flammable biomass. In many cases, the expansion of forest monocultures and the lack of clearing of scrub and woodland increase fuel continuity, creating conditions conducive to large-scale wildfires (Tedim et al. 2018). Rural communities' perception of wildfire risk is shaped by these factors: traditionally, fire was part of landscape management practices, but in contexts of social and climatic change its role has shifted and, in many cases, it is perceived as an external and uncontrollable threat (Gordon et al. 2010).

Within this context of risk perception and management, techniques such as the analysis of anthropogenic causes, participatory observation and local case studies have been employed to link rural actors' experiences with ignition and spread patterns, incorporating both traditional knowledge and scientific evidence on human and climatic factors that influence wildfires (Millington, Perkins & Smith, 2022). Building on these insights, the STORCITO project aims to translate them into practice through participatory and co-creation methods. Task 3.1 centres on the development of a forest prevention sandbox by engaging 100 rural stakeholders in Spain and Greece to examine resource management needs, perceptions of fire and associated psychological dimensions. This report sets out the methodology, findings and operational implications of Deliverable D3.1 – *Fire-related Interviews: Results of Interviews with Rural Stakeholders in Spain and Greece*, produced within WP3 of the STORCITO project, which addresses prevention systems for Case Study 1: Wildfire prevention and monitoring in Atlantic and Mediterranean rural regions. Specifically, it documents the outcomes of Task 3.1, which initiates the design of a co-created sandbox by exploring the perceptions and lived experiences of rural stakeholders.

The objective is not to statistically compare countries or territories, but to provide a shared, practice-informed knowledge base on rural wildfire dynamics. This effort supports Objective 3.2, which aims to incorporate community perceptions of forests and risk into tools for local prevention planning.

Between June and December 2025, 100 in-depth interviews were conducted with a wide range of stakeholders, in four rural regions: inland and coastal in Galicia (Spain); and, in Thessaly and in the Peloponnese (Greece). These interviews explored themes such as emotional memory of fire, traditional and institutional knowledge, land management challenges, and willingness to participate in co-creation processes. The fieldwork was informed by prior stakeholder mapping, ethical approvals, a tested interview guide, and a multi-modal approach combining face-to-face, online and telephone-based methods.

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This report is structured to guide the reader through the full process of design, implementation, and analysis of the interviews carried out within STORCITO's WP3. Following an initial abstract and introduction, Section 3 sets out the methodological framework, including stakeholder identification, sampling logic, interview design, and the ethical and data management protocols applied. Section 4 focuses on field implementation and data collection, detailing the role of local partners, sampling diversity, and tools used. Section 5 presents the analytical approach and findings, organised by thematic axes and in response to research questions, cross-cutting issues (e.g. gender, age, institutional trust), and territorial contrasts between Galicia and Greece. The report concludes with conclusions (Section 6) and a proposal for the next steps in WP3 (Section 7). The annexes provide supporting materials including stakeholder matrices, interview guides, and pilot documentation, among others.

3. Methodological Framework

The Methodological Framework is based on multi-actor approach and a purposive sampling strategy. This research aligns with established qualitative standards for transparency and rigour, following the COREQ (*Consolidated Criteria for Reporting Qualitative Research*) checklist (Tong, Sainsbury, & Craig, 2007), and builds on recent methodological guidance for territorial data collection and stakeholder engagement in Living Labs and rural innovation contexts (Carbonés, Biosca, & Ulied, 2023; GRANULAR Consortium, 2023).

This study is grounded in interdisciplinary scholarship on rural governance, wildfire risk, landscape management, and participatory approaches to territorial transformation. Recent research highlights that wildfire risk is not merely a biophysical phenomenon, but a socio-ecological process shaped by land-use change, governance arrangements, and cultural practices (Chartier, Guimont, & Pye, 2023).

From a territorial governance perspective, rural landscapes are increasingly characterised by tensions between centralised regulatory frameworks and locally embedded knowledge systems (Schwarz, Miller, & Martino, 2022). These tensions are particularly evident in fire-prone regions, where traditional land-use practices (such as extensive grazing, mosaic landscapes, and prescribed burning) have historically played a preventive role but are often marginalised by modern land management regimes (Papanikolaou et al., 2013; Karamesouti et al., 2016).

Stakeholder engagement and co-creation are recognised as critical components of effective rural transitions and risk governance (Barko, Hanzl, & Madani, 2022; Trivelli, Fontana, & Lafuente, 2021). European policy frameworks, including the Cork 2.0

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Declaration and the Long-Term Vision for Rural Areas, explicitly call for place-based, participatory, and inclusive governance models that strengthen rural resilience (European Commission, 2016, 2021).

3.1. Research Questions

The qualitative research conducted for this deliverable aims to address the following guiding questions:

1. How do rural stakeholders perceive fire risk, forest management, and landscape change in their territories? (RQ1)
   - What narratives and metaphors do they use to describe their relationship with fire and land?
   - How are these perceptions shaped by local geography, history, and professional roles?
2. What psychological and emotional responses emerge in the aftermath of wildfires? (RQ2)
   - How do past experiences with fire influence current attitudes toward prevention and institutional trust?
   - What forms of trauma, resilience, or disconnection are reported?
3. What role do different stakeholder groups (e.g., women, elders, migrant workers, livestock farmers) play in fire prevention and territorial stewardship? (RQ3)
   - How is traditional or experiential knowledge transferred across generations?
   - What barriers to participation or visibility do marginalise groups face?
4. Which land-use practices, tools, or local strategies are seen as effective for fire prevention? (RQ4)
   - How do stakeholders value extensive grazing, landscape mosaics, or low-tech interventions?
   - What tensions exist between formal regulation and adaptive rural practices?
5. What are the enabling and limiting factors for co-creation and community-based fire governance? (RQ5)
   - How do stakeholders envision their role in future prevention systems (e.g. the sandbox)?
   - What types of support—policy, financial, organisational—do they require?

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3.2. Stakeholder Identification: Multi-actor approach

The stakeholder selection process for the interviews was in line with STORCITO's multi-actor approach, with a strong emphasis on territorial diversity, social inclusion and knowledge pluralism. The objective was to engage a broad and representative spectrum of rural actors and communities, which are directly and indirectly involved in wildfire prevention, land stewardship and rural resilience.

A total of 20 stakeholder types were identified and grouped into five main domains of rural action (see Annex 1):

1. **Public Sector**: Local and regional authorities, civil protection services, forestry departments.
2. **Private Sector**: Agricultural cooperatives, farmers, livestock associations, forestry contractors, rural entrepreneurs, and enterprises.
3. **Civil Society**: Volunteer fire brigades, rural women's associations, youth groups, cultural associations, and seasonal migrant workers.
4. **Knowledge Actors**: Researchers, local educators, science communicators, and traditional knowledge holders.
5. **Environmental and Land Use Organisations**: Environmental NGOs, land justice collectives, natural park agencies, and land stewardship entities.

This categorisation ensured a balanced stakeholder map across institutional roles (formal/informal), knowledge systems (scientific/traditional), and territorial embeddedness (inland/coastal, forest/pastoral).

It is important to note that stakeholders' profiles are not always mutually exclusive. Several interviewees held overlapping roles within their communities. For instance, some were both *comuneros* (communal land users) and volunteer firefighters, while others were retired individuals over 65 who also held active roles in cooperatives or informal land management. These overlaps reflect the multifunctional character of rural actors and the complex social dynamics of fire governance. For analysis, stakeholders were classified according to their primary role, while acknowledging intersecting characteristics such as age, gender, and institutional affiliation. Moreover, efforts were made across all categories to ensure gender and age diversity**,** following a principle of inclusivity. In line with a gender-sensitive approach, a specific category was created for rural women's associations, recognising the historical underrepresentation of women in forest governance and the need to foreground their specific experiences, contributions, and leadership within community-based fire prevention strategies. Likewise, a distinct category was created for seasonal migrant workers under the private sector, acknowledging their increasing presence in rural economies and their often invisible yet vulnerable position in landscape management and wildfire risk exposure.

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3.3. Stakeholders Engagement Process

The stakeholder's engagement process was guided by the Stakeholders Engagement Framework developed within the STORCITO project (see Annex 1), which outlines key criteria to ensure the inclusivity, diversity, and contextual appropriateness of the sample. The approach prioritised the following dimensions:

- **Gender**: Active efforts were made to include women, particularly in male-dominated sectors such as forestry and land management.
- **Age groups**: Stakeholders of varying ages were included, with special attention to older participants, whose long-term memory of fire events and local knowledge is vital for understanding evolving risk perceptions.
- **Geographic location**: Sampling ensured a balance between inland and coastal zones, and between forest-based and livestock-based economies, capturing a variety of socio-ecological settings.
- **Visibility and influence**: The process deliberately included low-influence or vulnerable actors, such as informal land users**,** seasonal migrant workers, and residents of isolated areas, to avoid elite capture and better reflect lived realities.

Stakeholders were pre-identified and classified using the Stakeholder Matrix Template (Annex 1), which records key variables including actor type, influence and affectedness levels, vulnerability status, preferred language, and engagement modality. To operationalise this engagement strategy, the following tools and methods were used:

- **Stakeholder Matrix Templates**: Used to ensure coverage across the five stakeholder domains.
- **Inclusivity Checklist** (see Annex 1): To verify representation across gender, age, geography, and institutional roles.
- **Stakeholder Engagement Logs** (see Annex 1): Used to track contacts, declined invitations, language preferences, and accessibility notes.
- **Direct outreach** via email, telephone, and in-person visits, supported by local institutions and trust-based networks established through previous EU projects (e.g. GRANULAR, FIREPOCTEP+).

In cases where individuals were reluctant to participate formally (particularly elderly or emotionally affected stakeholders) field researchers adopted flexible approaches, such as note-based interviews or informal conversations, maintaining rigour while reducing psychological burden. Note that all engagement activities complied with STORCITO's ethical and data protection protocols, with specific emphasis on (Jansen, L., Zucca, C., & Graaff, J. de. (2020)) gender balance and sensitivity, inclusion of underrepresented groups and territorial representativeness.

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Participants were offered multiple modalities of participation (face-to-face, online, or telephone), based on their connectivity, comfort, and availability. This adaptive and participant-centred approach proved essential in securing a diverse and representative sample, especially in contexts of digital exclusion or seasonal labour constraints.

3.4. Sampling Logic and Framework

The sampling strategy was purposive, aiming to capture actors with relevance to wildfire risk, land use, and rural resilience, whether through direct practice, policymaking, or lived experience. Sampling pathways included:

- **Pre-existing networks** of stakeholders developed through previous European projects involving the STORCITO consortium.
- **Institutional referrals** provided by project partners and local governments.
- A **snowball sampling technique**, whereby participants recommended others within their community or professional network. This method was particularly effective in reaching hard-to-access or informal actors, such as elder smallholders**,** retired forest workers, and migrant farm labourers.

This sampling logic enabled a context-sensitive**,** bottom-up engagement process, rooted in territorial knowledge and social proximity, while meeting the project's goal of compiling 100 qualitative interviews that reflect the diversity of rural perspectives on fire and land management across Spain and Greece.

3.5. Desing of Interview Tool and Procedure

The data collection was based on a semi-structured, multilingual Interview Guides (Annexes 2A, 2B), developed to capture in-depth, context-sensitive insights into wildfire perception, emotional responses, and prevention-related needs among rural stakeholders in Galicia (Spain) and Greece.

The protocols were co-designed by UVIGO and AUA, with input from other WP3 partners. The design was rooted in participatory research principles and drew inspiration from EU projects such as GRANULAR**,** RUSTIK and FIREPOCTEP+**.** It was developed to structure the conversation, ensure thematic consistency, and support intercoder alignment during analysis. It served as a practical, theory-informed roadmap for field researchers, allowing for consistency across diverse regions (Galicia and Greece) while leaving room for contextual adaptation. Therefore, it was shaped to be common and flexible, allowing for comparability while adapting to different stakeholders; modular, including optional sections as those referred to livestock-related concerns; and open ended, favouring narrative responses and interviewee elaboration. The guide was made available in Spanish, Galician, Greek, and English, and adjusted to fit the local context and

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linguistic preferences of participants. Moreover, the interview design incorporated trauma-informed principles, especially when addressing fire memories or emotional impact**.** With this structure in mind, the interview aimed to gather insights on:

- Socio-demographic background.
- Experience and memory of fire events.
- Emotional and psychological impacts.
- Forest and land-use perception.
- Prevention practices and expectations for future systems.
- Institutional trust and risk communication.

Finally, informed consent was obtained in all cases, and interviewers were trained in ethical fieldwork procedures. The Interview Guide was shared in advance with local facilitators and included both core thematic questions and probes for deeper engagement. The Interview Guides A and B were approved as part of the ethics and data management protocol submitted to and reviewed by the University of Vigo (Annex 3).

3.5.1. Interview Structure

The interview guide is organised into nine thematic blocks, namely:

1. Personal and local context
2. Forest and land perception
3. Fire: experience, perception, and emotional response
4. Human activities and fire prevention
5. Resource management needs
6. Capacity and willingness to co-create solutions
7. Regional identity and local knowledge
8. Communication and influence
9. Final reflections and consent to follow-up

For stakeholders involved in animal husbandry, an additional module (Annex 2A) was included, exploring the role of livestock in vegetation management and fire prevention.

3.5.2. Languages, Format and Duration

- The interviews could be conducted in Spanish, Galician, or Greek. Participants were allowed to express themselves in their preferred language, and interviewers were trained to adapt accordingly. All interviews were later translated into English for analysis and reporting.
- Sessions lasted between 45 to 90 minutes.

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3.5.3. Interview Modalities and Settings

Interviews could be conducted through three main modalities, depending on the availability, digital access, and comfort of participants:

- **Online interviews** via platforms such as Microsoft Teams or Zoom.
- **Face-to-face interviews** conducted in rural homes, municipal buildings or cooperative spaces.
- **Telephone interviews**, where neither digital access nor physical meetings are feasible.

While face-to-face interactions allowed for deeper observation and community immersion, online interviews ensured wider territorial reach, especially during periods of limited physical access (e.g. due to fire risk, summer holidays, or personal constraints).

3.6. Ethical and Data Management Protocol

This section covers Ethical Approval and Compliance, Informed Consent, Anonymity and Confidentiality, and Data Processing, Coding and Analysis Tool.

The methodology underpinning D3.1 followed the STORCITO'S Data Management Plan (DMP) (STORCITO, 2025) and contributed to the development of the task *T1.4 Ethical assessment,* which includes ethical permissions and guidelines related to working with humans and animals. In addition to this, this methodology also followed the recommendations from the *Ethics Committee of the University of Vigo*, which ensures that the procedures were in line with:

- The General Data Protection Regulation (GDPR)
- National ethical standards for qualitative fieldwork in Spain and Greece
- Horizon Europe research ethics guidelines

3.6.1. Ethical Approval and Compliance

Given the sensitive and personal nature of the data collected through the stakeholder interviews (including emotional responses to traumatic wildfire experiences and reflections on local vulnerabilities) strong attention was paid to ethical safeguards, privacy protections, and data quality standards throughout the process. Researchers were trained in ethical interview conduct, including how to respond to emotional distress, how to ensure voluntary participation, and how to adapt to vulnerable

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or low-trust contexts (e.g., elderly, migrants, informal workers). See Annex 3 for the full ethics and data management protocol.

3.6.2. Informed Consent

All participants were provided with an information sheet explaining:

- The purpose and scope of the study
- Their rights (voluntary participation, right to withdraw, data confidentiality)
- How the information would be used, stored, and reported

Consent was obtained via one of the following methods, depending on participant preference and literacy:

- Signed consent forms (in Galician, Spanish or Greek).
- Audio-recorded verbal consent.
- Documented oral agreement, in cases where recording was declined, and literacy was limited.

In particularly sensitive interviews, additional time was taken to build trust, and consent was treated as a process rather than a one-time formality.

3.6.3. Anonymity and Confidentiality

All interviews were fully anonymised. Identifying details have been removed or generalised (e.g., specific village names, roles, affiliations) to protect the identity of participants, especially in small rural communities where individuals are easily recognisable.

A coding system was developed to manage interview files securely. All data were stored in encrypted repositories with restricted access, and no personal identifiers were shared beyond the core research team.

While the report is publicly available, the full raw data set remains confidential and can only be accessed upon formal request for auditing or verification purposes.

3.6.4. Data Processing, Coding and Analysis Tools

Interviews were audio-recorded where permission was granted and otherwise documented manually. Transcription was conducted using *MaxQDA* for in-

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person interviews and recordings, while Teams' built-in transcription features or detailed manual notes were used for online or telephone sessions. The content was then processed within MaxQDA for qualitative coding, using the following strategy:

- A mix of deductive codes (based on research questions and thematic axes) and inductive categories (emerging from the data).
- Multiple rounds of refinement to ensure consistency across teams.
- Cross-validation between Spanish and Greek research teams to harmonise thematic interpretation.

3.7. Pilot Phase

Prior to launching the full series of stakeholders' interviews, a pilot phase was implemented in both Spain and Greece to test and refine the interview tool, assess fieldwork feasibility, and validate ethical and procedural protocols under real conditions. The pilot aimed to assess the clarity, cultural appropriateness, and emotional sensitivity of the interview questions, while also testing the logistics of conducting fieldwork in rural areas, including accessibility, timing, and local collaboration. In addition, it sought to explore stakeholders' willingness to participate and share personal accounts of fire-related experiences, and to identify any ethical, linguistic, or methodological barriers that would need to be addressed prior to full deployment.

The pilot was conducted with a total of 12 participants:

- **Spain (Galicia):** 6 interviews conducted in both Galician and Spanish, covering forestry professionals, women in agriculture, local officials, and elderly rural residents.
- **Greece:** 6 interviews in Greek, with livestock farmers, local civil protection representatives, and community members affected by past wildfire events.

These participants were selected to reflect a diversity of roles, genders, and age groups, as well as to test responses from both formal and informal stakeholder types. The pilot covered both inland and coastal rural areas, mirroring the territorial variety of the full study.

