Methodology

We approached the development of the drill as an integrated action within the planned interventions in the safe model village, and structured it in three fundamental phases:

1. **Technical planning:**

- Design of the drill scenario based on realistic types of wildfires, considering wind direction, fuel availability and the location of the most likely sources.
- Preparation of action scripts for each actor involved, including emergency warnings, evacuation routes, meeting points, safety zones and confinement procedures.
- Prior coordination with emergency services and firefighting equipment.

2. **Execution of the drill**

- Activation of warning and communication systems with residents.
- Mobilisation of the population following established routes and procedures.
- Real-time assessment of the collective response, use of community resources and compliance with protocols.
- Observation by technical teams for subsequent evaluation.

3. **Post-drill evaluation**

- Analysis of the operational response.
- Identification of errors, bottlenecks and opportunities for improvement.
- Collection of testimonials from participants.

Complementary, see Annex III to know more about the Schedule of manoeuvres.

Conclusions

Practical drills are a fundamental validation tool in the process of building communities that are prepared for extreme wildfires. In our case, their application in the model safe village has proven to be effective in:

- Confirming the internalisation of knowledge acquired in training sessions.
- Detecting real barriers that could compromise evacuation in the event of a fire (road closures, lack of signage, low participation of vulnerable residents, etc.).
- Building trust between the population and emergency services.
- Translating technical knowledge into concrete actions taken by the community.

Figure 24: Village drill

Figure 25: Village drill

4.4. Work Strategy 4: Exchange of experiences and lessons learned (Portugal and Chile)

Introduction

Extreme wildfires pose a growing threat to rural settlements, particularly in areas with urban-forest interfaces. In response to this problem, various innovative initiatives have emerged, such as the 'model safe villages' in Galicia, the 'safe villages' in Portugal and community strategies in Chile, all with the aim of improving the resilience of exposed communities.

Experience has shown that knowledge and response capacity in the face of extreme wildfires cannot be built in isolation. For this reason, the Trelle safe model village project has actively promoted exchange with other similar initiatives in territories facing comparable challenges. This international technical cooperation allows for the sharing of good practices, the comparison of approaches and the strengthening of the effectiveness of local interventions through mutual learning.

Objectives

- To highlight the importance of sharing experiences between communities facing extreme wildfire risks.
- Promote the transfer of knowledge, tools and methodologies between Galicia, Portugal and Chile.
- Analyse the benefits of a technical visit between the model safe village of Trelle and a Portuguese safe village.
- Assess the impact of the webinar held with technical and institutional actors from Chile and the interest shown in replicating the model.

Methodology

Three main actions have been developed:

1. **Technical visit between Trelle and a safe village in Portugal:**

A bilateral technical visit was promoted between representatives and inhabitants of the safe model village of Trelle (Galicia) and a Portuguese community participating in the 'Aldeias Seguras – Pessoas Seguras' programme. During the exchange, the following took place:

- Talks on the characteristics and potential of each model, and the possibility of implementing successful activities in both proposals, together with a space for dialogue among participants on risk perception and community participation.
- Presentations of local self-protection plans
- Tours of rural-forest interface areas

This meeting allowed for the comparison of models, the identification of synergies, and the strengthening of the idea of social co-responsibility in the prevention and response to wildfires.

2. **Technical webinar with Chile:**

An international webinar was held with the participation of CORMA technicians and representatives from the Community Prevention Network in Chile and the Galicia Team coordinating the Atlantic Living Lab. The webinar presented the model safe villages approach in Galicia and generated a technical dialogue focused on the following points:

- Shared risk management.
- Education and awareness-raising among the population.
- Coordination mechanisms between local authorities and civil protection agencies.
- Preventive infrastructure adapted to the territory.

Chile showed great interest in the Galician experience, identifying possibilities for adapting the model to areas in the south-central region of the country, characterised by rural dispersion and a high recurrence of fires.

