FIRE-RES

Innovative technologies & socio-ecological-economic solutions for fire resilient territories in Europe

# FIRE-RES Innovation Catalogue

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# Introduction

Welcome to the FIRE-RES Innovation Catalogue!

This is your guide to over 80 innovations that are advancing wildfire resilience landscapes in Europe and beyond. This collection brings together a broad range of interventions, spanning prevention, early detection, effective response, and recovery – all of which contribute to the wildfire resilience of landscapes, natural environments and communities.

The catalogue is divided into two main parts:

1. The section 'Innovation Actions' showcases innovations developed within the FIRE-RES project.

2. The section 'Open Innovation Challenge' features ideas, inititives and products developed by innovators who joined the project throught the Open Call and brought new perspective to the FIRE-RES project.

Together those innovative solutions provided a pool of interventions aiming to address the challenges defined in the project's 11 Living Labs across all phases of the fire cycle, and all areas of activity necessary for integrated wildfire management.

We encoragues you to explore the following pages, connect with the innovators, and help drive these solutions forward to create landscapes that are more resilient to wildfires.

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# Innovation Actions

## Piloting an adapted Forest Fire Potential Polygons methodology to improve decision making on EWE (IA 1.1)

| | |
|---|---|
| **User group(s)** | Emergency managers, landscape managers, fire analysts, Incident commanders |
| **Area(s) of application** | Emergency Management |
| **Wildfire management phase(s)** | Prevention & Preparedness, Response & Suppression |
| **TRL at end of project** | TRL 7 |
| **Innovation status** | Not available |
| **Innovation technical description** | An improved fire analysis methodology relying on fire potential polygons and building on new EWE knowledge that can be used for wildfire response operations. |
| **Testing Living Lab(s)** | Catalonia – Spain, Chile, Norway-Sweden, Portugal |
| **Coordinator** | CFRS |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-1-1-piloting-an-adapted-forest-fire-potential-polygons-methodology-to-improve-decision-making-on-ewe/<br><br>Deliverable 1.3: https://fireres.eu/wp-content/uploads/2023/10/D1.3_FIRERES_AdaptFirePotentialPoligons.pdf<br><br>Publications:<br><br>Metodologia de polígons de potencial de foc. Guia tècnica (2023) - Documentació de Seguretat Pública (repositori del Departament d'Interior i Seguretat Pública) |

## Testing key inputs for atmospheric data analysis using new knowledge and expertise on EWE (IA 1.2)

| | |
|---|---|
| **User group(s)** | Emergency managers, Wildfire analysts. |
| **Area(s) of application** | Emergency Management |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | TRL 3 |
| **Innovation status** | Not available |
| **Innovation technical description** | A list of new key inputs for atmospheric data analysis using new knowledge and expertise on EWE. It includes an adapted methodology for fire analysis. |
| **Testing Living Lab(s)** | Catalonia – Spain, Chile |
| **Coordinator** | CFRS CONAF |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-1-2-testing-key-inputs-for-atmospheric-data-analysis-using-new-knowledge-and-expertise-on-ewe/<br><br>Deliverable 1.4: https://fire-res.eu/wp-content/uploads/2024/09/D1.4_FIRE-RES_TestingKeyInputs.pdf |

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## Testing key inputs for atmospheric data analysis using new knowledge and expertise on EWE (IA 1.3)

| | |
|---|---|
| **User group(s)** | Firefighters, Policy makers |
| **Area(s) of application** | Extreme Wildfire Event process |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Currently: TRL4, Expected: TRL 5-6 |
| **Innovation status** | Still under development / coming soon |
| **Innovation technical description** | A fire danger prediction system to improve the widely used FWI and integrate into existing wildfire information systems (e.g. GWIS). It incorporates easily accessible weather forecasts and fuel data to predict the probability of extreme fire occurrence |
| **Testing Living Lab(s)** | Nouvelle Aquitaine – France, Bulgaria, Catalonia – Spain, Galicia – Spain, Germany–The Netherlands, Greece, Norway-Sweden, Portugal, Sardinia – Italy |
| **Coordinator** | INRAE |
| **Further information** | A page on FIRE-RES website: https://fire-res.eu/ia-1-3-piloting-early-warning-indicators-of-ewes-incorporating-fire-weather-and-vegetation-conditions/<br><br>Deliverable 1.6: https://fire-res.eu/wp-content/uploads/2025/03/D1.6_FIRE-RES_Early-warning-indicators-1.pdf |

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## Integrated fire management model: bases, demonstration and piloting activities (IA 1.4)

| | |
|---|---|
| **User group(s)** | Firefighters, researchers, land managers and forest managers |
| **Area(s) of application** | Landscape Management |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 7 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | This IA promotes the use of an IFM strategy and in particular prescribed fires in EU regions, by reporting experiences and lessons learned from fire management practices, both in fire-prone and new fire areas. |
| **Testing Living Lab(s)** | Catalonia – Spain, Germany–The Netherlands, Portugal, Sardinia – Italy |
| **Coordinator** | CTFC CFRS |
| **Further information** | A page on FIRE-RES website: https://fire-res.eu/1-4-integrated-fire-management-model-bases-demonstration-and-piloting-activities/<br><br>Deliverable 1.9: Integrated fire management model: demonstration, training and piloting activities, including new fire-prone areas (IA 1.4 brief 1)"<br><br>Deliverable 1.10: https://fire-res.eu/wp-content/uploads/2025/08/D1.10_FIRE-RES_Integrated-Fire-Management-model-1.pdf<br><br>Prescribed burns demonstrate international collaboration in FIRE-RES firefighting research<br><br>FIRE-RES organised an international training on integrated wildfire management<br><br>"Play with fire": a serious game igniting wildfire risk awareness<br><br>'Intorno al Fuoco' events: Sardinian Living Lab explores memories of forest fires and raises public awareness on fire risks |