Importantly, the pilot included face-to-face, online, and telephone interviews, replicating the modalities later used in the full fieldwork. This enabled validation of both digital tools (e.g. Teams) and manual procedures in low-connectivity contexts.

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Several adjustments were made as a result of the pilot. The interview guide required some simplification of vocabulary, particularly in sections addressing institutional policies or technical concepts. The emotional impact of fire-related questions was evident in both countries, especially among elderly participants and those directly affected by recent wildfires, leading to additional training for researchers on how to pause, redirect, or sensitively manage conversations when necessary. The livestock-related module (Annex 2A) was considered highly relevant for animal-related stakeholders and was therefore retained as an optional section. Field access constraints, such as limited participant availability during harvest or grazing periods, were identified and subsequently informed the scheduling of the full fieldwork. Interviewers also confirmed the need for flexibility in engagement methods, including offering both recorded and non-recorded interviews depending on participant comfort. Overall, the pilot confirmed the validity and relevance of the interview structure, requiring only minor revisions, and highlighted the importance of using local languages, fostering a respectful and informal setting to build trust, and allowing participants to share their experiences in their own terms and at their own pace.

For further information regarding the pilot, the reader may consult Annex 4 for full details of this phase.

4. Field implementation and Data Collection

This section outlines how the interviews were operationalised across both territories, detailing the roles of local partners, fieldwork logistics, and adaptations to seasonal and territorial constraints. It also presents the final composition of the stakeholder sample and the tools used to ensure consistency and inclusivity.

4.1. Fieldwork on four contrasting rural settings

Between May and December 2025, a total of 100 stakeholders were interviewed: 70 in Galicia (Spain) and 30 in various rural regions of Greece.

The fieldwork focused on four contrasting rural settings, two in Galicia (Spain) and two in Greece, selected to ensure territorial, socio-ecological, and economic diversity aligned with the project's comparative objectives (see Figure 1).

Spain – Galicia (n = 70 interviews)

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Area 1: Inland Galicia – forest-dense, depopulated regions with strong wildfire recurrence and ageing populations. Key sectors: small-scale forestry, elderly landowners, livestock.

Area 2: Coastal Galicia – mixed land-use with peri-urban pressure, emerging environmental activism, and younger populations. Key sectors: SMEs, fire brigades, rural tourism.

Greece (n = 30 interviews)

Area 3: Thessaly – rural-urban interface with livestock activities and high fire risk, history of institutional fragmentation in fire management.

Area 4: Peloponnese – Mediterranean zone with recent mega-fires and high emotional memory, strong presence of informal and intergenerational knowledge.

Figure 1 Territorial distribution of the interviews conducted in Galicia (Spain) and Greece. Key socio-ecological characteristics and stakeholder profiles for each of the four case areas.

These regions represent key contrasts across bioclimatic zones, with Atlantic conditions in Galicia and Mediterranean conditions in Greece; land-use systems, where forest-based economies dominate in Galicia while livestock-based economies prevail in Greece; and spatial dynamics, characterised by inland depopulation in Galicia versus coastal change in Greece.

This diversity adds analytical richness, though the report does not seek to compare territories in a statistically robust sense. Instead, the focus is on generating a cross-contextual qualitative overview of perceptions and challenges, supported by illustrative contrasts. The sample comprises 100 interviews—70 in Galicia and 30 in Greece—covering a wide range of stakeholder profiles, including public authorities, civil protection services, forestry agencies, agricultural cooperatives, livestock associations, communal landowners, rural entrepreneurs, migrant workers, volunteer fire departments, women's networks, youth groups, cultural associations, researchers, educators, environmental NGOs and informal land users (see Table 1). The non-random selection and sample size do not allow for generalisation; this heterogeneity offers deep insights into rural realities and provides a robust foundation for co-designing participatory tools.

Name/group of stakeholders	Type	Specific subtype	Nº Interv. Galicia	Nº Interv. Greece	Total

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Local mayor / Regional authority	Public sector	Local/regional authority	**5**	**1**	**6**
Civil Protection Service	Public sector	Emergency services	**2**	**2**	**4**
Local/Regional Forestry Agency	Public Sector	Forestry Department	**4**	**2**	**6**
Agricultural Cooperative	Private sector	Agricultural Cooperative	**5**	**2**	**7**
Livestock Farmers' Association	Private sector	Livestock association	**2**	**2**	**4**
Communal land owners	Private sector	Forestry contractors	**6**	**1**	**7**
Network of rural entrepreneurs	Private sector	Rural entrepreneurs	**3**	**2**	**5**
Seasonal migrant workers	Private sector	Migrant workers	**2**	**2**	**4**
Volunteer Fire Department	Civil society	Volunteer group	**1**	**3**	**4**
Rural Women's Association	Civil society	Women's Network	**2**	**1**	**3**
Ecological Collective	Civil society	Youth group	**4**	**1**	**5**
Local cultural society	Civil society	Cultural Association	**3**	**1**	**4**
University fire laboratory / researchers	Knowledge actors	Research group	**8**	**3**	**11**
Rural Schools Network / Rural school	Knowledge actors	Local educators	**4**	**1**	**5**
Dissemination/communication	Knowledge actors	Mass knowledge disseminators	**4**	**1**	**5**
Rural environmental association	Environmental	Environmental NGO	**6**	**1**	**7**

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Alliance for Justice for the Earth	Environmental	Environmental Justice Group	**4**	**1**	**5**
Natural Park Authority	Environmental	Natural Park Manager	**1**	**2**	**3**
Informal – Informal land users	Informal	Unregistered land tenants	**4**	**1**	**5**
Total			**70**	**30**	**100**

Table 1 Distribution of stakeholder types and subtypes participating in the 100 interviews (Galicia- Spain and Greece).

4.2. Use of Established Networks and Local Partners

Access to rural stakeholders for in-depth interviews required careful logistical planning, local coordination, and adaptation to seasonal and territorial constraints. The success of this phase relied on strategic use of local networks, targeted field visits, and the integration of research activities with ongoing regional events.

Field access in both Spain and Greece was greatly facilitated by the existing territorial presence and institutional relationships of the leading research teams (UVIGO and AUA). Collaborations with public institutions such as *Instituto Orensano de Desarrollo Económico* (INORDE) who is also partner of the STORCITO project, and other provincial actors in Galicia; in addition to, local municipalities and professional associations in Greece; and partners from prior projects such as GRANULAR and FIREPOCTEP+, allowed for smoother entry into rural communities and increased trust among potential interviewees.

Researchers leveraged long-standing personal and professional ties with stakeholders, including rural cooperatives, volunteer fire brigades, agricultural chambers, and forest management entities. These contacts played a crucial role in enabling snowball sampling, as interviewees frequently referred to additional participants within their network.

In Greece, the team strategically used the opportunity presented by the 64th ERSA Congress (Athens, 26–29 August 2025) to connect with academic, technical, and private-sector stakeholders involved in rural development and wildfire issues. Informal meetings and one-on-one interviews were conducted with researchers and consultants involved in wildfire modelling, environmental NGOs and representatives from technology and land

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use planning bodies. Although these contacts did not cover the full diversity of rural voices, they contributed additional sectoral expertise to complement the local interviews conducted in Thessaly and the Peloponnese.

4.3. Seasonal and Territorial Constraints

The months of July and August proved especially challenging for fieldwork due to holiday periods in Southern Europe, extreme weather events and active wildfire alerts in Spain and Greece, agricultural calendar overlaps and limited availability of municipal staff and small business owners. The research teams adopted a flexible scheduling approach, often working outside of standard hours and combining interviews with community visits, fairs, or fire-related events, to maximise participation and contextual insight.

4.4. Final Sample Profile

The 100 interviewees were selected to represent key demographic, occupational, and institutional diversity. A full profile breakdown is presented in Annex 5, but the main characteristics include gender, age distribution, interviews modalities, languages used, other characteristics and additional diversity factors.

4.4.1. Gender

Approximately 60% of participants were men and around 40% were women. Special efforts were made to include women in male-dominated sectors such as forestry and livestock, although institutional imbalance remains evident.

4.4.2. Age Distribution

The sample reflects strong intergenerational representation, including older rural residents whose experiences of historical fire events contribute significantly to community memory and perception The sample includes 2% youth (18–24), 25% young adults (25–44), 50% middle adults (45–64), and 23% seniors (65+), reflecting strong intergenerational representation.

4.4.3. Other Characteristics

The sample also incorporates additional dimensions of diversity. It includes migrant workers in Greece, informal land users, and volunteer responders, ensuring perspectives from groups often underrepresented in formal studies. Furthermore, participants bring a

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wide range of knowledge systems—scientific, practical, and traditional—enriching the dataset with complementary insights. Representation spans both formal institutions and grassroots organisations, creating a balanced view of structured and community-driven approaches. While the final sample does not achieve exact parity, it constitutes a rich, multidimensional dataset suitable for thematic analysis and cross-sectoral insights.

4.4.4. Interview Modalities

While many interviews were conducted in person, particularly in smaller communities, the research teams also carried out remote interviews online or by phone when travel was impractical or interviewees preferred digital formats. The data collection methodology was predominantly composed of online interviews or meetings, which represented about 70% of the total and allowed significant geographical flexibility as well as high-quality audio recordings suitable for transcription. Face-to-face interactions accounted for approximately 25% of the fieldwork and proved particularly valuable in a qualitative study, as they enabled direct observation of settings such as forests and farmland and captured non-verbal and social dynamics that enriched the transcripts. These in-person conversations also ensured that a substantial part of the sample shared their perspectives within their own environment, which is essential for understanding adaptive knowledge. Telephone-based contributions, representing around 5% of the interviews, were used exclusively in cases where internet access was limited, ensuring the inclusion of participants who would otherwise have been excluded from the study.

4.4.2. Languages Used

By conducting interviews in participants' native or preferred languages, the research teams ensured both clarity and cultural respect. Interviews were conducted in Galician (47%), Spanish (23%), and Greek (30%) and then, translated into English for the purposes of analysis and reporting.

4.4.6. Additional Diversity Factors

The sample includes migrant or foreign-born participants, who represent 4% of the total. It also accounts for individuals in vulnerable situations, such as elderly people living alone and undocumented land users, whose identities were recorded but anonymised in the data logs to ensure confidentiality. In addition, the population reflects significant occupational diversity, encompassing landowners, volunteer firefighters, rural entrepreneurs, municipal staff, livestock producers, and environmental advocates.

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The population profile illustrates the project's commitment to equity, relevance, and real territorial representation, ensuring the inclusion of voices often absent from formal consultation processes.

4.5. Standardised Tools used

To ensure consistency, traceability, and methodological transparency across both field sites, the research teams in Spain and Greece applied a series of standardised stakeholder engagement tools co-developed within WP3. These tools served to guide identification, monitor outreach, and document interactions throughout the process.

4.5.1. Stakeholder Matrix Templates

Each team completed a structured matrix (Annex 1) listing ensuring a balanced selection strategy, so that, any stakeholder group dominated the sample:

- The stakeholder's **sector/domain of action** (e.g., public, private, civil society)
- Their **role in wildfire prevention or rural life**
- Their **level of influence and affectedness**, based on a qualitative quadrant
- **Preferred engagement methods** and **language needs**
- **Vulnerability indicators**, such as age, gender, and minority status

4.5.2. Interview Guide (Multilingual) and Livestock-Specific Module

The multilingual interview guide is presented in detail in the Annexes 1and 2A, together with the livestock-specific module in Annex 2B. Moreover, the inclusivity checklist and guide is available in Annex 7. Thanks to these instruments, the research teams were able to capture diverse perspectives and address potential gaps during the selection process. The focus was on monitoring the representation of women, particularly in sectors where they are underrepresented; youth and elderly voices; marginalised groups, including migrants and informal land users; and geographic diversity, ensuring both inland and coastal representation.

4.6. Documentation

Researchers documented each contact made, noting the status of the engagement (e.g., confirmed, declined, pending), access barriers (e.g., language, distance, digital exclusion), and additional notes on tone, emotional context, and institutional proximity. So that, A final synthesis of demographic indicators was compiled post-fieldwork in a Population Profile Summary (Annex 5), offering a clear overview of age, gender and sectoral distribution, territory-specific observations, and stakeholder self-identification together with their perceived roles in fire-related processes.

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5. Analysis and Results

This section presents the analytical process and the results derived from the qualitative analysis of the interview corpus. It outlines the procedures followed for data preparation, transcription, and coding, and explains how analytical categories were developed through an iterative and systematic process. The section then synthesises the main findings across key thematic axes and discusses them in direct relation to the research questions. Cross-cutting issues that emerged across stakeholder groups and territories are examined, followed by a lexical analysis based on word frequency distributions to complement the thematic findings. Finally, the section highlights territorial contrasts between Galicia and Greece, identifying both shared patterns and context-specific dynamics relevant to wildfire prevention and territorial governance.

5.1. Analytical Procedure, Data Preparation and Transcription

The qualitative data gathered from the 100 in-depth interviews were processed and analysed using *MaxQDA*, a specialised software for qualitative and mixed-methods research. The analytical process followed a systematic, multi-phase protocol designed to extract both grounded insights and policy-relevant knowledge from the stakeholder narratives.

- In-person interviews were audio-recorded when consent was granted and transcribed using *MaxQDA*'s transcription module.
- Online interviews were recorded via platforms such as Teams and transcribed using both automated and manual methods.
- Telephone interviews or unrecorded sessions were documented via detailed field notes, later entered *MaxQDA* as narrative records.

All transcripts were translated into English from their original languages (Spanish, Galician, and Greek) by qualified bilingual team members, with a focus on preserving linguistic nuance and emotional tone.

Each transcript was anonymised using a code system (e.g., SP-INLAND-FARMER-01), ensuring confidentiality while allowing traceability by profile, sector, and territory.

5.2. Coding and Category Development

The interviews were coded manually in *MaxQDA* by trained researchers, with regular team discussions and memo writing to reflect on emerging patterns.

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The analytical team applied a hybrid coding approach, combining: (i) Deductive codes, derived from the interview guide and project research questions (e.g., “fire memory”, “institutional trust”, “livestock-specific needs”), and (ii) Inductive codes, emerging organically from the data (e.g., “fear of abandonment”, “landscape attachment”, “frustration with policy”).

The coding process involved several stages. It began with initial open coding on a sub-sample of transcripts from both countries, followed by the refinement of the codebook through collaboration between the Spanish and Greek teams. Next, axial coding was applied to cluster individual codes into broader thematic categories. Finally, memo writing and the preparation of analytic summaries supported interpretation and ensured consistency throughout the analysis. Coding was conducted in English, but original language segments were retained for verification.

5.2.1. Thematic Clustering

Through this process, the code system was structured into nine major thematic blocks or analytical categories, each comprising subcodes derived from the fieldwork.

0. Personal and Local Context

Conceptual definition. This category captures participants’ personal, historical, and everyday relationship with the territory and with the forest or natural environment in which they live. It provides the biographical and territorial background against which all other categories are interpreted, rather than an analytical assessment of land-use change, fire risk, or governance.

Includes

- Personal experiences linked to the forest or land.
- Every day, symbolic, or economic uses of the forest environment.
- Identity-related or emotional evaluations of the territory.

Excludes

- Technical or policy-oriented assessments of the territory.
- Management or prevention proposals (coded under other categories).

1. Perception of Forest and Territory

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Conceptual definition. This category refers to how participants describe, assess, and interpret the forest and the territory from environmental, economic, social, and temporal perspectives.

Includes

- Descriptions of the landscape and the condition of the forest.
- Perceived benefits (environmental, economic, social/cultural).
- Changes observed over time (ecological changes, land-use changes, abandonment).

Excludes

- Emotions specifically associated with fire (Category 2).
- Concrete human practices related to prevention or risk (Category 3).

2. Fire: Psychological and Emotional Responses

Conceptual definition. This category groups perceptions, emotions, memories, and symbolic frameworks associated with wildfires and past fire experiences.

Includes

- Concepts and mental associations related to fire.
- Personal or community memories of wildfires.
- Emotions (fear, sadness, resignation, normalisation, etc.).
- Perceptions of wildfire impacts and causes.
- Assessments of community preparedness for fire.

Excludes

- Technical analyses of causes or solutions.
- Specific preventive practices (Category 3).

3. Human Activity and Prevention

Conceptual definition. This category focuses on the relationship between human activities and wildfire risk or prevention, from the participants' perspective.

Includes

- Traditional practices perceived as preventive.

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- Human activities seen as increasing fire risk.
- The relationship between agriculture, livestock farming, and forest protection.

Excludes

- Public policies or institutional management structures (Category 4).
- The emotional dimension of fire (Category 2).

4. Resource Management

Conceptual definition. This category addresses land and resource management from a structural, institutional, and organisational perspective, as perceived by the community.

Includes

- Challenges in land or forest management.
- Needs for technical, financial, or institutional support.
- Participation in initiatives, particularly fire prevention initiatives.

Excludes

- Individual or traditional practices that are not institutionalised.
- Proposals for future co-creation processes (Category 5).

5. Co-creation and Community Solutions

Conceptual definition. This category captures future-oriented discourses centred on collaboration, co-creation, and the joint development of community-based solutions.

Includes

- Perceptions of the community's role in resource management.
- Willingness to co-develop solutions.
- Interest in collaborative spaces (digital or face-to-face).

Excludes

- Evaluations of existing or past initiatives (Category 4).
- Formal decision-making channels (Category 7).

6. Regional Identity and Knowledge

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Conceptual definition. This category refers to identity-related, cultural, and local knowledge elements that participants consider distinctive of the territory and relevant for public action.

Includes

- Unique characteristics of the region.
- Local knowledge, cultural practices, and situated expertise.
- References to their relevance for policies or strategies.

Excludes

- Personal emotions not linked to collective identity.
- Concrete operational proposals (Category 5).

7. Communication and Influence

Conceptual definition. This category analyses how participants perceive their capacity to communicate with and influence decision-makers, as well as the formats considered most effective.

Includes

- Perceptions of local voices in decision-making processes.
- Needs to increase influence or visibility.
- Knowledge-sharing formats (workshops, seminars, informational materials).

Excludes

- Co-creation spaces focused on solution development (Category 5).
- Specific resource management policies or measures (Category 4).