3. **Shared knowledge platform:**

As a result of these exchanges, we are working on the design of a virtual platform for the systematisation of lessons learned, which will include technical documents, good practice sheets, videos and operational guides, accessible to all parties involved.

Conclusions

The exchange of experiences with similar initiatives in Portugal and Chile has proven to be a key tool for strengthening model villages that are safe from extreme wildfires. Technical visits allow for a direct understanding of other realities and foster mutual trust, while virtual meetings such as the webinar with Chile open up opportunities for transcontinental cooperation.

These actions reaffirm the need for solutions adapted to the socio-territorial characteristics of each place, highlight the active participation of citizens as a central element of any prevention model, and broaden the scope of learning through international networks, contributing to the sustainability and projection of local actions.

In a context of climate change and increasing exposure to risk, building technical and social alliances between territories with common problems is not only desirable but indispensable.

4.5. Work Strategy 5: Strategies for local economic revitalization and project support

Introduction

To strengthen the local economy, we have held a series of talks with some of the young people in the village, as potential entrepreneurs, with the aim of promoting business activities in the region. Examples include extensive livestock farming, organic farming, beekeeping, recreational and sporting activities, etc.

The talks were given after consulting with the Galician Agency for Rural Development (AGADER), the Galician Forestry Agency (XERA) and the EFI.

The progressive abandonment of rural areas has contributed decisively to the intensification of the risk of severe wildfires, a phenomenon that is aggravated by conditions associated with climate change, such as prolonged drought, rising temperatures and the accumulation of biomass. The depopulation of the countryside, the collapse of the traditional agroforestry mosaic and the loss of economic activity in villages have given rise to homogeneous, highly flammable landscapes that are not actively managed. In this context, the resilience of rural villages to extreme wildfires

depends largely on the economic recovery of the environment, land occupation and the promotion of sustainable land use.

Within the framework of the proposal to create Model Villages Safe from Wildfire Emergencies, we propose local economic recovery as a fundamental pillar by promoting entrepreneurial initiatives rooted in the territory. To this end, we have held a series of participatory meetings with young people from the village, identified as key players in the regeneration of the local economic fabric, discussing with them potential lines of entrepreneurship linked to the sustainable use of the rural environment: extensive livestock farming, organic farming, beekeeping and tourist, recreational or sporting activities in nature.

These sessions were designed and carried out after consulting with specialised entities, such as the Galician Agency for Rural Development (AGADER), the Galician Forestry Agency (XERA) and the EFI in order to ensure the technical, ecological and economic viability of the proposals and their alignment with land use planning and fire prevention strategies.

Figure 26: Meeting work strategy 5

Objectives

We have set ourselves the following potential objectives:

1. To promote viable, sustainable economic activities adapted to the rural environment that contribute to reducing the structural risk of wildfires.
2. To encourage the population to stay in the area and promote generational renewal by providing technical and financial advice to young local entrepreneurs.
3. Introduce financing tools and institutional support for the implementation of initiatives that contribute to the multifunctional use of the territory.

4. Integrate local economic recovery as an essential component of resilience to wildfires and climate change.

Methodology

To tackle these challenges, we have proposed identifying available, underused or abandoned resources, analysing fuel loads and mapping potential risk areas in collaboration with scientific entities (CSIC).

We held a meeting with AGADER, XERA and CSIC to define strategic lines of action.

As a result, we organised a talk to identify interests, skills and emerging business ideas.

From here on, it is no longer up to us. If this activity is successful and proposals are submitted, the next step would be a technical and economic analysis of each proposal, taking into account profitability, environmental sustainability, and the capacity to generate employment and reduce combustible biomass.

And, of course, we will promote, within our means, support and the search for funding: individualised support for access to grants, public aid, training, and the implementation of initiatives.