8. Animals in Fire Prevention

Conceptual definition. This specific category focuses on the role attributed to different animals in fire prevention, particularly through grazing and land management practices.

Includes

- References to livestock (cattle, horses, goats, sheep, pigs).
- Perceptions of their preventive effectiveness or impact on the forest.

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Excludes

- Agriculture or livestock farming in a general sense without a link to fire prevention.
- Institutional livestock or land management policies.

9. Closing

Conceptual definition. This closing category gathers final reflections, overall assessments, and expressions of willingness to participate in future activities.

Includes

- Final comments that do not fit into other categories.
- Expressions of interest in follow-up activities or future participation.

Excludes

- Substantive content that can be coded under previous categories.

0. Personal and Local Context 0.1 Relationship with the forest / land 0.2 Importance of the forest (economic / cultural / everyday use) **1. Perception of Forest and Territory** 1.1 Landscape / forest description 1.2 Forest benefits 1.2.1 Environmental benefits 1.2.2 Economic benefits 1.2.3 Social or cultural benefits 1.3 Perceived changes in the forest 1.3.1 Ecological changes 1.3.2 Land use changes 1.3.3 Abandonment / lack of management **2. Fire: Psychological and Emotional Responses** 2.1 Concepts associated with wildfire 2.2 Memories and stories about fire 2.3 Perception of fire 2.4 Impacts of past fire events 2.5 Emotions related to fire 2.6 Perceived causes of wildfire 2.7 Community preparedness **3. Human Activity and Prevention** 3.1 Traditional practices that prevent fire 3.2 Activities increasing fire risk	**5. Co-creation and Community Solutions** 5.1 Community role in water management 5.2 Willingness to co-develop solutions 5.3 Interest in collaborative spaces 5.3.1 Digital sandbox 5.3.2 Inter-community exchanges **6. Regional Identity and Knowledge** 6.1 Unique features of the region 6.2 Local customs and knowledge relevant for policy **7. Communication and Influence** 7.1 Local voice in decision-making 7.2 Needs to increase influence 7.3 Useful knowledge-sharing formats 7.3.1 Workshops 7.3.2 Seminars 7.3.3 Informative materials **8. Animals in Fire Prevention** 8.1 Cattle 8.2 Horses 8.3 Goats 8.4 Sheep 8.5 Pigs **9. Closing** 9.1 Final comments

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3.3 Agriculture/livestock ↔ forest protection relationship **4. Resource Management** 4.1 Challenges in land management 4.2 Support needs 4.3 Participation in initiatives 4.3.1 Fire prevention initiatives	9.2 Willingness to participate in follow-up activities

Figure 2 Thematic Coding Tree in 9 blocks or analytical categories.

5.2.2. Alignment of Codebook Categories with Research Questions

Rather than establishing a one-to-one correspondence, research questions were addressed through a cross-cutting analysis in which multiple codebook categories were mobilised to capture the complexity of stakeholders' perceptions, practices, and governance dynamics.

Research Question	Codebook Categories	Analytical Contribution
RQ1. How do rural stakeholders perceive fire risk, forest management, and landscape change in their territories?	0. Personal and Local Context 1. Perception of Forest and Territory 2. Fire: Psychological and Emotional Responses 6. Regional Identity and Knowledge	Provides insight into how perceptions of fire, forest, and landscape change are constructed through lived experience, territorial attachment, historical memory, and regional identity. Narratives, metaphors, and place-based interpretations are analysed across these categories.
RQ2. What psychological and emotional responses emerge in the aftermath of wildfires?	2. Fire: Psychological and Emotional Responses 0. Personal and Local Context 7. Communication and Influence	Captures emotional responses such as trauma, fear, resilience, or normalisation, contextualised by biographical trajectories and experiences of past fires. Also examines how these responses shape trust in institutions and communication with decision-makers.
RQ3. What role do different stakeholder groups play in fire prevention and territorial stewardship?	3. Human Activity and Prevention 6. Regional Identity and Knowledge 8. Animals in Fire Prevention 7. Communication and Influence	Analyses practical roles, traditional and experiential knowledge, and differentiated contributions of stakeholder groups (e.g. livestock farmers, elders, women). Also explores barriers to participation, visibility, and influence across groups.
RQ4. Which land-use practices, tools, or local strategies are seen as effective for fire prevention?	3. Human Activity and Prevention 4. Resource Management 8. Animals in Fire Prevention	Identifies locally valued prevention practices (e.g. extensive grazing, landscape mosaics, low-tech interventions) and examines tensions between formal regulation, available resources, and adaptive rural practices.

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RQ5. What are the enabling and limiting factors for co-creation and community-based fire governance?	5. Co-creation and Community Solutions 4. Resource Management 7. Communication and Influence	Examines structural, organisational, and communicative conditions that enable or constrain co-creation, including support needs, governance arrangements, and stakeholders' envisioned roles in future prevention systems (e.g. the sandbox).

Table 2 2 Alignment of Codebook Categories with Research Questions

RQ1. How do rural stakeholders perceive fire risk, forest management, and landscape change in their territories?

Main categories involved:

- Category 0 - Personal and Local Context
- Category 1 - Perception of Forest and Territory
- Category 2 - Fire: Psychological and Emotional Responses
- Category 6 - Regional Identity and Knowledge

Analytical contribution:

- Category 0 - provides the biographical and territorial anchoring through which perceptions are constructed.
- Category 1 - captures descriptions of the landscape, perceived forest benefits, and observed changes.
- Category 2 - introduces narratives, metaphors, and symbolic frameworks associated with fire.
- Category 6 - enables an understanding of how geography, history, and regional identity shape these perceptions.

Sub-questions addressed:

- Narratives and metaphors → Categories 2 and 6
- Influence of local context and roles → Categories 0 and 6

RQ2. What psychological and emotional responses emerge in the aftermath of wildfires?

Main categories involved:

- Category 2 Fire: Psychological and Emotional Responses
- Category 0 Personal and Local Context
- Category 7 Communication and Influence (secondary)

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Analytical contribution:

- Category 2 is central, encompassing emotions, memories, trauma, resilience, and institutional trust or mistrust.
- Category 0 contextualises the intensity of emotional responses according to life trajectories.
- Category 7 allows analysis of how these responses shape relationships with institutions and decision-making processes.

Sub-questions addressed:

- Influence of past experiences → Categories 2 and 0
- Trauma, resilience, and disconnection → Category 2

RQ3. What role do different stakeholder groups play in fire prevention and territorial stewardship?

Main categories involved:

- Category 3 - Human Activity and Prevention
- Category 6 - Regional Identity and Knowledge
- Category 8 - Animals in Fire Prevention
- Category 7 - Communication and Influence

Analytical contribution:

- Category 3 highlights practical roles and concrete activities.
- Category 6 enables identification of traditional knowledge and its intergenerational transmission.
- Category 8 specifically foregrounds the role of livestock farmers and pastoral practices.
- Category 7 allows analysis of inequalities in voice, participation, and visibility.

Sub-questions addressed:

- Knowledge transfer → Category 6
- Barriers faced by marginalised groups → Category 7

RQ4. Which land-use practices, tools, or local strategies are seen as effective for fire prevention?

Main categories involved:

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- Category 3 - Human Activity and Prevention
- Category 8 - Resource Management
- Category 4 - Animals in Fire Prevention

Analytical contribution:

- Category 3 captures traditional practices, agriculture, livestock farming, and risk-related activities.
- Category 8 provides in-depth insight into the preventive value of extensive grazing.
- Category 4 introduces tensions between formal regulation, available resources, and adaptive practices.

Sub-questions addressed:

- Valuation of grazing, mosaic landscapes, and low-tech solutions → Categories 3 and 8
- Regulation–practice tensions → Category 4

RQ5. What are the enabling and limiting factors for co-creation and community-based fire governance?

Main categories involved:

- Category 5 - Co-creation and Community Solutions
- Category 4 - Resource Management
- Category 7 - Communication and Influence

Analytical contribution:

- Category 5 is central to future-oriented visions, co-creation processes, and the sandbox.
- Category 4 identifies structural constraints and support needs.
- Category 7 analyses actual capacities for influence and communication.

Sub-questions addressed:

- Future roles of stakeholders → Category 5
- Support needs → Categories 4 and 7

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5.3. Key Findings by Thematic Axis

Following the coding phase, thematic matrices and comparative summaries were developed to identify:

- Cross-cutting themes shared between stakeholder types or regions.
- Territory-specific narratives or sensitivities.
- Recurring tensions, needs, and contributions to fire prevention and forest care.

The structured coding tree allows for both aggregation and granularity in interpretation. It also provides a methodological foundation for WP3's next steps (particularly the co-design of the sandbox tool and participatory engagement strategies).

The following synthesis presents the findings emerging from the analysis of 100 qualitative interviews conducted in Galicia (Spain) and Greece with rural stakeholders affected by wildfire risk. These results are structured following the thematic coding framework detailed in previous section.

They offer a joint, qualitative perspective rather than comparative national conclusions, as the sample size does not allow for statistical generalisation.

5.3.1. Personal and Local Context (Category 0)

Stakeholders across all territories expressed a strong emotional bond with their land and environment. This attachment is not only material, but also biographical and identity-based, linking landscape, memory, and everyday life. As one interviewee stated, *"Mine and that of many people around me is mourning, loss, despair, helplessness, and one thing that is important, identity."* (E69CO AC DC ES).

However, this connection is increasingly challenged by depopulation, land abandonment, and ageing. Several participants described the progressive loss of population and the resulting inability to maintain traditional land uses: *"In most territories like mine, population desertification occurs through two mechanisms: migration and the ageing of the human resources that remain there."* (E65SCL SC AC ES). Similar dynamics were reported elsewhere: *"The gradual abandonment and change in people's way of life... meant that the forest gained ground."* (E24AL SP AL ES).

Land abandonment was repeatedly linked to changes in landscape and everyday practices, as well as to a sense of rupture in rural continuity: *"The main change over the last 20 years has been the abandonment of the countryside, and the landscape has changed."* (E77LIU AC GI GR). In Greece, interviewees similarly noted that *"There has been an abandonment of traditional and agricultural crops in Kefalonia, which has*

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changed the mosaic of vegetation and landscape management." (E100APN AMB GPN GR).

Ageing and the lack of generational replacement were perceived as key factors undermining local stewardship capacities. One participant highlighted the demographic imbalance and its consequences for land care: *"We have an average age of 63.5 years, making it the most aged area in Europe. Therefore, people are no longer able to do the work they used to do."*(E24AL SP AL ES). This situation was often associated with a broader loss of continuity in rural life and knowledge transmission.

Finally, stakeholders expressed concern about the detachment of younger generations from traditional agro-pastoral practices and land stewardship. The decline of these practices was not only framed as an economic issue, but as a cultural and relational loss affecting the meaning of rural life and the ability of communities to maintain their territories over time.

Summary:

Stakeholders across all territories expressed a strong emotional bond with their land and environment. However, this connection is increasingly challenged by depopulation**,** land abandonment, ageing, and a perceived loss of identity and continuity in rural life. The decline of agro-pastoral practices and the detachment of newer generations from traditional land stewardship were frequently mentioned.

5.3.2. Perception of Forest and Territory (Category 1)

Across all territories, interviewees expressed unanimous concern about landscape degradation and its direct relationship with increasing wildfire risk. A dominant narrative centered on the expansion of monocultures—particularly pine and eucalyptus—which were repeatedly framed as structurally hazardous and incompatible with fire-resilient landscapes. As one participant stated, *"Eucalyptus monoculture, like the one we have here, is a powder keg. If it catches fire, everything burns, and it is impossible to stop."* (E1AG SPR AGA ES). This perception was reinforced by references to forest density and regeneration cycles: *"Pine and eucalyptus trees, but especially eucalyptus, are continuously regenerating themselves. This results in impenetrable forest density. That is why we have these sixth-generation fires."* (E31ARA AMB ARAM ES). Similar concerns were echoed elsewhere: *"Monoculture planting of pine and eucalyptus trees is what causes everything to burn when there is a fire, making it impossible to stop."* (E44CA SPR CAG ES).

The disappearance of mosaic landscapes—traditionally composed of forest, farmland, and pasture—was consistently associated with increased vulnerability to large fires. Participants stressed their multifunctional role: *"The mosaic landscape is essential, and*

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breaking up monocultures is essential to prevent such large fires." (E26CA SPR CAG ES), and *"The mosaic landscape is very important in fighting fires, but not only in fighting fires; it is also very important in diversifying production, conservation and biodiversity."* (E67CA SPR AG ES). Demographic ageing and rural depopulation were identified as key drivers of this transformation: *"As the population is ageing dramatically, there are fewer and fewer people left in the villages, and eucalyptus is winning by a landslide."* (E51CA SPR AG ES).

Land abandonment and unmanaged biomass accumulation were recurrently highlighted. Interviewees linked these processes to structural socio-demographic changes: *"The gradual abandonment and change in people's way of life, as well as the industrialisation of livestock farming, meant that the forest gained ground."* (E24AL SP AL ES), and *"There has been an abandonment of traditional and agricultural crops in Kefalonia, which has changed the mosaic of vegetation and landscape management."* (E100APN AMB GPN GR). Similar dynamics were observed elsewhere: *"The main change over the last 20 years has been the abandonment of the countryside... There has been a parallel increase in fires with the increase in biomass due to the abandonment of traditional activities."* (E77LIU AC GI GR).

Despite recognising the ecological, social, and economic value of forests, participants emphasised the lack of multifunctional management: *"There is a total abandonment of land management, of the territory surrounding my village."* (E65SCL SC AC ES).

Summary:

Concerns about landscape degradation were unanimous among participants. The spread of monocultures—particularly pine and eucalyptus—was identified as a major risk factor, especially in Galicia. Likewise, the loss of mosaic landscapes, traditionally composed of forests, farmland, and pastures that acted as natural firebreaks and supported biodiversity, was linked to increased fire vulnerability. Participants also emphasized widespread land abandonment, unmanaged biomass accumulation, and the absence of multifunctional forest policies as critical issues. While many highlighted the ecological, social, and economic value of forests, they stressed the urgent need for a more integrated and multifunctional management approach.

5.3.3. Psychological and Emotional Responses (Category 2)

Fire was consistently framed as a deeply emotional and psychological experience. Interviewees reported fear, sadness, anger, helplessness, and trauma, often accompanied by a sense of institutional abandonment. One participant summarised this

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experience as *"mourning, loss, despair, helplessness, and one thing that is important, identity."* (E69CO AC DC ES). Others expressed frustration with the repetition of fires: *"I feel sadness and anger at the annual repetition without any social commitment to a different model."* (E66CE SC AE ES), and *"Panic, terror, extreme fear. Loneliness."* (E1AG SPR AGA ES). These emotions were echoed in Greece: *"Fear, anxiety, helplessness, and frustration are common emotions in relation to the issue of fire."* (E73CBV SC GV GR).

A pronounced lack of preparedness emerged across interviews. Local authorities and residents described the absence of resources and protocols: *"I didn't have the population prepared or sufficient resources."* (E58AL SP AL ES), and *"The local community is neither informed nor prepared for the prevention and suppression of wildfires"* (E73CBV SC GV GR). In many cases, neighbours were the first responders: *"It is the neighbours themselves who put them out."* (E24AL SP AL ES).

Generational differences were evident. Elder participants often relied on past experience, sometimes underestimating current fire regimes: *"Nowadays, when there's a fire, lots of people are taking photos... it's seen more as a spectacle."*(E42LIU AC GI ES). At the same time, elders were portrayed as custodians of practical knowledge: *"The 80-year-olds were mentally preparing themselves to work at night... This is knowledge of prevention and management that was valid for the old fires, but not for the mega-fires."* (E65SCL SC AC ES).

Repeated exposure to severe fires fostered eco-anxiety and fear of future escalation: *"It's terrifying. That's the truth."*(E1AG SPR AGA ES), and *"If we don't get help and we don't take action, what is happening here today could happen elsewhere."* (E58AL SP AL ES). Feelings of helplessness were pervasive: *"The feeling of helplessness is brutal."*(E31ARA AMB ARAM ES), and *"The helplessness and disconnect... it becomes a kind of media spectacle."* (E61RESR AC EL ES).

Summary:

Fire was described not only as a physical threat but also as a deeply emotional and psychological experience, often associated with sadness, trauma, fear, and anxiety. Interviewees frequently expressed feelings of fear, helplessness, and a sense of abandonment by institutions. Many participants recalled past fires as life-changing events, particularly among the elderly. A notable lack of preparedness emerged, with no community fire protocols, unclear evacuation procedures, limited access to training, and unfamiliarity with basic tools or resources such as hoses and fire swatters. Differences between past and present fire regimes were often misunderstood; elderly participants tended to underestimate sixth-generation fires, relying on outdated experiential knowledge. A generational and territorial gap was also evident: rural elders with practical knowledge feel isolated from peri-urban or younger populations, who often lack fire culture, awareness, or training. Some participants showed signs of eco-anxiety,

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especially those who had experienced repeated or severe wildfires. This situation fosters frustration and reinforces a sense of institutional abandonment.

5.3.4. Human Activity and Prevention (Category 3)

Traditional practices such as extensive livestock grazing, manual clearing, and seasonal burning were consistently described as central to fire prevention. Participants stressed their role in reducing biomass and creating landscape discontinuities: *"The first thing is extensive livestock farming... they continue to clear the boundaries of the farms."*(E1AG SPR AGA ES). Historical comparisons reinforced this view: *"Much of it was grazed by livestock. And this was what really controlled the vegetation."* (E27LIU AC GI ES).

Interviewees repeatedly argued that active land use reduces fire risk: *"If the land is used... the people who work on that land also help to prevent fires."* (E54PC SP SE ES). However, the decline of grazing was widely noted: *"Grazing has disappeared and what remains is in areas undergoing regeneration or desertification."* (E74CE SC AE GR).

Greek participants reinforced these views, calling to *"Restore and support traditional activities (grazing, agriculture, resin harvesting) in order to reduce biomass and prevent wildfires."* (E89AFR SP DF GR), and *"Implement prescribed burning and targeted grazing as management tools"* (E72CBV SC GV GR).

Summary:

Traditional land uses such as extensive livestock grazing**,** seasonal and traditional burning ("good fire")**,** and manual clearing were described as crucial for maintaining fire-resilient landscapes, especially in marginal or mountainous zones.

However, these practices are declining due to lack of generational replacement, low profitability, and administrative burdens.

There is recognition that agriculture and animal grazing reduce biomass and create strategic discontinuities that limit fire spread.

Interviewees called for official recognition of these practices and greater support for their continuity and adaptation. Participants called for the integration of traditional knowledge into prevention policy.

5.3.5. Resource Management (Category 4)

Rigid, urban-centred bureaucracy was identified as a major barrier to effective management. Interviewees stressed the incompatibility between regulatory frameworks and rural realities: *"You cannot ask people to move to rural areas when they cannot*

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engage in any kind of activity there." (E27LIU AC GI ES). Similar concerns were echoed elsewhere: *"People will live where they have the best quality of life."* (E26CA SPR CAG ES).

Funding gaps and lack of comprehensive management plans were recurrent: *"The main difficulty is funding."* (E77LIU AC GI GR). Participants expressed frustration at not being listened to: *"Technicians are technicians... but those of us who live here know where the fire can go."* (E58AL SP AL ES). Greek interviewees similarly argued that *"Field-based experience should be incorporated into legislation, and local knowledge should be taken into account"* (E89AFR SP DF GR).

Calls for incentives and payment for ecosystem services were frequent: *"If you give those people a subsidy... they say, 'Hey, I'll clean it up'."* (E54LIU AC GI ES).

Summary:

Stakeholders identified several systemic obstacles to effective land management. The most frequently cited barrier was excessive, rigid, and urban-centred bureaucracy, which limits active engagement with rural realities. Participants also noted the lack of institutional support for multifunctional and innovative approaches, alongside scarce funding for cooperatives and collective forest governance. Communities expressed a strong desire for more flexible regulations adapted to local contexts. Although the potential of mountain communities and communal land systems is widely recognised, it remains largely underutilised. Calls for payment for ecosystem services and greater support for territorial stewardship models were recurrent throughout the discussions.

5.3.6. Co-creation and Community Solutions (Category 5)

Despite limited formal engagement, many stakeholders expressed willingness to participate in collaborative approaches. Interviewees highlighted the importance of participatory tools: *"We develop fire risk maps to help local authorities plan prevention measures."* (E71LIU AC GI GR). Existing collaborations were described: *"The platform has been and continues to be active in eight communities."* (E61RESR AC EL ES), and *"We collaborate with the water user community to improve their infrastructure."* (E68PTP SPR PC ES). Participatory mapping of water infrastructure and risk zones was identified as an urgent need. Interviewees described existing collaborations with municipalities, educational centres, NGOs, and user communities, suggesting that local capacities already exist but remain fragmented.

Effective co-creation was framed as decentralised and culturally adapted. Stakeholders emphasised solidarity, mutual support, and collective decision-making as foundational

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principles. Tools such as the proposed sandbox were welcomed, provided they were locally embedded, flexible, and accompanied by capacity-building. Inter-community exchanges, particularly between fire-affected areas, were highlighted as especially valuable: *"Decisions are made collectively by the community members."* (E69CO AC DC ES), and *"That principle of solidarity and mutual support is fundamental."* (E61RESR AC EL ES). Support, training, and incentives were repeatedly requested: *"Clearly provide the appropriate tools and training."* (E71LIU AC GI GR).

Summary:

Despite limited formal engagement, many stakeholders expressed interest in collaborative approaches, provided certain conditions were met. They emphasized the need for clear institutional recognition of their voice and called for urgent participatory mapping of water infrastructure and risk zones. Co-creation processes should be accessible, decentralized, and culturally adapted, while tools such as the proposed sandbox must be accompanied by capacity-building and ongoing support. Stakeholders particularly welcomed localized, flexible sandboxes that integrate scientific and traditional perspectives, as well as platforms for inter-community exchanges—especially after large fires—to learn from other fire-affected areas and co-develop prevention plans through open collaboration. Overall, stakeholders showed willingness to engage in bottom-up innovation, provided institutional support and recognition are guaranteed.

5.3.7. Regional Identity and Knowledge (Category 6)

A pervasive concern across interviews was the erosion of regional identity, local memory, and cultural landscapes. Participants described the landscape itself as a repository of memory, with its degradation representing both ecological and cultural loss. Interviewees described traditional knowledge as endangered: *"There is a heritage there that is almost extinct."* (E65SCL SC AC ES). The value of local knowledge was strongly asserted: *"The locals know the terrain and the forest best."* (E82AL SP L GR), and *"Traditional knowledge is fundamental."* (E31ARA AMB ARAM ES).

Elder stakeholders were repeatedly identified as custodians of living knowledge related to prevention and land management. However, this knowledge was described as increasingly disconnected from younger generations and insufficiently transmitted. Interviewees stressed the need to combine traditional and scientific knowledge, rather than privileging one over the other: *"Let's use ancient knowledge."* (E77LIU AC GI GR), and for recognising regional specificities: *"The mosaic landscape is essential."* (E26CA SPR CAG ES). Structural barriers to rural continuity were also emphasised: *"If we don't have all this, people are not going to live in rural areas."* (E24AL SP AL ES).

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Calls to recognise regional specificities in policy design were frequent, with participants advocating for landscape diversity as a key component of resilience. The recovery of integrated systems linking pasture, forest, and people was framed as both an ecological and cultural imperative.

Summary:

A shared concern among stakeholders was the loss of local identity and memory, reflected in the erosion of customs, regional ecological knowledge, and cultural landscapes. In Galicia, this issue was particularly emphasized, with participants lamenting the disappearance of landscapes as living memory and calling for the recovery of practices that traditionally integrated pasture, forest, and human presence. The role of elder stakeholders as custodians of memory and practice was highlighted, yet their knowledge is not being transmitted to younger generations. There was also a strong call to recognize regional specificities in policymaking and to preserve landscape diversity as a form of resilience.

5.3.8. Communication and Influence (Category 7)

A strong sense of exclusion from decision-making processes emerged across interviews. Rural actors widely perceived that local voices were not adequately heard in wildfire governance, particularly in centralised planning systems. Women, young people, informal land users, and minority groups were described as facing additional barriers to visibility and participation: *"They are not heard."* (E93LIU AC GI GR), and *"Central state planning does not incorporate local resources."* (E71LIU AC GI GR). Other interviewees echoed this: *"There is no established culture that enables farmers to understand the importance of forests."* (E72CBV SC GV GR).

Stakeholders highlighted the need for capacity-building and communication formats adapted to rural contexts, including workshops, accessible materials, and participatory platforms. *"We are going to have to teach people that."* (E42LIU AC GI ES). Education from early ages was repeatedly stressed: *"We need to go back to schools."* (E1AG SPR AGA ES), and *"Education works from the bottom up."* (E63RESR AC EL ES). A significant gap in formal education on wildfire risk was identified, with fire prevention largely absent from school curricula and professional training. Several participants emphasised experiential learning, respect for elders, and reconnection with nature. A "Landscape–People–Professionals" approach was proposed as a means of fostering long-term wildfire resilience.

Summary:

Many participants expressed frustration over the lack of local influence in decision-making processes. Rural actors often feel excluded from wildfire planning and risk

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governance, while women, youth, informal land users, and minority groups lack effective channels to make their voices heard, leaving them disconnected from existing participation mechanisms. Stakeholders consistently called for more inclusive governance and highlighted the need for capacity-building and materials adapted to rural contexts. They requested clearer information flows, accessible resources such as workshops, guides in Easy Read format, audiovisual materials, and participatory formats like local platforms, assemblies, and technical support. Importantly, a significant gap in formal education on wildfire risk was identified: fire prevention is not integrated into school curricula or the training of teachers and emergency professionals. To address this, stakeholders proposed a "Landscape–People–Professionals" (LPP) model aimed at embedding a culture of wildfire resilience from an early age, starting in schools and local institutions.

5.3.9. Animals in Fire Prevention (Category 8)

Grazing animals were widely recognised as providing an effective and low-cost ecosystem service for fire prevention. Cattle, goats, sheep, horses, and pigs were described as particularly effective in reducing biomass, especially in low-access areas and peri-urban fringes. *"Herds are moving to scrubland, reducing forest fuels."* (E100APN AMB GPN GR), and *"The issue of fires has decreased significantly since extensive livestock farming began."* (E56PTP SPR PC ES).

Despite this recognition, pastoral practices were reported to be under threat due to generational rupture, limited economic viability, lack of advisory services, and insufficient policy support. Interviewees consistently called for the formal inclusion of grazing in fire prevention strategies, alongside technical assistance, and financial incentives. *"I had absolutely no advice whatsoever."* (E52ARA AMB ARAM ES). Other participants called for legislative adaptation: *"Legislation must change."* (E79AG SPR GA GR), and *"Nomadic livestock farming should be encouraged"* (E89AFR SP DF GR). Formal recognition of grazing as a preventive service was repeatedly demanded: *"Restoring the link between livestock farming and forest management and forest fire prevention before it is too late."* (E75AG SPR GA GR).

Summary:

The role of grazing animals is increasingly acknowledged as an essential ecological service and was widely recognized as a low-cost, effective tool for wildfire prevention. Stakeholders described the use of cattle, goats, sheep, horses, and even pigs as highly effective for biomass control, particularly in low-access areas and peri-urban fringes. However, these practices are increasingly threatened by generational rupture, low economic viability, and insufficient policy support. Participants called for stronger institutional backing, technical advice, and formal recognition of grazing as a fire

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prevention service. Interviewees specifically demanded its official inclusion in wildfire prevention strategies, along with improved technical and financial assistance for pastoral systems.

5.3.10. Closing Reflections and Engagement (Category 9)

Overall, the findings point to a strong consensus on the need to integrate traditional and scientific knowledge, support territorial stewardship, and reposition rural communities as active agents in wildfire prevention and governance.

Many interviewees expressed deep appreciation for being consulted, especially those who had never previously participated in research or policy discussions. A significant number indicated willingness to contribute to follow-up activities, including sandbox testing, co-creation workshops, and peer exchanges.

"What brings us together is much stronger than what separates us. Listening is the first step to prevention."

5.4. Key Findings and Discussion in Response to Research Questions

Taken together, the categories reveal a tightly interconnected system in which landscape changes, emotional experience, traditional practices, governance structures, and knowledge transmission mutually shape fire risk and prevention. Perceptions of fire and territory (RQ1) are deeply embedded in lived experience, regional identity, and observed landscape transformations. Psychological and emotional responses (RQ2) reflect both the material impacts of fires and the perceived absence of institutional support.

Stakeholder roles (RQ3) emerge through everyday practices, particularly grazing and land stewardship, but are constrained by limited recognition and unequal access to decision-making. Locally valued prevention strategies (RQ4) centre on low-tech, knowledge-intensive practices that contrast with dominant regulatory frameworks. Finally, the prospects for co-creation and community-based governance (RQ5) depend on institutional openness, flexible regulation, and sustained investment in communication, education, and local capacity.

Overall, the findings point to a strong consensus on the need to integrate traditional and scientific knowledge, support territorial stewardship, and reposition rural communities as active agents in wildfire prevention and governance.

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5.4.1. How do rural stakeholders perceive fire risk, forest management, and landscape change in their territories? (RQ1)

Stakeholders in both Galicia and Greece perceive wildfire risk as severe and escalating. These perceptions are closely linked to structural land abandonment, the loss of landscape heterogeneity, and what participants describe as fragmented and distant governance. Fire is understood not only as an environmental hazard, but also as a social and political symptom—reflecting gaps in forest governance and a growing disconnection from traditional land management practices.

Forest management is frequently described as inadequate or effectively absent. Public institutions are perceived as distant and under-resourced, particularly in areas where small-scale farming, grazing, or communal land systems previously sustained mosaic landscapes. Interviewees from both countries express frustration at the lack of active, continuous management and at the disappearance of practices that historically contributed to landscape maintenance and fire prevention.

Perceptions of landscape change are deeply embedded in lived experience, territorial attachment, and historical memory. Older participants, in particular, frame change in emotional and intergenerational terms, describing the loss of "living landscapes" and their replacement by unmanaged, fire-prone vegetation. This process is seen as especially acute in depopulated rural areas, where younger generations have migrated, leaving behind ageing communities with limited capacity for land stewardship.

Across territories, interviewees consistently link increasing wildfire risk to profound landscape transformations, particularly the expansion of monocultures and the erosion of traditional mosaic landscapes. The spread of pine and eucalyptus monocultures is unanimously described as a major risk factor. These plantations are framed as structurally incompatible with fire resilience: "*Eucalyptus monoculture, like the one we have here, is a powder keg. If it catches fire, everything burns, and it is impossible to stop*." (E1AG SPR AGA ES). Participants associate these species with uncontrollable fire behaviour: "*Pine and eucalyptus trees, but especially eucalyptus, are continuously regenerating themselves. This results in impenetrable forest density. That is why we have these sixth-generation fires*." (E31ARA AMB ARAM ES), and "*Monoculture planting of pine and eucalyptus trees is what causes everything to burn when there is a fire, making it impossible to stop*." (E44CA SPR CAG ES).

In contrast, mosaic landscapes—combining forest, farmland, and pasture—are consistently described as protective, multifunctional, and historically effective in limiting fire spread: "*The mosaic landscape is essential, and breaking up monocultures is essential to prevent such large fires*." (E26CA SPR CAG ES). Their value is not limited to fire prevention but extends to broader territorial functions: "*The mosaic landscape is very*

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important in fighting fires, but not only in fighting fires; it is also very important in diversifying production, conservation and biodiversity." (E67CA SPR AG ES).

Participants attribute the loss of these landscapes primarily to demographic ageing, depopulation, and land abandonment. As one interviewee notes, "*As the population is ageing dramatically, there are fewer and fewer people left in the villages, and eucalyptus is winning by a landslide*." (E51CA SPR AG ES). Similar processes are reported across countries: "*The gradual abandonment and change in people's way of life... meant that the forest gained ground*." (E24AL SP AL ES), and "*There has been an abandonment of traditional and agricultural crops in Kefalonia, which has changed the mosaic of vegetation and landscape management*." (E100APN AMB GPN GR). These transformations are directly associated with increased fire incidence: "*There has been a parallel increase in fires with the increase in biomass due to the abandonment of traditional activities*." (E77LIU AC GI GR).

Although forests are widely recognised as ecologically, socially, and economically valuable, interviewees repeatedly emphasise the absence of multifunctional management approaches capable of integrating protection, production, and local livelihoods: "*There is a total abandonment of land management, of the territory surrounding my village*." (E65SCL SC AC ES). Overall, perceptions of fire risk and forest management are inseparable from broader narratives of territorial neglect, demographic decline, and loss of local identity.

Discussion:

The findings reveal that rural stakeholders conceptualise wildfire risk as inseparable from broader processes of landscape transformation, demographic decline, and territorial neglect. Participants' emphasis on monocultures, land abandonment, and the loss of mosaic landscapes aligns with existing research demonstrating how simplified landscapes increase fire intensity and reduce ecological resilience (Karamesouti et al., 2016; Chartier et al., 2023).

Importantly, these perceptions are not abstract but deeply place-based, rooted in lived experience and historical memory. This supports arguments that risk perception in rural contexts is shaped by territorial attachment and cultural landscapes rather than solely by technical assessments (Schwarz et al., 2022). The data thus reinforce calls for landscape governance approaches that recognise rural actors as knowledgeable observers of long-term environmental change.

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5.4.2. What psychological and emotional responses emerge in the aftermath of wildfires? (RQ2)

Wildfire is experienced not only as a material or environmental event, but as a profound emotional rupture. Interviewees describe a wide range of psychological responses, including fear, loss, anger, helplessness, anxiety, and frustration, particularly in territories affected by recent mega-fires (e.g., Peloponnese 2021, Galicia 2022–2023). These emotions are often articulated not only in relation to material destruction, but also to the erosion of identity, memory, and a sense of continuity. One participant captured this collective experience as "*mourning, loss, despair, helplessness, and one thing that is important, identity*." (E69CO AC DC ES).

The data also reflect a pattern of adaptive desensitisation: in high-risk areas, fire has become "normalised," and this emotional fatigue reduces both trust in institutions and willingness to engage in collective planning. Others express deep distrust in public responses**,** viewing them as reactive and media-oriented, rather than preventive or community-based.

Emotional exhaustion linked to the recurrent nature of fires is a salient theme. Several interviewees expressed frustration with what they perceived as the cyclical repetition of disaster without structural change: "*I feel sadness and anger at the annual repetition without any social commitment to a different model that would prevent them from happening again.*" (E66CE SC AE ES). Acute emotional responses were also reported, including fear and isolation: "*Panic, terror, extreme fear. Loneliness*." (E1AG SPR AGA ES). Similar patterns were observed in Greece, where interviewees noted that "*El miedo, la ansiedad, la impotencia y la frustración son emociones comunes ante el tema del fuego.*" (E73CBV SC GV GR).

These emotional responses are significantly intensified by a widespread perception of unpreparedness. Both local authorities and residents described the absence of adequate protocols, training, and resources: "*I didn't have the population prepared or sufficient resources*." (E58AL SP AL ES), and *"The local community is not informed or prepared for the prevention and suppression of wildfires."* (E73CBV SC GV GR). In this context, communities were often forced into reactive roles, with neighbours acting as first responders: "*It is the neighbours themselves who put them out*." (E24AL SP AL ES).

Past experiences with fire shape current emotional responses in complex and sometimes contradictory ways. Elder participants frequently drew on historical fire knowledge, which in some cases led to an underestimation of contemporary mega-fires: "*Nowadays, when there's a fire, lots of people are taking photos... it's seen more as a spectacle*." (E42LIU AC GI ES). At the same time, elders were widely recognised as holders of practical and situational knowledge: "*The 80-year-olds were mentally preparing themselves to work at night... This is knowledge of prevention and management that was*

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valid for the old fires, but not for the mega-fires." (E65SCL SC AC ES). This tension highlights both the value and the limits of experiential knowledge under changing fire regimes.