Figure 27: Field trip work strategy 5

Conclusions

A priori, we have detected great interest on the part of the village inhabitants in initiatives such as this. The problem, which we also highlight here, is that most of those who defend these activities are elderly people, a group that in principle does not fall within the range of potential entrepreneurs. Younger people express uncertainty when it comes to embarking on this adventure, but this may be because it is their first contact with it or because they are aware of the difficulty of deciding to live in the countryside and of the rural environment as it is today. In any case, our maxim has been to make it clear that

enhancing the value of the local economy is not only a matter of territorial development, but also a strategic tool for preventing wildfires. We wanted to convey that activities such as extensive livestock farming and organic farming play a fundamental role in controlling vegetation, reducing the horizontal and vertical continuity of fuel. Beekeeping, in addition to its profitability, promotes biodiversity and the maintenance of mosaic habitats. Recreational and tourist activities integrated into the natural environment encourage permanent and conscious occupation of the territory, increasing passive surveillance and early detection of risks.

5.Technology Readiness Level

Transition from TRL 5 to TRL 6: validation in a relevant environment

Both innovations have successfully passed the laboratory validation phase (TRL 5), demonstrating their effectiveness in highly demanding real-world operating environments, confirming their evolution to TRL 6.

During the summer of 2025, Galicia suffered five simultaneous mega-fires, reaching the highest rate of expansion ever recorded in a forest fire: 1,020 hectares per hour. In this extreme context, the solutions developed have been tested under critical conditions:

- The virtual reality scenario was tested in the safe model village of Trelle (Toén), integrated into the Living Lab environment. Despite the virulence of the fires, there was no ignition in the area, reinforcing the validity of the preventive model and its educational usefulness.
- The innovative nozzle has been used by forest firefighters in real interventions, effectively contributing to their physical protection and to the effectiveness of extinguishing extreme wildfires.

6. GENERAL CONCLUSIONS

Following the implementation of the various actions outlined in our proposal, and especially after conducting fieldwork and drills in the village environment, we believe we can affirm, based on empirical evidence, that the combination of territorial and social actions is effective and transformative in addressing the challenge posed by extreme wildfires in rural areas.

On the one hand, direct interventions in the landscape—based on the creation of safety rings, clearing work, selective pruning, thinning, clearing and recovery of agricultural areas—will prove decisive in reducing the intensity and speed of fire spread, creating opportunities for both firefighting and the self-protection of the population and heritage. We are convinced that these actions, planned according to technical criteria and adapted

to the local context, will not only reduce the immediate risk, but will also contribute to creating a more functional, diverse and managed landscape.

On the other hand, training the local population has had a very significant impact on improving community preparedness for risk. The incorporation of innovative tools such as virtual reality has enabled a qualitative leap in the way knowledge is transmitted, facilitating an immersive, realistic and accessible learning experience for people of different ages and profiles. We affirm that, after participating in these training activities, residents have acquired clear criteria on how to act in the event of a fire threat, which will reduce their exposure to risk in an emergency and reinforce their autonomy in critical contexts.

The organisation of evacuation and response drills has made it possible to validate the established procedures in real conditions, improving coordination between the population and the Galician Wildfire Prevention and Extinction Service (SPIF). These practices have been key to identifying operational improvements and consolidating risk perception.

We also believe that the project will open up avenues for collaboration and mutual learning through exchanges with one of Portugal's safe villages (visit pending), which will enrich our proposal and reaffirm that many of the challenges we face are shared on a global scale. The alliances established with initiatives in countries such as Portugal and Chile show that building resilient territories is possible if approached with a systemic vision, political commitment and citizen participation.

Finally, we know that the promotion of economic projects linked to land management—extensive livestock farming, mycology, beekeeping, organic farming, and nature tourism—is not only viable but also represents an essential complement to the long-term sustainability of the model. These activities revitalise the environment, generate employment, increase active landscape management, and strengthen the population's roots. In our case, there have been two initiatives in a short period of time that have received a lot of support but unfortunately have not yet been able to get off the ground.