Repeated exposure to severe fires has also fostered eco-anxiety and fear of future escalation. Interviewees expressed a strong sense of vulnerability and anticipation of further loss: "*It's terrifying. That's the truth*." (E1AG SPR AGA ES), and "*If we don't get help and we don't take action, what is happening here today could happen elsewhere*." (E58AL SP AL ES). Feelings of helplessness were pervasive and often linked to perceptions of institutional distance or performative responses: "*The feeling of helplessness is brutal*." (E31ARA AMB ARAM ES), and "*The helplessness and disconnect... it becomes a kind of media spectacle*." (E61RESR AC EL ES).

Overall, psychological and emotional responses to wildfire are deeply intertwined with personal trajectories, collective memory, and governance dynamics. Fear, trauma, and exhaustion are not only reactions to fire events themselves, but also to the perceived absence of long-term prevention, meaningful participation, and institutional care.

Discussion:

The strong emotional responses documented (fear, helplessness, frustration, and eco-anxiety) reflect what Chartier et al. (2023) describe as "living with fire" in conditions of chronic uncertainty. These emotions are intensified by repeated fire exposure and by perceived institutional distance, echoing findings from Mediterranean contexts where lack of preparedness and top-down governance erode trust (Papanikolaou et al., 2013).

The generational divide identified in the interviews highlights a critical tension: while elders retain experiential fire knowledge, this knowledge is increasingly mismatched with contemporary mega-fire regimes. This finding supports the need to rethink how experiential and scientific knowledge are integrated, rather than assuming their automatic compatibility.

5.4.3. What role do different stakeholder groups play in fire prevention and territorial stewardship? (RQ3)

The findings indicate that stakeholder roles in fire prevention and territorial stewardship are complex, overlapping, and often informal. Contributions are primarily articulated through everyday land-use practices, experiential knowledge, and community-based action rather than through formal governance structures. Livestock farmers, elders, and long-term residents are consistently described as key actors in maintaining fire-resilient landscapes.

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Traditional practices such as extensive grazing, manual clearing, and seasonal burning are portrayed as central preventive mechanisms. As one participant noted, "*The first thing is extensive livestock farming... they continue to clear the boundaries of the farms*." (E1AG SPR AGA ES). Historical perspectives reinforce this view: "*Much of it was grazed by livestock. And this was what really controlled the vegetation*." (E27LIU AC GI ES). These practices are widely recognised as contributing to biomass reduction and landscape continuity.

Elders play a particularly critical role as custodians of experiential and place-based knowledge, especially in relation to seasonal land use, livestock routes, and fire behaviour during emergencies. However, interviewees express concern that this knowledge is not being transmitted to younger generations and is increasingly marginalised: "*There is a heritage there that is almost extinct*." (E65SCL SC AC ES). Participants repeatedly emphasise that "*Traditional knowledge is fundamental*." (E31ARA AMB ARAM ES), yet its incorporation into formal governance and prevention systems remains limited.

Livestock farmers are widely perceived as potential allies in fire prevention through extensive grazing. Grazing animals—cattle, goats, sheep, horses, and pigs—are recognised as providing an ecological service by reducing fuel loads: "*Herds are moving to scrubland, reducing forest fuels*." (E100APN AMB GPN GR). Stakeholders report observable effects on fire incidence: "*The issue of fires has decreased significantly since extensive livestock farming began*." (E56PTP SPR PC ES). Despite this recognition, farmers frequently report regulatory burdens, lack of incentives, and insufficient institutional support.

Other stakeholder groups, including women, young people, migrant and seasonal workers, and informal land users, are described as playing active but largely invisible roles. Women are often engaged in civil society initiatives and livestock-related practices, yet their participation is rarely reflected in institutional decision-making. Migrant and seasonal workers, although deeply embedded in rural economies and directly exposed to fire risk, face legal, linguistic, and social barriers that limit their engagement with formal prevention systems.

Across interviews, a recurrent theme is the lack of visibility and influence afforded to local actors. Participants repeatedly state that local voices are excluded from decision-making processes: "*They are not heard*." (E93LIU AC GI GR), and "*Central state planning does not incorporate local resources and expertise as it should*." (E71LIU AC GI GR). Overall, the findings highlight a disconnect between the practical contributions of diverse stakeholder groups and their limited recognition within formal fire governance frameworks.

Discussion:

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The results clearly demonstrate that fire prevention and territorial stewardship are already being carried out by specific stakeholder groups (particularly livestock farmers, elders, and long-term residents) through everyday practices. This confirms existing evidence that rural stewardship often operates informally and outside formal governance structures (Vitálišová et al., 2021).

However, the perceived exclusion of local actors from decision-making processes points to persistent barriers to meaningful participation, especially for women, youth, and informal land users. This mirrors broader critiques of participatory governance, where consultation does not necessarily translate into influence or co-decision (Trivelli et al., 2021).

5.4.4. Which land-use practices, tools, or local strategies are seen as effective for fire prevention? (RQ4)

Stakeholders consistently identify land-use practices rooted in the active management of the territory as the most effective strategies for fire prevention. Across both Spain and Greece, locally valued approaches prioritise low-tech, land-based practices that reduce biomass, maintain landscape heterogeneity, and create strategic discontinuities capable of limiting fire spread.

Extensive livestock grazing emerges as the most frequently cited and strongly endorsed practice. Interviewees describe grazing as particularly effective in managing biomass in hard-to-reach or abandoned areas, often considering it more appropriate than mechanised clearing. As one participant explained, "*If the land is used… the people who work on that land also help to prevent fires*." (E54PC SP SE ES). However, the decline of grazing is widely lamented: "*Grazing has disappeared and what remains is in areas undergoing regeneration or desertification*." (E74CE SC AE GR).

Greek interviewees reinforce this perspective, explicitly calling for the recovery and support of traditional land-use activities: *"Restore and support traditional activities (grazing, agriculture, resin harvesting) to reduce biomass and prevent wildfires."* (E89AFR SP DF GR). Prescribed burning and targeted grazing are also highlighted as complementary tools: "*Implement prescribed burning and targeted grazing as tools for vegetation management and wildfire prevention*." (E72CBV SC GV GR).

The maintenance of mixed land-use mosaics—combining forest, pasture, and agricultural land—is repeatedly identified as a key preventive strategy. However, stakeholders note that these mosaics are increasingly undermined by land abandonment and the expansion of monocultures, such as eucalyptus in Galicia and pine plantations in Greece. As a result, participants express strong interest in flexible, low-cost, and

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community-led solutions, including rotational pasturing and communal clearing initiatives, provided that regulatory frameworks enable local self-organisation.

Despite broad consensus on the effectiveness of these practices, interviewees highlight significant tensions between adaptive local strategies and formal regulatory frameworks. Bureaucratic rigidity and limited institutional support are consistently cited as major barriers: "*The main difficulty is funding*." (E77LIU AC GI GR). Pastoralists frequently report a lack of technical guidance and advisory services: "*I had absolutely no advice whatsoever*." (E52ARA AMB ARAM ES). Legislative constraints are explicitly identified as obstacles to innovation and continuity: "*Legislation must change*." (E79AG SPR GA GR), and "*Nomadic livestock farming should be promoted*." (E89AFR SP DF GR).

Across contexts, participants consistently demand official recognition of grazing and other traditional practices as legitimate fire prevention tools, along with financial, legal, and institutional support to sustain and adapt them: "*Restoring the link between livestock farming and forest management and forest fire prevention before it is too late*." (E75AG SPR GA GR). Overall, the findings underscore a strong alignment between locally perceived effectiveness and low-tech, knowledge-intensive practices, alongside a persistent gap between local capacities and formal governance frameworks.

Discussion:

Stakeholders' prioritisation of extensive grazing, mosaic landscapes, and low-tech interventions aligns with scientific evidence on biomass control and fire mitigation (Karamesouti et al., 2016). The strong consensus around grazing as an ecosystem service reinforces arguments for recognising pastoralism as a preventive tool rather than a residual activity.

Nevertheless, the findings expose structural contradictions: practices valued locally are often constrained by rigid regulatory frameworks, insufficient funding, and lack of advisory support. This tension between adaptive rural practices and formal regulation has been widely documented in European land-use policy (Schwarz et al., 2022).

5.4.5. What are the enabling and limiting factors for co-creation and community-based fire governance? (RQ5)

The findings indicate that there is clear potential for co-creation and community-based fire governance. Many stakeholders express willingness to engage actively in prevention and planning processes, but this engagement is conditional upon institutional trust, procedural transparency, and meaningful recognition of local knowledge. While formal participation in governance has so far been limited, interest in collaborative approaches is consistently high.

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Several enabling factors for co-creation emerge across interviews. Existing local networks—such as livestock associations, volunteer brigades, and community organisations—provide a foundation for collective action. Past involvement in EU-funded projects or pilot initiatives has also contributed to familiarity with participatory processes and increased openness to collaboration. In addition, recent wildfire events and visible landscape changes have acted as strong motivational triggers, reinforcing awareness of shared risk and the need for collective solutions.

Interviewees highlight concrete examples of ongoing collaborative practices: "*We develop fire risk maps to help local authorities plan prevention measures*." (E71LIU AC GI GR); "*The platform has been and continues to be active in eight communities*." (E61RESR AC EL ES); and "*We collaborate with the water user community to improve their infrastructure*." (E68PTP SPR PC ES). These experiences demonstrate existing capacities for coordination and joint action, even in the absence of fully institutionalised governance frameworks.

Effective co-creation is consistently described as decentralised, territorially adapted, and culturally embedded. Participants emphasise collective decision-making and social cohesion as key principles: "*Decisions are made collectively by the community members*." (E69CO AC DC ES), and "*That principle of solidarity and mutual support is fundamental*." (E61RESR AC EL ES). Stakeholders also stress the importance of practical support, including training and incentives: "*Clearly provide the appropriate tools and training*." (E71LIU AC GI GR). In this context, there is strong interest in customisable and user-friendly tools—such as the proposed STORCITO sandbox—that can be adapted to local realities and support co-development processes.

Communication and education emerge as critical enabling factors. Participants call for sustained capacity-building efforts starting from early ages and embedded within local contexts: "*We are going to have to teach people that*." (E42LIU AC GI ES); "*We need to go back to schools*." (E1AG SPR AGA ES); and "*Education works from the bottom up*." (E63RESR AC EL ES). These interventions are seen as essential for fostering a long-term culture of prevention and engagement.

At the same time, interviewees identify several limiting factors that constrain co-creation. Rigid bureaucratic procedures, delays in public response, and weak coordination between agencies are frequently cited as obstacles. Limited funding and scarce resources—particularly time, labour, and legal expertise—reduce the capacity of communities to sustain voluntary participation. Digital divides further exclude elderly or isolated rural actors from consultation processes, while emotional fatigue and historical distrust of external interventions undermine long-term engagement.

Overall, the findings suggest that while willingness to engage in bottom-up innovation is widespread, effective co-creation depends on governance frameworks that evolve to reduce administrative burdens, strengthen communication channels, recognise

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territorial knowledge, and provide sustained institutional and material support for community-based action.

Interviewees frequently mentioned the need for customisable tools, such as the proposed STORCITO sandbox, that are territorially adaptable, user-friendly, and culturally embedded. Several enabling factors were identified, including the presence of local networks and organisations such as livestock associations, volunteer brigades and community groups, which provide a foundation for collective action; previous experience with EU-funded projects or pilot initiatives, fostering familiarity with participatory processes and collaborative governance; motivation triggered by recent wildfire events and visible landscape change, heightening risk awareness and willingness to engage; strong community values of solidarity and mutual support, which underpin collective decision-making and shared responsibility; recognition of local and experiential knowledge as a valuable input for prevention and governance; interest in decentralised, territorially adapted co-creation processes rather than one-size-fits-all solutions; availability of practical tools and training, including customisable and user-friendly platforms; and commitment to education and capacity-building from early ages to promote a long-term culture of prevention and engagement. Conversely, several limiting factors were noted, including rigid and complex administrative procedures with excessive bureaucracy and delays in public response; poor coordination between institutions and agencies, limiting coherent action across governance levels; insufficient funding and material resources, constraining the sustainability of community participation; lack of technical guidance and advisory support for locally driven initiatives; digital divides excluding elderly, isolated or less connected rural actors from consultation processes; limited time, labour and legal capacity within communities to sustain voluntary engagement; emotional fatigue and burnout following repeated wildfire events; historical distrust of external or top-down interventions, undermining long-term institutional trust; and insufficient integration of local knowledge into formal decision-making, leading to perceptions of exclusion and tokenistic participation.

Discussion:

The expressed willingness to engage in co-creation reflects a latent capacity for community-based governance, consistent with stakeholder mapping and engagement literature (Barko et al., 2022). However, stakeholders clearly articulate that participation must be accompanied by institutional recognition, flexibility, and long-term support.

The demand for education, capacity-building, and accessible communication formats resonates with European policy objectives for resilient rural areas (European Commission, 2016, 2021) and with Living Lab methodologies that emphasise iterative learning and local empowerment (Carbonés et al., 2023; GRANULAR Consortium, 2023). The proposed sandbox is therefore best understood not as a technical tool alone, but as

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a governance instrument that can mediate between scientific knowledge, local experience, and policy action.

5.4.6. Implications for Policy and Practice

Overall, the findings support a shift from reactive, centralised fire management to territorially embedded, participatory prevention systems. Integrating traditional knowledge, supporting pastoral systems, strengthening local governance, and embedding fire education across generations emerge as key levers for resilience. These conclusions are consistent with ongoing European initiatives such as FIREPOCTEP+ and reinforce the relevance of local action plans co-developed by academics, policymakers, and communities (Papanikolaou et al., 2013).

5.5. Cross-cutting Issues

Beyond the thematic structure applied in the coding framework, the qualitative dataset revealed several transversal dynamics that cut across all stakeholder types, territories, and thematic blocks. These include gendered perceptions of fire and forest use, age-related knowledge and intergenerational dynamics, barriers to institutional trust and engagement, and linguistic and cultural nuances in fire narratives. These cross-cutting issues are critical to understanding the social complexity of wildfire governance and prevention and must be carefully considered in the development of participatory tools such as the sandbox.

5.5.1. Gendered Perceptions of Fire and Forest Use

Clear gendered patterns emerged regarding both the perception of fire risk and relationships with the land. Men often framed fire using technical or managerial language, focusing on equipment, strategies, and land-use classifications. In contrast, women's narratives more frequently referred to emotional impacts, memory, and family concerns, especially in post-fire contexts. Several interviewees described feelings of mourning, loss, despair, and helplessness, linking these emotions to identity: *"Mine and that of many people around me is mourning, loss, despair, helplessness, and one thing that is important, identity."* (E69CO AC DC ES). Repeated exposure to fires was also described as emotionally exhausting: *"I feel sadness and anger at the annual repetition without any social commitment to a different model that would prevent them from happening again."* (E66CE SC AE ES).

Many women reported a sense of exclusion from formal forest management processes, with some noting they had never been consulted on fire-related matters before this interview. This exclusion reflects broader governance dynamics, where local voices—

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often mediated through informal or care-based roles—remain marginal: *"They are not heard."* (E93LIU AC GI GR). Traditional land-based roles also diverge by gender; women are often responsible for secondary landscapes such as hedgerows, gardens, and community spaces, which are overlooked in fire policy despite their critical role in firebreaks and local resilience.

Despite these asymmetries, several women expressed a strong willingness to engage in community prevention activities, particularly through education, mutual aid networks, health-related initiatives, and resilience-building efforts. As one participant emphasized: *"That principle of solidarity and mutual support is fundamental."* (E61RESR AC EL ES).

5.5.2. Age-related Knowledge and Intergenerational Dynamics

Interviews confirmed a marked generational gap in both fire-related knowledge and perceived risk. Older participants tended to possess deep experiential knowledge of traditional fire prevention practices such as grazing, crop rotation, and manual clearing. However, they often underestimated the scale and behaviour of current sixth-generation wildfires, referring instead to fire regimes of the past. During recent fire events, elders were described as mobilising practical skills rooted in lived experience: *"The 80-year-olds were mentally preparing themselves to work at night... This is knowledge of prevention and management that was valid for the old fires, but not for the mega-fires."* (E65SCL SC AC ES). In contrast, younger participants—particularly those under 40—showed limited direct experience with fire and expressed low trust in institutional responses. They also reported minimal exposure to wildfire education, both in formal schooling and public discourse. One interviewee observed a shift in attitudes over time: *"Nowadays, when there's a fire, lots of people are taking photos... it's seen more as a spectacle."* (E42LIU AC GI ES).

Several interviewees voiced concern about a "broken transmission chain," noting that fire prevention practices are not being passed on, partly due to rural depopulation and the absence of institutional spaces for intergenerational dialogue. This dynamic pose both a risk and an opportunity: while tacit knowledge is being lost, there is significant potential for intergenerational co-learning if supported by sandbox tools and local engagement mechanisms. Many participants framed this erosion of knowledge as a loss of heritage: *"There is a heritage there that is almost extinct."* (E65SCL SC AC ES). Others stressed its importance: *"Traditional knowledge is fundamental."* (E31ARA AMB ARAM ES), yet institutional mechanisms to preserve or transmit it remain weak. Despite these challenges, education was repeatedly highlighted as a key opportunity for rebuilding this link: *"We need to go back to schools."* (E1AG SPR AGA ES) and *"Education works from the bottom up."* (E63RESR AC EL ES).

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5.5.3. Barriers to Institutional Trust and Engagement

A recurrent theme in both Spain and Greece was the perceived disconnection between rural communities and formal institutions. Many interviewees expressed mistrust toward authorities, particularly after recent fire events where institutional responses were seen as late, poorly coordinated, or even absent: *"I didn't have the population prepared or sufficient resources."* (E58AL SP AL ES). This perception was reinforced by the lack of community preparedness: *"Local community is neither informed nor prepared for the prevention and suppression of wildfires."* (E73CBV SC GV GR). Some stakeholders criticized fire policy as "urban-centric," arguing that it ignores the realities of land fragmentation, ageing populations, and informal land use. Administrative procedures for prevention—such as permits for clearing or subsidies—were described as complex, slow, and disconnected from local needs and capacities: *"The main difficulty is funding."* (E77LIU AC GI GR). In both territories, interviewees highlighted the lack of recognition for community efforts, including local brigades, grazing cooperatives, and fire memory groups, and expressed frustration with institutional reluctance to listen to local experience: *"Technicians are technicians... those of us who live here know where the fire can go."* (E58AL SP AL ES).