For all these reasons, and based on both the evidence obtained and the impact achieved, we can affirm that our intervention will result in a safe and resilient model village, an example of what is possible anticipating fires, protecting lives and enhancing the value of the territory. This model should not be understood as an isolated case, but rather as a replicable proposal capable of inspiring integrated strategies in other rural environments with high exposure to the risk of wildfires.

In short, we want prevention to cease to be an option and become a guarantee when action is taken with planning, technical knowledge, innovation and participation. The future of villages in the face of fire can and must be built from the present.

ANNEXES

Annex I: Technical data sheets for projects suitable for implementation in the village

1. Technical Data Sheet Num. 1: Extensive Livestock Farming of Small Ruminants (Sheep and Goats)

Description

Establishment of an extensively managed herd, using natural pastures and low scrub to maintain the undergrowth.

Fire prevention benefits:

- Reduction of herbaceous and shrub biomass.
- Creation of areas with low fuel load (biological firebreaks).
- Reduction in the horizontal continuity of flammable material.

Technical requirements:

- Basic infrastructure (mobile fencing, drinking troughs).
- Training in holistic management and animal welfare.
- Coordination with local forest owners or forest owners.

Institutional support available:

- CAP aid (eco-grazing scheme).
- AGADER subsidies for the incorporation of young farmers.
- Programmes to promote native breeds.

2. Technical Data Sheet Num. 2: Organic Farming on Reclaimed Terraces

Description

Establishment of organic gardens for growing vegetables and aromatic plants on traditional terraces that are no longer in use.

Fire prevention benefits:

- Maintenance of open land and permanent cultivation.
- Prevention of scrub encroachment in adjacent areas.
- Restoration of the agroforestry mosaic landscape.

Technical requirements:

- Restoration of terraces and irrigation systems.
- Organic certification (CRAEGA) if marketing is desired.
- Access to local markets or short distribution channels.

Institutional support available:

- Aid for young people entering the agricultural sector.
- Subsidies for organic farming.
- Technical training and advice from agricultural organisations.

3. Technical Data Sheet Num. 3: Professional Beekeeping In Communal Forests

Description

Installation of mobile and fixed apiaries for the production of honey, wax, pollen and other bee products.

Fire prevention benefits:

- Promotion of biodiversity (pollination).
- Control of scrub growth in busy areas.
- Frequent presence of people in risk areas.

Technical requirements:

- Training in beekeeping and animal health.
- Beekeeping farm registration.
- Assessment of flowering and orientation of apiaries.

Institutional support available:

- Subsidies for beekeeping facilities.
- Support from Galician beekeeping associations.
- Programmes to promote local products.

4. Technical Data Sheet Num. 4: Recreational and Sports Activities in Nature

Description

Development of guided hiking trails, cycle tourism, orienteering races, etc., with an educational and sustainable focus.

Benefits in terms of fire prevention:

- Active and regular occupation of the territory (indirect surveillance).
- Improved knowledge of the environment and its ecological values.
- Integration of the community in the care of the landscape.

Technical requirements:

- Signposting of routes and approval (PR-G).
- Coordination with landowners.
- Training in first aid and nature guiding.

Institutional support available:

- Leader programmes (rural development groups).
- Subsidies for active rural tourism.
- Partnerships with schools, associations and hostels.

5. Technical Data Sheet Num. 5: Micro-SMEs for the Processing of Local Products

Description

Creation of small workshops for the processing of chestnuts, mushrooms, jams, milk, etc., with added value and local marketing.

Benefits in terms of fire prevention:

- Maintenance of productive plots.
- Incentive for active management of groves, oak forests and private farms.
- Rural economic diversification.

Technical requirements:

- Installation of a certified workshop or kitchen.
- Training in processing and labelling processes.
- Commercial strategy (markets, social networks, local brand).

Institutional support available:

- Leader and AGADER grants for infrastructure.
- Network of rural coworking spaces in Galicia.
- Technical assistance from IGAPE for business plans.