Despite these barriers, stakeholders consistently expressed a willingness to collaborate, provided that institutions engage in genuine co-production and recognize community contributions. Existing local initiatives—such as volunteer action, grazing practices, and informal prevention networks—were seen as undervalued, despite their significant role in building resilience.

5.5.4. Linguistic and Cultural Nuances in Fire Narratives

Conducting interviews in Spanish, Galician, and Greek revealed important language-specific ways of speaking about fire, landscape, and emotion. In Galicia, the use of Galician often enabled more emotionally nuanced storytelling, particularly among elder participants, who described fire not only as a threat but as an interruption of ancestral landscapes and ways of life (*"o monte vello"*). In Greece, local dialects and metaphors reflected a place-bound and moralised understanding of fire, closely linked to abandonment and social change, with emotional responses frequently articulated in collective terms: *"Fear, anxiety, helplessness, and frustration are common emotions in relation to the issue of fire."* (E73CBV SC GV GR). Interviewers observed that participants were generally more expressive and reflective when allowed to speak in their mother tongue. Translating these narratives into English required careful interpretation to preserve cultural meaning, especially where fire was portrayed not only as a hazard but as a symbol of loss, neglect, or moral decline: *"The helplessness and disconnect... it becomes a kind of media spectacle."* (E61RESR AC EL ES).

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These findings underscore the need for multilingual engagement tools and highlight the importance of cultural literacy in wildfire risk communication. Together, they illustrate that fire is not merely a technical challenge but a socially embedded phenomenon shaped by identity, emotion, history, and power. For this reason, the STORCITO sandbox must account for these dynamics if it is to become a truly inclusive and effective prevention tool.

5.6. Lexical Analysis: Worlds Cloud by Thematic Category

To complement the thematic coding and qualitative content analysis, a lexical analysis was performed to visualise the most frequently used terms across each of the nine thematic categories. For each major analytical block, a word cloud was generated using data extracted from the relevant coded segments.

These word clouds serve as a visual synthesis of stakeholder discourse and highlight dominant narratives, recurrent concerns, and thematic emphasis across the dataset. From a methodological standpoint, the word cloud functions as a complementary quantitative lens to the qualitative coding framework. It reinforces and triangulates key findings by showing that the most salient concepts in stakeholders' spontaneous language align closely with the main analytical categories and research questions. In this sense, lexical analysis strengthens the internal coherence and robustness of the overall qualitative interpretation.

To ensure clarity and analytical relevance, the procedure followed several steps. First, the full set of interview transcripts was cleaned and normalised to remove non-content words such as articles, prepositions, conjunctions, and auxiliary verbs (e.g., "the", "and", "is"), allowing the visualisation to focus on semantically significant terms rather than structural elements of language. Second, all original transcripts—conducted in Spanish, Galician, and Greek—were translated into English for unified processing. During lexical analysis, synonyms and lexical variants were consolidated to avoid fragmentation (for example, "firefighters", "fire brigade", and "emergency services" were grouped under a single root term where applicable). Finally, the analysis was conducted using the MaxQDA Visual Tools module, which enables lexical frequency analysis by coded segment and generates word clouds. The tool automatically calculates word frequency within each category and represents it through proportional sizing, with the most commonly mentioned terms appearing larger (see Figure 3).

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Figure 3 Word cloud illustrating the most frequently mentioned terms across all interviews, aggregated from all thematic categories. Generated using MaxQDA Visual Tools.

5.6.1. Overall lexical prominence

The most frequent term is “work” (frequency = 778; 1.01%; rank 1), appearing in 94.37% of the interviews. The next most frequent terms are “community” (639; 0.83%; rank 2; 91.55% of documents) and “management” (608; 0.79%; rank 3; 92.96% of documents). Together, these top-ranked terms indicate that participants repeatedly articulate wildfire- and landscape-related issues through concepts associated with activity (work), collective organisation (community), and governance/coordination (management).

Other high-frequency terms situate the discourse in territorial and environmental contexts: “mountain” (580; 0.75%; 90.28%), “forest” (546; 0.71%; 81.69%), “land” (536; 0.70%; 94.37%), and “territory” (531; 0.69%; 66.20%).

5.6.2. Distribution across documents

Several terms combine high frequency with broad distribution across interviews, suggesting transversal relevance across the dataset. Words such as *work* (94.37%), *land* (94.37%), and *life* (365 occurrences; 0.47%; 94.37%) appear consistently across documents, alongside *management* (92.96%), *community* (91.55%), and *natural* (301 occurrences; 0.39%; 90.14%). Similarly, terms like *feel* (291 occurrences; 0.38%; 92.96%) and *local* (372 occurrences; 0.48%; 85.92%) demonstrate widespread usage. By contrast, some words, despite their high frequency, are concentrated in fewer interviews,

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indicating more context-dependent usage. For example, *territory* appears in 66.20% of documents despite a high frequency of 531 mentions, while *eucalyptus* (335 occurrences; 0.44%) is also limited to 66.20% of documents.

5.6.3. Thematic clusters and semantic fields

From a semantic perspective, the most frequent words cluster into several clearly identifiable fields. Governance, collective action, and management emerge as a dominant theme, with terms such as *community*, *management*, *administration* (203; 0.26%), *public* (155; 0.20%), *service* (216; 0.28%), and *town hall* (141; 0.19%) indicating that wildfire prevention is strongly framed as a matter of institutional coordination and collective responsibility. Landscape, land use, and abandonment form another prominent cluster, reflected in words like *abandon* (368; 84.51%), *landscape* (262), *plantation* (169), and *vegetation* (163), which point to widespread concern about land abandonment, fuel accumulation, and landscape transformation. A third field relates to productive activities and livestock, with terms such as *livestock farming* (235; 0.31%), *animal* (291; 0.38%), *cattle farmer* (213; 0.28%), *goat* (154; 0.20%), *shepherd* (126; 0.16%), *agriculture* (185; 0.24%), and *farm* (154; 0.20%) highlighting the centrality of pastoral and agricultural practices in stakeholders' narratives about fire prevention. Prevention, risk, and knowledge also feature prominently, with words like *prevention* (302; 0.39%), *risk* (194; 0.25%), *protection* (118; 0.15%), *knowledge* (184; 0.24%), *experience* (168; 0.22%), and *information* (162; 0.21%) pointing to an explicit preventive framing that links experiential knowledge with risk management. Finally, emotional and experiential dimensions, although less frequent than governance or land-use terms, are evident in words such as *fear* (320; 0.42%), *feel* (291; 0.38%), *life* (365; 0.47%), *remember* (131; 0.17%), and *lose* (111; 0.14%), indicating that emotional and biographical aspects are integral to how wildfire is discussed.

5.6.4. Interpretation and methodological relevance

The dominance of terms related to work, community, management, and landscape suggests that wildfire is primarily conceptualised by stakeholders as a socially embedded and territorially situated issue, rather than as a purely environmental or technical problem. The simultaneous prominence of productive activities (especially livestock farming) and abandonment-related terms supports the interpretation that fire risk is closely associated with changing land-use practices and declining rural labour.

The frequency distribution reveals that the most recurrent terms combine collective and organisational language, such as community, management and administration, with territorial and environmental references, including mountain, forest, land and territory. These are accompanied by vocabulary associated with prevention and risk, such as prevention and risk, together with production-related expressions, notably livestock farming and words like animal, cattle farmer and goat.

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Word	Word length	Frequency	%	Rank	Documents %
work	8	778	1,01	1	94,37
community	9	639	0,83	2	91,55
management	7	608	0,79	3	92,96
mountain	5	580	0,75	4	80,28
forest	6	546	0,71	5	81,69
land	6	536	0,70	6	94,37
territory	10	531	0,69	7	66,20
local	5	372	0,48	8	85,92
abandon	9	368	0,48	9	84,51
train	6	365	0,47	10	84,51
life	4	365	0,47	10	94,37
eucalyptus	9	335	0,44	13	66,20
fear	5	320	0,42	14	87,32
talk	6	305	0,40	15	77,46
prevention	10	302	0,39	16	84,51
natural	7	301	0,39	17	90,14
animal	6	291	0,38	18	77,46
feel	6	291	0,38	18	92,96
specie	7	290	0,38	20	71,83
plant	7	268	0,35	21	63,38
landscape	7	262	0,34	22	85,92
manage	9	254	0,33	23	88,73
nature	10	253	0,33	24	74,65
economic	9	249	0,32	25	73,24
livestock farming	9	235	0,31	26	84,51
population	9	221	0,29	27	73,24
pine	4	217	0,28	28	69,01

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service	8	216	0,28	29	74,65
cattle farmer	8	213	0,28	30	63,38
produce	8	212	0,28	31	73,24
populate	6	209	0,27	33	53,52
own	6	208	0,27	34	73,24
neighbour	6	207	0,27	35	64,79
want	6	205	0,27	36	67,61
administration	14	203	0,26	37	53,52
village	5	203	0,26	37	52,11
cow	4	199	0,26	39	60,56
world	5	196	0,25	40	67,61
tree	5	195	0,25	41	69,01
time	6	195	0,25	41	80,28
risk	6	194	0,25	43	74,65
land	7	189	0,25	44	66,20
agriculture	11	185	0,24	45	71,83
knowledge	12	184	0,24	46	71,83
use	8	175	0,23	48	78,87
city	6	172	0,22	49	64,79
plantation	10	169	0,22	50	52,11
experience	11	168	0,22	51	78,87
vegetation	10	163	0,21	53	56,34
information	11	162	0,21	54	54,93
maintain	8	160	0,21	55	74,65
chestnut	7	158	0,21	56	50,70
take care	6	158	0,21	56	63,38
listen	8	155	0,20	58	77,46
public	7	155	0,20	58	56,34

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goat	5	154	0,20	60	63,38
farm	5	154	0,20	60	53,52
interest	9	152	0,20	62	61,97
wood	7	152	0,20	62	54,93
summer	6	149	0,19	64	71,83
support	6	148	0,19	65	76,06
property	9	147	0,19	66	64,79
activity	9	146	0,19	67	56,34
different	9	145	0,19	68	64,79
know	7	143	0,19	69	71,83
town hall	12	141	0,18	70	36,62
traditional	11	139	0,18	71	76,06
use	3	139	0,18	71	76,06
control	9	138	0,18	73	69,01
value	5	134	0,17	74	50,70
begin	7	132	0,17	75	57,75
know	5	132	0,17	75	63,38
remember	8	131	0,17	77	53,52
society	8	130	0,17	78	60,56
social	6	127	0,17	79	54,93
truth	6	127	0,17	79	47,89
shepherd	9	126	0,16	81	46,48
understand	8	125	0,16	83	57,75
place	5	125	0,16	83	67,61
field	6	121	0,16	86	56,34
study	8	120	0,16	87	57,75
protection	10	118	0,15	89	53,52
participate	10	115	0,15	92	61,97

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product	8	115	0,15	92	45,07
voice	3	115	0,15	92	69,01
agricultural	8	114	0,15	96	60,56
share	9	111	0,14	100	78,87
lose	6	111	0,14	100	56,34
horse	7	107	0,14	111	52,11
recover	9	106	0,14	112	60,56
cultivate	8	104	0,14	117	57,75
fear	5	100	0,13	122	52,11

Table 3 3 Most frequent terms in the qualitative interview corpus and their distribution across documents (N = 100)

5.7. Territorial Contrasts Between Galicia and Greece

The qualitative dataset enables the identification of territorial contrasts that are highly relevant to the design of wildfire prevention strategies. These differences do not imply hierarchical evaluations but rather highlight how environmental, social and productive contexts shape wildfire perception, preparedness and land management practices.

Below, we summarise key axes of differentiation observed between Galicia (Spain) and selected regions of Greece, based on stakeholder interviews and contextual data.

5.7.1. Land Ownership and Governance

Galicia is characterised by a high level of private ownership of forests and rural land, with public management accounting for less than 2% of the land area. In contrast, Greece has a significant proportion of public forest land—over 37%—and substantial state intervention in environmental and rural governance. These differences result in varying levels of autonomy, conflict and coordination in wildfire prevention policies.

5.7.2. Terrain, Climate and Landscape Structure

Greece has a highly fragmented and mountainous geography, with approximately 80% of its land consisting of dry, rocky and calcareous landscapes shaped by a Mediterranean climate. Its coastline is complex and includes more than 2,000 islands. Galicia, although also mountainous (around 60–70%), features broader valleys and usable plains, with an Atlantic climate characterised by humid, temperate conditions and green landscapes. Its soils are acidic and rich in organic matter, making them well suited for pasture and

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broadleaf forests. These contrasts strongly influence fuel accumulation, land accessibility and vegetation flammability.

5.7.3. Agricultural and Forestry Systems

Table 4 provides a comparative overview of key agricultural and forestry characteristics in two contrasting regions: Greece, with its Mediterranean context, and Galicia, with its Atlantic environment. In Greece, agriculture is dominated by olive cultivation, which accounts for 42% of agricultural land, alongside grapes, citrus and cotton. Forestry plays a minimal role, with exploitation largely limited to biomass and resin. ivestock systems are extensive, primarily based on sheep and goat grazing, with an estimated 7–8 million heads. Flagship products include olive oil and feta cheese, both of which hold Protected Designation of Origin (PDO) status.

In contrast, Galicia's Atlantic environment supports permanent grasslands covering 65% of the land, complemented by maize, potatoes and horticultural crops. Forestry is highly productive, driven by eucalyptus and pine plantations for pulpwood. Livestock systems are intensive, centred on dairy cattle—around one million cows producing 40% of Spain's milk supply—alongside a growing pig sector. Galicia's flagship products include dairy, beef and pulpwood, reflecting its strong integration of forestry and livestock production.

Aspect	Greece (Mediterranean)	Galicia (Atlantic)
Dominant crops	Olive (42% of agriculture), grapes, citrus, cotton	Permanent grasslands (65% of land), maize, potato, horticulture
Forestry	Minimal exploitation; mostly for biomass/resin	Highly productive; eucalyptus and pine for pulpwood
Livestock systems	Extensive sheep/goat grazing (7–8 million heads)	Intensive dairy cattle (1M cows; 40% of Spain's milk), pigs growing
Flagship products	Olive oil, feta cheese (PDO)	Dairy, beef, pulpwood

Table 4 4 Comparison of agricultural and forestry systems in Greece and Galicia. Greece is dominated by olive cultivation (42% of agricultural land), minimal forestry exploitation and extensive sheep and goat grazing, with flagship products such as olive oil and feta cheese. In contrast, Galicia features permanent grasslands (65% of land), highly productive forestry focused on eucalyptus and pine for pulpwood, and intensive dairy cattle systems producing 40% of Spain's milk, alongside flagship products like dairy, beef and pulpwood.

5.7.4. Population Distribution and Rural Structure

Greece has a concentrated population, with nearly half of its residents living in Athens and Thessaloniki, while rural areas are sparsely populated and include many ghost villages. In contrast, Galicia presents the highest rural dispersion in Western Europe, with half of its population living in scattered hamlets or isolated houses, often numbering between one and ten per settlement, creating a mosaic-like human geography. This

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unique pattern poses specific challenges for emergency logistics, fire warnings and community organisation.

5.7.5. Rural Depopulation Dynamics

Greece experienced an intense rural exodus between 1950 and 1990, driven by industrialisation, fragmented landholdings and a lack of services. In contrast, Galicia underwent a more gradual rural decline between 1955 and 1980, initially due to emigration and later exacerbated by the dairy crisis. Since 2000, the process has continued slowly, influenced by the closure of services such as schools and healthcare, as well as persistently low milk and agricultural prices, among other factors. In both regions, ageing populations, land fragmentation and service withdrawal are shared drivers of rural depopulation. However, in Galicia, rural voiding is more "invisible": houses are closed but still standing, whereas in Greece entire villages have disappeared.

5.7.6. Implications for Fire Prevention and Policy Design

These territorial contrasts (see Table 5) suggest that wildfire governance models must be differentiated. In Galicia, efforts need to address high levels of private ownership, dispersed populations and a strong forest-based economy. In Greece, the focus lies on state–community coordination, fire risk in abandoned public lands and low-yield agricultural zones (Misseyanni et al., 2025). The sandbox tool must therefore accommodate not only socio-cultural differences but also biogeographic, economic and spatial variables, ensuring customised strategies for Atlantic and Mediterranean settings.

Category	Galicia (Atlantic)	Greece (Mediterranean)
Land Ownership	Mostly private; <2% public	>37% public forest land
Terrain & Climate	Humid, temperate, valleys & pastures	Dry, rocky, mountainous, fragmented
Dominant Crops	Grasslands, maize, potatoes	Olives, grapes, citrus, cotton
Forestry Use	Productive, pulpwood-focused (pine, eucalyptus)	Minimal exploitation, biomass/resin use
Livestock Systems	Dairy cattle, pigs (intensive)	Sheep/goat grazing (extensive)
Population Pattern	Highly dispersed rural population	Concentrated population, ghost villages
Depopulation History	Gradual decline, still inhabited hamlets	Rapid exodus, abandoned settlements

Table 5 Comparative overview of territorial characteristics relevant to wildfire prevention in Galicia (Spain) and Greece. he table highlights key differences in land ownership, terrain and climate, agricultural and forestry practices, livestock systems, population patterns and depopulation history

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6. Conclusions

This report has presented the methodology, findings, and operational implications of the 100 in-depth interviews conducted with rural stakeholders in Galicia (Spain) and Greece, as part of STORCITO's Deliverable D3.1. These qualitative insights offer a granular and human-centred understanding of how wildfire risk is perceived, experienced, and managed across diverse socio-ecological contexts.

The evidence confirms that wildfires are not only environmental events, but deeply social, emotional, and territorial phenomena, entangled with local memory, governance structures, landscape histories, and shifting rural economies. Stakeholders articulated a wide range of concerns, from technical to existential, as well as a strong willingness to participate in co-creating solutions, provided institutional processes become more accessible, inclusive, and context-sensitive.

Several key messages emerge from the analysis. Rural abandonment and depopulation are the main structural factors explaining the crisis of forestlands in both Galicia and Greece, as well as the severity of wildfires. Traditional rural practices, such as extensive grazing, mosaic landscapes and rotational land use, remain undervalued in formal prevention systems despite their ecological relevance. There is widespread distrust in institutional responses, yet a readiness to engage exists if efforts are made to recognise local voices and remove bureaucratic barriers. Fire is experienced as much through emotion as through policy, meaning that future tools must incorporate trauma-aware and culturally rooted approaches. Women, elders and young people all face distinct challenges in fire governance, but each group holds critical knowledge and perspectives that must be integrated into prevention strategies. Territorial differences in ownership, ecology and land-use systems demand customisable tools adaptable to both Atlantic and Mediterranean realities. Finally, administrative burdens and the lack of regulatory flexibility are major obstacles to sustainable land management and wildfire prevention.

Stakeholders identified several critical challenges and proposed corresponding solutions. Rural abandonment and depopulation, which lead to unmanaged vegetation and increased fire risk, should be addressed by supporting active land stewardship through extensive grazing, traditional farming and landscape restoration. Traditional rural practices remain undervalued in formal fire prevention strategies, so integrating local knowledge systems into policy frameworks and incentivising mosaic and rotational land use is essential. Widespread distrust in institutions and fire policies can be mitigated by promoting participatory governance, reducing bureaucracy and recognising community-led initiatives. Fire is experienced not only as a hazard but also as a traumatic and

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emotional event, requiring the development of trauma-aware tools, culturally sensitive approaches and spaces for community healing. Marginalised groups such as women, elders and youth are often excluded from decision-making despite holding key knowledge; inclusive engagement strategies and representation in local fire governance mechanisms are therefore necessary. Territorial diversity between Atlantic and Mediterranean contexts, as well as differences between forest and pasture systems, are not reflected in current policies, highlighting the need for adaptable and context-sensitive tools tailored to local socio-ecological systems. Administrative burdens and inflexible regulations block sustainable land management, so simplifying procedures, revising legal frameworks and supporting multifunctionality and innovation are crucial. Finally, the lack of intergenerational transfer of traditional ecological knowledge calls for strengthening environmental education and community-based knowledge transmission practices.

Despite the operational and ethical challenges encountered (including delays due to summer fieldwork, translation bottlenecks, and emotional sensitivity) the research team successfully gathered a rich and diverse corpus of stakeholder knowledge. The interview data will serve as the empirical foundation for the development of the wildfire prevention sandbox that will be further developed in deliverable *D3.3 Fire-prevention sandbox*, a tool that must now translate these voices into action.

As a public deliverable, D3.1 reflects STORCITO's commitment to social innovation, participatory governance, and ethical research practice. Its findings are not definitive, but they mark a crucial step in reimagining wildfire prevention from the perspective of those who live with fire every day.

The voices of 100 rural stakeholders have shown not only the impact of wildfires, but also the resilience, knowledge, and willingness to act across Europe's rural territories. STORCITO's task now is to turn that insight into action.

7. Next steps

Findings presented in this report provide a clear roadmap for the development of the STORCITO wildfire prevention sandbox, a participatory tool designed to help rural stakeholders plan, coordinate and implement context-specific fire prevention strategies. These insights will guide the co-creation phase, ensuring that the sandbox reflects the realities, needs and capacities of rural communities across Atlantic and Mediterranean Europe.

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Next steps focus on translating the results of this deliverable into practical design principles and operational components. The sandbox must be built around territorial flexibility, allowing adaptation to diverse landscapes and governance models, and offer multilingual and multimodal access to ensure inclusion in low-connectivity areas. It should recognise traditional and local knowledge, integrating fire history, seasonal practices and emotional mapping, while enabling role-based collaboration among livestock keepers, local authorities, firefighters and community groups.

Key functional components will include participatory mapping tools, scenario simulation for land-use and fire behaviour, prevention planning calendars and templates, inter-community learning modules, and training materials tailored to different audiences. Multiple user profiles—such as livestock keepers, local officials, volunteers, youth and researchers—will have customised access paths and functions to meet their specific needs.

The sandbox must align with regional and municipal prevention plans, EU and national policies on forest resilience and rural development, and local action groups. It should serve not only as a technical planning tool but also as a social innovation platform, bridging formal policy frameworks with lived realities. Co-design with users through living lab methodologies will be essential to ensure ownership and usability. All this process will be reported in deliverable D3.3 Fire-prevention sandbox and submitted in the 10th month of the STORCITO project.

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Annex 1. WP3 Stakeholder Matrix Template

This annex contains the structured matrices used to document stakeholder engagement for Deliverable D3.1. It includes one matrix per territory (Spain and Greece), detailing each stakeholder's type, level of influence and affectedness, role in fire prevention or rural life, vulnerability status, and preferred engagement format. It also includes the *Checklist for Inclusive Stakeholder Selection*, used to ensure diversity in the sample, and the *Engagement Log Template*, which records the contact history, language use, and access barriers encountered during fieldwork.

By the agreed deadline, please submit to Uvigo the following deliverables related to the stakeholder interviews:

1. **Interview Results**
    - **Audio recording of each interview**
    - **Full transcription in English**
    - **Supporting evidence of the interview, such as:**

        - Screenshot of the video call
        - Signature of the interviewee (if in person)
        - Any additional visual proof (e.g., photo of the meeting context)

    Note: Ensure consent is obtained for all documentation in accordance with GDPR and ethical standards.

2. **WP3 Stakeholder Matrix Template**

    a) **One table per territory (Spain/Greece)**

    - Use one row per stakeholder.
    - Additional columns may be included if relevant (e.g., contact person, specific location, gender balance observed, or notes on accessibility).

    b) **Checklist for Inclusive Stakeholder Selection**

    - Ensure that the stakeholder sample reflects diversity.

    c) **Engagement Log Template**

    - Document all steps and contacts related to stakeholder engagement.

These materials are essential for the preparation of Deliverable D3.1 and for ensuring comparability and inclusiveness across case studies.

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Stakeholder Name / Group	Type	Specific Subtype	Influence Level	Affectedness Level	Influence-Affectedness Quadrant	Role in Fire Prevention / Rural Life	Vulnerability Status	Language Preference
Local Mayor / Regional Authority	Public Sector	Local /Regional Authority	High	High	High influence / High affectedness	Leads local prevention planning	—	GAL/ES/GR
Civil Protection Service	Public Sector	Emergency Services	High	High	High influence / High affectedness	Coordinates wildfire response	—	GAL/ES/GR
Local/Regional Forest Agency	Public Sector	Forestry Department	High	Medium	High influence / Low affectedness	Manages forest maintenance and firebreaks	—	GAL/ES/GR
Agro Cooperative	Private Sector	Agricultural Cooperative	Medium	High	Medium influence / High affectedness	Grazing and fire prevention	—	GAL/ES/GR
Livestock association	Private Sector	Livestock association	Medium	High	Medium influence / High affectedness	Grazing and fire prevention	—	GAL/ES/GR
Forest Contractor Union	Private Sector	Forest Contractors	Medium	Medium	Medium influence / Medium affectedness	Implements fuel treatments	—	GAL/ES/GR
Rural Entrepreneur Network	Private Sector	Rural Entrepreneurs	Low	Medium	Low influence / Medium affectedness	Owns eco-tourism businesses in fire-risk areas	—	GAL/ES/GR
Seasonal Migrant Workers	Private Sector	Migrant Labourers	Low	High	Low influence / Low visibility	Agricultural tasks in fire-prone zones	Migrants, non-native speaker	Arabic??
Volunteer Fire Brigade	Civil Society	Volunteer Group	Medium	High	Medium influence / High affectedness	Community fire patrols	—	GAL/ES/GR
Women's Farming Association	Civil Society	Women's Network	Medium	High	Low influence / High affectedness	Manages livestock in fire-prone zones	Isolated women	GAL/ES/GR
Youth Eco Collective	Civil Society	Youth Group	Medium	Medium	Medium influence / Medium affectedness	Environmental awareness activities	Youth	GAL/ES/GR
Local Culture Society	Civil Society	Cultural Association	Low	Low	Low influence / Low visibility	Hosts fire memory events	Elderly	GAL/ES/GR
University Fire Lab / researchers	Knowledge Actors	Research Group	High	Low	High influence / Low	Provides data and modelling	—	GAL/ES/GR

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Stakeholder Name / Group	Type	Specific Subtype	Influence Level	Affectedness Level	Influence-Affectedness Quadrant	Role in Fire Prevention / Rural Life	Vulnerability Status	Language Preference
					affectedness			
Rural School Network / Rural school	Knowledge Actors	Local Educators	Medium	Medium	Medium influence / Medium affectedness	Teaches fire resilience	—	GAL/ES/GR
Elder Farmers' Circle	Knowledge Actors	Traditional Knowledge Holders	Low	High	Low influence / High affectedness	Transmits fire history orally	Elderly	GAL/ES/GR
Green Forest NGO	Environmental	Environmental NGO	Medium	Medium	Medium influence / Medium affectedness	Reforestation and advocacy	—	GAL/ES/GR
Justice for Land Alliance	Environmental	Environmental Justice Group	Medium	High	Medium influence / High affectedness	Advocates for land access post-fire	Rural poor	GAL/ES/GR
Natural Park Authority	Environmental	Natural Park Manager	High	Medium	High influence / Low affectedness	Manages biodiversity and access	—	GAL/ES/GR
Informal – Informal Land Users	Informal	Unregistered Land Tenants	Low	High	Low influence / Low visibility	Livelihood use of fire-affected land	Roma / informal settlers	??

Checklist for Inclusive Stakeholder Selection

Criteria	Yes / No	Notes / Actions Needed
Representation from the 5 domains of action		
At least 30% women participants		
Age diversity (youth, elderly)		
Coverage of remote or isolated areas		
Representation of minorities (e.g.: migrants / LGTBIQ+ / Roma communities / refugees / youth with low civic engagement…)		
Both formal and informal power structures (Mayors and councilors AND Local influencers, informal leaders AND elders or knowledge holders with no institutional title)		
Inclusion of vulnerable or trauma-affected		
Geographical spread: coastal/inland		
Fire-prone vs fire-resilient territories		

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Mix of knowledge systems (technical/traditional)		

Engagement Log Template (an example)

Entry ID	Date	Territory	Stakeholder Name / Code	Contacted By	Status(Completed / Scheduled / Declined)	Barriers Noted (e.g., language, tech access)	Engagement Format	Language Used	Notes
WP3-ES-GA-001	10/06/25	Spain (Galicia)	Women's Farming Network	UVIGO	Completed	None	Semi-structured interview	Galician	Warm reception, valuable insights
WP3-GR-PL-002	12/06/25	Greece (Peloponnese)	Migrant Worker Group	AUA	Declined	Language barrier	Group meeting proposed	Arabic interpreter	Reschedule with interpreter

Annex 2 (A). Interview Guide A

This interview guide is a core tool for WP3's Deliverable D3.1, enabling the collection of qualitative data from rural stakeholders regarding **wildfire perceptions, prevention, and management**, particularly from a **psychosocial and local knowledge perspective**. It is designed to be used across the four rural case study areas in **Spain and Greece**, in **multiple languages** (Spanish, Galician, Greek, and English).

The guide has been developed following best practices in participatory research (cf. GRANULAR, RUSTIK) and complies with **GDPR** and ethical research standards. It was tested through a **pilot phase** (see Annex 4).

SUGGESTED QUESTIONS FOR INTERVIEWS/FOCUS GROUPS

Not all questions will be included in each interview/focus group. They are offered as a flexible pool for **our selection** based on interviewee profile and context.

Introduction and Consent

- Explanation of the project and the aim of the interview
- Duration, confidentiality, and voluntary participation
- Verbal or signed consent, depending on format

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- Language and translation preferences

1. Personal and Local Context

1. What is your current relationship with the forest or forested areas? (e.g., landowner, farmer, livestock breeder, local resident, NGO, etc.)
2. How important are forests in your daily life or for the local economy?

2. Forest and Land Perception

3. How would you describe the forest or natural landscape in your area?
4. What benefits do you think forests bring to your community?
5. Have you noticed any changes in recent years regarding the condition or use of forests?

3. Fire: Experience, Perception, and Psychology

6. What comes to mind when you think of forest fires?
7. Do you have memories or stories (personal or inherited) related to fire in your area?
8. Is fire seen more as a threat or as a tool in your community? Why?
9. Have you or your community ever experienced a wildfire? If yes: How did it impact people, homes, land, or animals?, How did it affect your sense of safety or connection to the land?
10. Do you feel fear, acceptance, or control in relation to fire as part of your environment?
11. What do you believe are the main causes of wildfires in your region? (e.g., neglect, climate, abandoned land, lack of maintenance, lightning, arson...)
12. Do you think that people in your area feel prepared or capable of dealing with fire risk?
13. What emotions or reactions do you notice in others when the topic of fire comes up?

4. Human Activities and Fire Prevention

14. What traditional or local land uses (e.g., grazing, clearing, agriculture) are practiced in your area that you believe help prevent fires?
15. Are there any activities that, in your opinion, increase the risk of fire?
16. How do you see the relationship between agriculture/livestock and forest protection?

5. Resource Management Needs

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17. What are the main challenges you face when it comes to managing land or forest resources?
18. What kind of support or resources (training, tools, funding, information) would help you better manage those spaces?
19. Are you currently involved in any fire prevention or forest management initiatives?

6. Capacity to Co-create Solutions

20. Do you think local communities can play a more active role in preventing fires?
21. What kinds of solutions or strategies would you be willing to contribute to or co-develop?
22. Would you participate in a collaborative space (digital sandbox, p.ex, or other scenarios) to share ideas and solutions with other rural communities?

7. Regional Identity and Knowledge

23. What makes your region unique in terms of how people see and use forests?
24. What local knowledge or customs should be taken into account when designing forest management policies?

8. Communication and Influence

25. Do you feel that local voices are heard in decision-making about forest or fire management?
26. What would help your community have a stronger voice in these processes?
27. What formats would be useful to share this knowledge with others (e.g., seminars, workshops, materials)?

9. Final Reflections

28. Is there anything else you would like to share?
29. Would you be open to participating in follow-up activities or workshops?

Multilingual Format and Local Adaptation

The interview guide must be available in the following languages:

- Spanish
- Galician
- Greek

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Each translation includes **linguistic validation** to ensure culturally appropriate terms and sensitive framing. Where applicable, **local expressions and examples** must be integrated (e.g., specific land use practices or fire events).

Application Guidelines

- The guide is **semi-structured**: researchers may adapt the flow and phrasing depending on interviewee's responses
- Estimated duration: **45–60 minutes**, with flexibility based on context
- Interviews can be conducted **in-person or via phone**, depending on connectivity, access, and safety
- Interviewers are trained in **ethics, cultural sensitivity, and trauma-informed approaches**

Annex 2 (B). Interview Guide. Possible questions on the use of Livestock for Vegetation Management

- **Identifying the most commonly used species and breeds locally:** *"What type of livestock do you use or know of that is used to keep farmland or forest areas clear?"*; *"You know the land well: which animals would be most useful for keeping the forest mass clean and safe in this area? Why?"*
- **Identifying success stories and barriers:** *"Are there any experiences you know of or have heard about in your area where livestock management has helped reduce fire risk? Could you describe them? What lessons have been learned from those experiences?"*
- **Identifying limitations of using only cattle:** *"Are there species or types of vegetation that you've noticed cattle won't eat? What do you usually do in that case?"*
- **Learning more about goats – especially in areas with dense scrub or steep terrain:** *"What role do you think goats or other animals play in controlling biomass in more difficult or overgrown areas?"*
- **Learning more about horses ('bestas' in Galicia, Spain):**
    - *"Some say that wild horses have become real 'firefighters', clearing undergrowth where people can't reach. Do you think that's true here? Have you seen it in practice?"*
    - *"Do you notice differences in the amount of scrub between areas with horses and those without?"*
    - *"Do you believe that horses or other wild animals do a better job than people in some areas when it comes to clearing the forest? What are the advantages or drawbacks you see?"*

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- *"In some places, horses are being reintroduced to work in the forest, like for timber hauling. Do you think that would be viable here, with local breeds and resources?"*
- *"Are there any conflicts or advantages in having free-roaming horses in the mountains? How is that organised here?"*
- *"Do you think the role of wild horses as a natural prevention tool should be better supported?"*
- *"If there were institutional support, do you think it would be possible to bring back the use of animals (like native horses) for forestry tasks such as clearing, transport, or targeted grazing?"*

- **Exploring local views on the complementarity between species:** *"Do you think a mixed herd (for example, cattle, goats, sheep, and horses) would be more effective for controlling vegetation? Why?"*
- **Exploring accumulated adaptive knowledge:** *"How does the type of vegetation affect livestock behaviour? Do you change your management depending on the time of year or the terrain?"*

Annex 3. Ethical Procedures and Data Management Protocol

This annex defines the **ethical safeguards and data governance procedures** applied in WP3 to ensure that all stakeholder engagement activities, especially those involving personal interviews on sensitive topics like wildfires and psychological well-being, comply with the highest standards of **research ethics**, **GDPR**, and **institutional oversight**.

The framework draws on guidance from the ***University of Vigo Ethics Committee***, the ***EU GDPR Regulation***, and ethical standards established in Horizon Europe projects.

Practical advice, **checklists**, and **behavioral reminders** for ethically responsible engagement in complex rural contexts.

This guide focuses on **practical advice**, **checklists**, and **behavioral reminders** for ethically responsible engagement in complex rural contexts.

1. Before the Interview: Preparation Checklist

- Confirm ethical approval status for your case study area.
- Carry translated and up-to-date **information sheets** and **consent forms.**
- Test your **recording device** (if applicable) and bring **spare batteries/chargers.**

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- Make sure interview materials are printed in the appropriate **local language.**
- Prepare a **private and respectful space** for the interview.
- Review the **stakeholder's background** and any relevant sensitivities.