These projects, accompanied by the design of a personalised advisory plan, will not only be technically and economically viable, but will also play a strategic role in creating villages that are resilient to wildfires. The final selection will be based on:

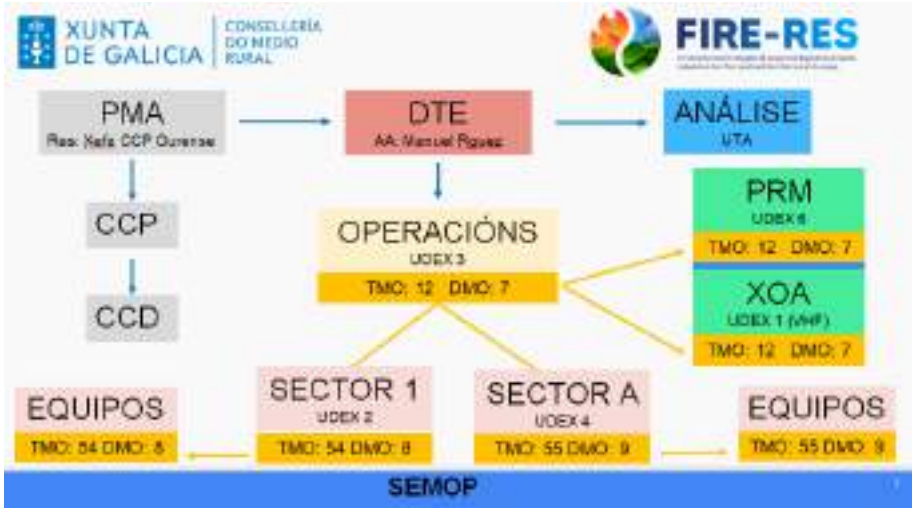
- The capacity of the promoter.
- The territorial and social fit of the activity.
- The direct impact on fuel management.
- The synergy with other existing initiatives.

Annex II: VILLAGE DRILL


XUNTA DE GALICIA
CONSELLERÍA DO MEDIO RURAL
FIRE-RES
MANOBRA LIÑA DE AUGA


XUNTA DE GALICIA
CONSELLERÍA DO MEDIO RURAL
FIRE-RES
MANOBRA DEFENSA EDIFICACIÓN


XUNTA DE GALICIA
CONSELLERÍA DO MEDIO RURAL
FIRE-RES
Zona embarque e desembarque
POSICIÓN PRM, PMA E MANOBRAS CO HELICÓPTERO



Participants:

- Head of Service in Ourense
- UDEX Environmental Agents
- UIFO Environmental Agents
- Environmental Agents
- Toén Team
- Santa Marta and Sierra de la Peña Fire Engines.
- La Chaira and Sierra de la Peña Brigades
- . CCP Ourense.
- UTA.
- UTA/PMA Pontevedra.
- Batracio XV Team

Communication channels:.

- Extinción 12 as fire command channel.
- Extinción 54 for Sector 1.
- Extinción 55 for Sector A

SEMOP:

- DTE – Manuel Rodríguez (Environmental Agent, District XII) Head of Operations – UDEX 3
- Head of Sector 1 – UDEX 2 Head of Sector A – UDEX 4 XOA – UDEX 1
- PRM – UDEX 6
- Planning – UTA

PMA RESPONSIBLE:

Monitoring of all operations from the advanced command post with support from XeoCode. Validate Operational Strategy together with the DTE using information provided by XP and XO Management of resources and supplies in contact with CCP-CCD

DTE

Receives communication from the CCD regarding the alarm and activates according to standard protocol.

Navigate to the alarm and modify (if necessary) the starting point with the corresponding communication to the CCD.

Confirmation of the fire by Extinguishing Channel 12. Request for change of level from A to B (if necessary).

Keep the CCD informed periodically, especially communicating any notable incidents.

Head of Operations:

Establish fire sectors and appoint those responsible for each one in coordination with the DTE. Feed XeoCode Lite.

Maintain constant communication with sector heads

TETRA COMMUNICATIONS

Entrapment manoeuvre in SECTOR 1

- XS 1 (command TMO): 'This is Operations Chief with Sector 1 Chief!'
- XO (command TMO): 'This is XO with Sector 1 Chief!'
- XS 1 (TMO in command): 'I am reporting a possible secondary source of fire to the east (Echo) of our location; I request authorisation to check it out.'

At this point, the XO informs the DTE and they agree to authorise the Sector 1 Chief to check the possible secondary source.

- XO (TMO in command): 'Received; proceed there and report back.'
- XS 1 (command TMO): 'Received!'

Once in the area, the Sector 1 Chief (UDEX02) is trapped by thick smoke and surrounded by flames. He presses the emergency button on his walkie-talkie (or mobile phone) and communicates by radio.

-

- XS 1 (Command TMO): 'Ahead XO with Sector 1 Chief, I confirm the fire in the indicated area. The massive smoke is cutting off our escape route, I have pressed the emergency button and request immediate rescue!'

The XO and DTE discuss the situation, inform the PMA manager and send rescue teams. The XP analyses the situation.

- XO (Sector 1 TMO): 'Radio silence, comrade trapped! Serra da Pena Brigade and MB, proceed immediately as a rescue unit to the location of Sector 1 Chief, take extreme precautions, there is massive debris, follow OACEL protocol, confirm message.'
- Serra da Pena Team Leader (TMO Sector 1): 'Message received, we are heading to the sector leader's location.'
- XO (TMO in command): 'Sector Leader 1, stay safe in the vehicle and activate the visibility lights. The Serra da Pena teams are already on their way to your position.'
- Serra da Pena Team Leader (TMO Sector 1): 'Attention XO, we have arrived at the sector leader's position and are beginning the rescue with water support.'
- XO (TMO Sector 1): 'Message received, continue to report on the incident.'

Once the danger has passed, the sector leader reports

- XS 1 (Command TMO): 'Ahead XO with Sector 1 Chief, we are now safe in a secure area, we can deactivate the alarm. We will proceed to supervise the area to reconfigure manoeuvres in the sector to tackle secondary outbreaks.'

- XO (command TMO): 'Information received, Sector 1 Chief. As soon as possible, report on the new situation in the sector for a new strategy.'
-

Information on the situation provided to the PMA by the DTE. Subsequent communication of rescue OK and cancellation of the emergency in XeoCode (PMA with CCD).

Water line manoeuvre in Sector 2

Regular communication between sector chief and XO on monitoring manoeuvres

- XO (command TMO): 'Ahead, Sector Chief A with XO.'
- XS A (command TMO): 'Ahead, XO with XS A.'
- XO (TMO in command): 'Please report on the situation in your sector'
- XS A (TMO in command): "We have secured the position on the track leading to Trellerma to prevent the fire from spreading to that area. With the support of the water line, we hope to prevent the fire from crossing the road. The change in wind direction is in our favour and the extinguishing speed is optimal. We will continue to report."
- XO (Command TMO): 'Received, thank you, we will maintain communication.'

Annex III: SCHEDULE OF MANOEUVRES

10:00 a.m. – Manoeuvre 1. Water line (Sector A)

- Sector A Chief (UDEX 4)
- UTA
- BF Chaira
- MB Sta Marta

11:00 a.m. - Maneuver 2. Impact defence in rural area

- Sector 1 Chief (UDEX 2)
- UTA
- Batracio XV
- BF Serra da Pena
- MB Serra da Pena
- Helicopter A Merca

12:00 p.m. - Maneuver 3.

- Trapping
- Sector 1 Chief (UDEX 2)
- UTA
- BF Serra da Pena
- MB Serra da Pena

Activities in PMA and communication:

- Operation of PMA, XeoCode, XeoCode Lite and analysis:
    - Provincial Head of Ourense
    - DTE
    - XO
    - XP
- TETRA communication exercise:
    - XOA
    - XS 1
    - XS A
    - Head of the Serra da Pena Team

- 14:00.- End!

FIRE-RES