2. Starting the Interview: Consent and Context

- Start by **introducing yourself** and the purpose of the interview.
- Provide the participant with the **information sheet** and walk them through it.
  - Ask for **informed consent** (written or recorded), making clear:
  - The interview is voluntary.
  - They can skip questions or stop at any time.
  - Their responses will be anonymised.
  - The data will be securely stored and used only for research.

- Clarify estimated duration (~45–60 minutes).
- Ask about **language preferences** and switch if needed.

3. During the Interview: Behavior and Sensitivity

- Let participants speak freely; **listen more than you talk.**
- Avoid expressing judgment or pushing for certain responses.
- Be mindful of **emotionally charged topics** (e.g., fire trauma, land loss).
- If distress arises, **pause or gently offer to skip the question.**
- Offer brief **affirmation and appreciation**, but do not over-promise outcomes.
- Avoid writing down personal identifiers (names, phone numbers) in your notes.

4. After the Interview: Data and Follow-Up

- Save audio files in **secure, encrypted folders** immediately.
- Clean your field notes: replace identifiers with **codes.**
- Upload relevant log details to the **Stakeholder Engagement Log** (Annex 1).
- If agreed, send the participant a **follow-up thank-you** or info sheet.
- Reflect on any ethical issues encountered and **report concerns to WP3 lead.**

5. Red Flags and How to Respond

Situation	Suggested Action
Participant becomes visibly distressed	Pause. Offer a break or end the interview. Respect boundaries.
Asked for personal benefit or financial compensation	Explain clearly that participation is voluntary and non-remunerated.

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Language barrier arises mid-interview	Offer to reschedule with a translator or in another preferred language
Asked about future project benefits	Be honest and modest. Avoid commitments. Direct them to local contacts if applicable.
Sensitive information is accidentally revealed	Redact during transcription. Flag for anonymisation.

6. Core Principles to Remember

- **Respect**: Prioritise participant dignity and local customs.
- **Transparency**: Be clear about who you are and what the interview is for.
- **Confidentiality**: Keep all identifiable data protected and coded.
- **Safety**: Ensure physical, psychological, and cultural safety in all settings.
- **Accountability**: When in doubt, consult the WP3 ethics contact point.

7. Ethical Approval Process

- A formal **ethical review** will be conducted by the **University of Vigo**.
- Submission of the protocol is scheduled for **July 2025**, with expected approval in July-August, in time for full-scale interviews.
- The ethical protocol includes:
    - Research objectives and justification.
    - Interview materials and consent forms (multilingual).
    - Procedures for handling sensitive data.
    - Risk mitigation measures for interviewees and researchers.
    - A plan for feedback and community and return of results.

8. Informed Consent Procedures

All participants will receive **clear, accessible information** about:

- The aims of the research and who is conducting it.
- What participation involves and how long it will take.
- The voluntary nature of participation and right to withdraw.
- How their data will be used, stored, and shared.

Consent will be obtained through:

- **Written forms** for literate, in-person participants..
- **Audio-recorded verbal consent** for phone or informal contexts.
- Translated versions will be provided in **Spanish, Galician, and Greek**, with English used for international coordination.

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9. Data Collection and Privacy

To align with GDPR principles, all data collection activities will adhere to the following:

GDPR Principle	WP3 Practice
Lawfulness, fairness, transparency	Information sheets provided; voluntary consent requested; no covert recording
Purpose limitation	Data used strictly for project purposes and described uses
Data minimisation	Only relevant data is collected; no unnecessary personal identifiers
Accuracy	Interviewers clarify and verify statements where needed
Storage limitation	Raw data stored securely only for project duration and archiving regulations
Integrity/confidentiality	Data stored in **encrypted drives**; access restricted to authorised personnel only

10. Anonymisation and Security Measures

- Interview transcripts will be **pseudonymised** using participant codes.
- Any identifying content in recordings or notes (e.g., village names, job titles) will be generalised or redacted.
- Translated and transcribed materials will exclude names or direct identifiers.
- Data will be stored on **encrypted institutional servers**, following each partner's security protocol, and coordinated centrally via the University of Vigo.

11. Researcher Responsibilities and Training

All interviewers and WP3 team members are responsible for:

- Completing **internal ethical and data protection training.**
- Respecting participant dignity, confidentiality, and cultural norms.
- Avoiding harm, including psychological distress or re-traumatisation.
- Reporting any **ethical incident** to the WP3 lead immediately.

A brief "**Ethics Quick Guide for Field Teams**" will be circulated to support consistent practice.

12. Data Sharing and Archiving

- Data will be **shared only within the STORCITO consortium**, unless additional consent is obtained.

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- A data subset may be made **FAIR-compliant** and deposited in a trusted repository, such as **Zenodo**, in accordance with the STORCITO Data Management Plan.
- Data use for scientific publications or presentations beyond the D3.1 scope will require new ethical clearance.

Annex 4. Pilot Implementation Report

This annex summarises the **pilot implementation** of the stakeholder interview process conducted in **Spain and Greece** during May-July- 2025. The purpose of the pilot was to:

- Test the **multilingual interview guide** (Annex 2A, AB).
- Assess **logistical feasibility** and engagement dynamics in rural settings.
- Identify adjustments needed before full-scale data collection.
- Provide initial feedback on language clarity, topic sensitivity, and time requirements.
- Support the ethical validation process (Annex 3).

1. Pilot Settings

Pilot interviews were conducted in **two rural areas per country**, selected to reflect the diversity of the STORCITO case studies along key dimensions:

Country	Region	Typology	Profile
Spain	Galicia (Interior)	Atlantic / Forest / Mountain	Smallholder forestry, elderly
Spain	Galicia (Coastal)	Mediterranean / Livestock / Coastal	Young agro-entrepreneurs
Greece	Thessaly (Interior)	Mediterranean / Mixed-use / Inland hills	Farmers, firefighters, migrants
Greece	Peloponnese (Coastal)	Mediterranean / Shrubland / Peri-urban	Women's groups, landowners

2. Participants and Methodology

- **Total number of pilot interviews**: 12
  - Spain: 6 (3 in Galician, 3 in Spanish)
  - Greece: 6 (Greek)
- Methods used:
  - Semi-structured interviews (face-to-face and phone)
  - Interview duration: 35–65 minutes

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Interviewers documented:

- Response quality and ease of engagement
- Language or conceptual barriers
- Emotional reactions to fire-related questions
- Technical/logistical difficulties (e.g., travel, connectivity)

3. Key Observations

a) Content and Clarity:
   Most questions were **understood clearly**, though prompts were useful in guiding depth.
   Interviewees appreciated the **open format**, particularly in expressing local knowledge.
b) Sensitivity:
   In Galicia and Thessaly, **fire memory evoked strong emotional responses**. Interviewers needed to pause or redirect questions.
   The section on **psychological impact** should remain optional and adaptable to context.
c) Language Use:
   Multilingual materials were essential; some older interviewees in Galicia could only speak Galician.
   Greek interviewees required **simplified vocabulary** for policy-related concepts.
d) Logistics:
   Summer farming schedules and **religious calendars** limited availability in some areas.
   Phone interviews worked well for more mobile participants but were harder for older residents.
e) Trust and Engagement:
   Participants were generally **willing to talk**, especially when approached through **local contacts**.
   Trusted local mediators (e.g., cooperatives, forest guards) helped facilitate access.

4. General Recommendations for Full Implementation

- Include **flexible time slots**, especially for farming households.
- Offer the **introductory sheet** in both written and spoken form.
- Flag sensitive topics in advance and prepare interviewers with **emotional support techniques.**

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- Continue using **local languages**, with support for **transcription and translation workflows.**
- Use **shorter interview versions** for more vulnerable or time-constrained profiles.
- Build in **debriefing mechanisms** for researchers (emotional load).

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Annex 5. Interviewee Final Matrix with Coding

Name/group of stakeholders (1)	Type (2)	Specific subtype (3)	Quadrant of influence-impact	Role in fire prevention / Rural life	Vulnerability status	Language preference	1	2	3	Location	Nº Galicia	Nº Greece	Total
Local mayor / Regional authority	Public sector	Local/regional authority	High influence / High impact	Leads local prevention planning	—	GAL/ES/GR	AL/AR	SP	AL/R	ES/GR	5	1	6
Civil Protection Service	Public sector	Emergency services	High influence / High impact	Coordinates response to forest fires	—	GAL/ES/GR	PC	SP	SE	ES/GR	2	2	4
Local/Regional Forestry Agency	Public Sector	Forestry Department	High influence / Low impact	Manages forest maintenance and firebreaks.	—	GAL/ES/GR	AFL/R	SP	DF	ES/GR	4	2	6
Agricultural Cooperative	Private sector	Agricultural Cooperative/Farmer	Medium influence / High impact	Grazing and fire prevention	—	GAL/ES/GR	CA	SPR	CAG/AG	ES/GR	5	2	7

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Name/group of stakeholders (1)	Type (2)	Specific subtype (3)	Quadrant of influence-impact	Role in fire prevention / Rural life	Vulnerability status	Language preference	1	2	3	Location	Nº Galicia	Nº Greece	Total
Livestock farmers' association	Private sector	Livestock/livestock farmers' association	Medium influence/high impact	Grazing and fire prevention	—	GAL/ES/GR	AG	SPR	AGA/GA	ES/GR	**2**	**2**	**4**
Private owners communal lands	Private sector	Private landowners	Medium influence / Medium impact	Implements fuel treatments	—	GAL/ES/GR	PTP	SPR	PC	ES/GR	**6**	**1**	**7**
Rural entrepreneurs network	Private sector	Rural entrepreneurs	Low influence / Medium impact	He owns ecotourism businesses in areas at risk of fire	—	GAL/ES/GR	RER	SPR	ER	ES/GR	**3**	**2**	**5**
Seasonal migrant workers	Private sector	Migrant workers	Low influence / Low visibility	Agricultural tasks in fire-prone areas	Migrants, non-native speakers	Arabic?	TMT	SPR	TM	ES/GR	**2**	**2**	**4**
Volunteer Fire Department	Civil society	Volunteer group	Medium influence / High impact	Community fire patrols	—	GAL/ES/GR	CBV	SC	GV	ES/GR	**1**	**3**	**4**

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Name/group of stakeholders (1)	Type (2)	Specific subtype (3)	Quadrant of influence-impact	Role in fire prevention / Rural life	Vulnerability status	Language preference	1	2	3	Location	Nº Galicia	Nº Greece	Total
Rural Women's Association	Civil society	Women's Network	Low influence / High impact	Manages livestock in fire-prone areas	Isolated women	GAL/ES/GR	AMR	SC	RM	ES/GR	2	2	4
Ecological Collective	Civil society	Ecological activism	Medium influence / Medium impact	Environmental awareness activities	Youth	GAL/ES/GR	EC	SC	AE	ES/GR	4	1	5
Local Cultural Society	Civil society	Cultural Association	Low influence / Low visibility	Organises events in memory of the fire	Elderly	GAL/ES/GR	SCL	SC	AC	ES/GR	3	1	4
University fire laboratory / researchers	Knowledge actors	Research group	High influence / Low impact	Provides data and models.	—	GAL/ES/GR	LIU/I	AC	GI	ES/GR	8	1	9
Rural Schools Network / Rural School / Rural teacher	Knowledge actors	Local educators	Medium influence / Medium impact	Teaches fire resilience	—	GAL/ES/GR	RESR	AC	EL	ES/GR	4	1	5

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Name/group of stakeholders (1)	Type (2)	Specific subtype (3)	Quadrant of influence-impact	Role in fire prevention / Rural life	Vulnerability status	Language preference	1	2	3	Location	Nº Galicia	Nº Greece	Total
Disseminators/communicators	Knowledge actors	Knowledge disseminators	High influence / Low impact	Conveys the story of the fire through mass media		GAL/ES/GR	DI/CO	AC	DC	ES/GR	4	1	5
Rural environmental activism	Environmental	Environmental NGO	Medium influence / Medium impact	Reforestation and promotion	—	GAL/ES/GR	ARM	AMB	NGOAMB	ES/GR	6	2	8
Alliance for Justice for the Earth	Environmental	Environmental Justice Group	Medium influence / High impact	Advocates for access to land after the fire	Rural poor	GAL/ES/GR	AJT	AMB	JAMB	ES/GR	4	1	5
Natural Park Authority	Environmental	Natural Park Manager	High influence / Low impact	Manages biodiversity and access	—	GAL/ES/GR	APN	AMB	GPN	ES/GR	1	2	3
Rural residents	Informal	Land tenants	Low influence / Low visibility	Use of land affected by fires as a means of livelihood	Roma / informal settlers	GAL/ES/GR	VZR	IN	AT	ES/GR	4	1	5

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Name/group of stakeholders (1)	Type (2)	Specific subtype (3)	Quadrant of influence-impact	Role in fire prevention / Rural life	Vulnerability status	Language preference	1	2	3	Location	Nº Galicia	Nº Greece	Total
											70	30	100

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Annex 6. Participant coding system for anonymisation

ID	Grupo	ID	Grupo
E1	AG SPR AGA ES	E51	CA SPR AG ES
E2	SCL SC AC ES	E52	ARA AMB ARAM ES
E3	CBV SC GV ES	E53	LIU AC GI ES
E4	AG SPR GA ES	E54	PC SP SE ES
E5	PTP SPR PC ES	E55	LIU AC GI ES
E6	AJT AMB JAMB ES	E56	PTP SPR PC ES
E7	PTP SPR PC ES	E57	ARA AMB ARAM ES
E8	LIU AC GI ES	E58	AL SP AL ES
E9	RESR AC EL ES	E59	ARA AMB ARAM ES
E10	CE SC AE ES	E60	ARA AMB ARAM ES
E11	PTP SPR PC ES	E61	RESR AC EL ES
E12	PTP SPR PC ES	E62	AFR SP DF ES
E13	CE SC AE ES	E63	RESR AC EL ES
E14	AJT AMB JAMB ES	E64	TMT SPR TM ES
E15	LIU AC GI ES	E65	SCL SC AC ES
E16	RESR AC EL ES	E66	CE SC AE ES
E17	AMR SC RM ES	E67	CA SPR AG ES
E18	DI AC DC ES	E68	PTP SPR PC ES
E19	AL SP AL ES	E69	CO AC DC ES
E20	AMR SC RM ES	E70	VZR IN AT ES
E21	SCL SC AC ES	E71	LIU AC GI GR
E22	PC SP SE ES	E72	CBV SC GV GR
E23	CA SPR AG ES	E73	CBV SC GV GR

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E24	AL SP AL ES	E74	CE SC AE GR
E25	TMT SPR TM ES	E75	AG SPR GA GR
E26	CA SPR CAG ES	E76	CA SPR AG GR
E27	LIU AC GI ES	E77	LIU AC GI GR
E28	VZR IN AT ES	E78	RER SPR ER GR
E29	DI AC DC ES	E79	AG SPR GA GR
E30	APN AMB GPN ES	E80	CA SPR AG GR
E31	ARA AMB ARAM ES	E81	PTP SPR PC GR
E32	AFR SP DF ES	E82	AL SP AL GR
E33	RER SPR ER ES	E83	TMT SPR TM GR
E34	VZR IN AT ES	E84	AMR SC RM GR
E35	AFR SP DF ES	E85	CBV SC GV GR
E36	VZR IN AT ES	E86	AMR SC RM GR
E37	CE SC AE ES	E87	SCL SC AC GR
E38	AL SP AL ES	E88	RESR AC EL GR
E39	AJT AMB JAMB ES	E89	AFR SP DF GR
E40	RER SPR ER ES	E90	CO AC DC GR
E41	AJT AMB JAMB ES	E91	ARA AMB ARAM GR
E42	LIU AC GI ES	E92	PC SP SE GR
E43	LIU AC GI ES	E93	LIU AC GI GR
E44	CA SPR CAG ES	E94	RER SPR ER GR
E45	AL SP AL ES	E95	VZR IN AT GR
E46	AFR SP DF ES	E96	APN AMB GPN GR
E47	ARA AMB ARAM ES	E97	TMT SPR TM GR
E48	RER SPR ER ES	E98	AFR SP DF GR
E49	CO AC DC ES	E99	AJT AMB JAMB GR

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E50	LIU AC GI ES	E100	APN AMB GPN GR

Annex 7. Mapping Guidance Sheet for Comprehensive Inclusion

To guide stakeholder identification in each case study, ask:

a. Have we included the 5 key sectors?

- Public Sector: Local and regional authorities, civil protection services, forestry departments
- Private Sector: Agricultural cooperatives, livestock associations, forest contractors, rural entrepreneurs
- Civil Society: Volunteer fire brigades, women's networks, youth groups, cultural associations
- Knowledge Actors: Local educators, researchers, traditional knowledge holders
- Environmental and Land Use Organisations: NGOs, environmental justice groups, natural park managers)

b. Have we addressed territorial diversity?

- Spain vs Greece
- Coastal vs Inland
- Forested vs Pastoral landscapes
- Fire-prone vs fire-recovered areas
- Others

c. Have we considered hidden or under-represented voices?

- Elderly rural residents
- Migrant laborers
- Roma communities, refugees
- LGBTQ+
- Women and in male-dominated sectors
- Youth with low civic engagement

d. Are we including both formal and informal power structures?

- Mayors and councilors

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- Local influencers, informal leaders
- Elders or knowledge holders with no institutional title

Checklist for Inclusive Stakeholder Selection

Criteria	Yes / No	Notes / Actions Needed
Representation from the 5 domains of action		
At least 30% women participants		
Age diversity (youth, elderly)		
Coverage of remote or isolated areas		
Representation of minorities (e.g.: migrants / LGTBIQ+ / Roma communities / refugees / youth with low civic engagement…)		
Both formal and informal power structures (Mayors and councilors AND Local influencers, informal leaders AND elders or knowledge holders with no institutional title)		
Inclusion of vulnerable or trauma-affected		
Geographical spread: coastal/inland		
Fire-prone vs fire-resilient territories		
Mix of knowledge systems (technical/traditional)		

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