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## Demonstration of innovative post-fire restoration and adaptation strategies (IA 1.5)

| | |
|---|---|
| **User group(s)** | Forest managers and researchers |
| **Area(s) of application** | Landscape management |
| **Wildfire management phase(s)** | Restoration & Adaptation |
| **TRL at end of project** | TRL 9 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | Implementation of preventive and post-fire restoration strategies with the aim to provide a scientifically-based framework to guide managers to design adaptation strategies to EWEs. |
| **Testing Living Lab(s)** | Canary Islands – Spain, Catalonia – Spain |
| **Coordinator** | CTFC |
| **Further information** | A page on FIRE-RES website: https://fire-res.eu/ia-1-5-demonstration-of-innovative-post-fire-restoration-and-adaptation-strategies/<br><br>Deliverable 1.12 part I: https://fire-res.eu/wp-content/uploads/2024/01/D1.12_FIRE-RES_Post-fire-strategies.pdf, part II: https://fire-res.eu/wp-content/uploads/2025/06/D1.12_FIRE-RES_IA1.5_Part-2.pdf<br><br>Tardós-Ascaso, P., Busquets-Olivé, E., Vilà-Vilardell, L., Collado , E., Beltrán , M., Casals, P., & Piqué, M. (2025). Tratamientos de adehesamiento y prevención de incendios forestales: efecto de diferentes intensidades de clara y técnicas de desembosque en el comportamiento del fuego. *Actas del 9º Congreso Forestal Español:*https://9cfe.congresoforestal.es/wp-content/uploads/2025/9cfe-1836.pdf<br><br>Advancing knowledge on post-fire forest resilience and restoration: https://fire-res.eu/advancing-knowledge-on-post-fire-forest-resilience-and-restoration/ |

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## Improving data acquisition for landscape design based on novel remote sensing methods (IA 2.1)

| | |
|---|---|
| **User group(s)** | Firefighters and policymakers in charge of forestland management |
| **Area(s) of application** | Landscape (forestland) preventive knowledge and surveillance |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 7 |
| **Innovation status** | Seeking collaboration partners |
| **Innovation technical description** | Satellite- and LiDAR- based landscape vegetation configuration information and evaluation relevant metrics (e.g. fuel load, vegetation structure, post-fire recovery, forest roads and WUI configuration). |
| **Testing Living Lab(s)** | Nouvelle Aquitaine – France, Catalonia – Spain, Greece, Norway-Sweden, Portugal |
| **Coordinator** | ICGC NIBIO |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-2-1-improving-data-acquisition-for-landscape-design-based-on-novel-remote-sensing-methods/<br><br>Deliverable D2.1: https://fire-res.eu/wp-content/uploads/2025/08/D2.1_FIRE-RES_ImprovingData-Adquisition_vf.pdf |

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## Scheduling and implementing novel management practices (IA 2.2)

| | |
|---|---|
| **User group(s)** | Administration, forest planners, policymakers, and managers |
| **Area(s) of application** | Landscape Management |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL6 |
| **Innovation status** | Not available |
| **Innovation technical description** | Wildfire-, ecology- and bioeconomy- conscious management unit level recommendations for integrated land management practices (including silviculture, prescribed burning and operational fuel load reduction, post-fire actions, land use change from forest to food crops, etc.). |
| **Testing Living Lab(s)** | Nouvelle Aquitaine – France, Bulgaria, Catalonia – Spain, Portugal, Sardinia – Italy |
| **Coordinator** | CNR CTFC |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-2-2-scheduling-and-implementing-novel-management-practices/<br><br>Deliverable D2.2: https://fire-res.eu/wp-content/uploads/2025/06/D2.2_FIRE-RES_IA-2.2-brief-Scheduling-and-implementing-novel-management-practices-1-111.pdf<br><br>Deliverable D3.3: Part A, Part B, Part C Part D.<br><br>Publications:<br><br>https://fire-res.eu/success-for-the-preventive-forest-fire-fighting-workshop-in-tuscany/<br><br>https://fire-res.eu/fire-res-advancing-forest-management-catalonia-demonstrates-cutting-edge-forestry-machinery/ |

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## Defining recommendations for improving security on WUI at multiple scales (IA 2.3)

| | |
|---|---|
| **User group(s)** | Policymakers and WUI residents |
| **Area(s) of application** | Landscape management in Wildland Urban Interface |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 6 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | Recommendations for fire-resistant WUI components design, covering topics such as residential construction and ornamental vegetation, and optimal allocation of barriers to decrease fire spread. |
| **Testing Living Lab(s)** | Canary Islands – Spain, Catalonia – Spain, Chile, Portugal |
| **Coordinator** | CNRS ISCI |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia2-3-defining-recommendations-for-improving-security-on-wui-at-multiple-scales/<br><br>Deliverable 2.3: https://fire-res.eu/wp-content/uploads/2024/11/D2.3_FIRE-RES_Quality-standard-for-WUI-architecture-and-landscape-design.pdf<br><br>Deliverable 2.4:https://fire-res.eu/wp-content/uploads/2024/12/D2.4_FIRE-RES_IA-2.3-brief-Recommendations-for-improving-security-on-WUI-at-multiple-scales.pdf<br><br>C. Luciani, V. Tihay-Felicelli, B. Martinent, P.A. Santoni, F. Morandini, T. Barboni, Influence of fuel moisture content on the burning of cistus shrubs exposed to a low-intensity fire, Fire Safety Journal, Volume 146, 2024, 104168.<br><br>C. Luciani, V. Tihay-Felicelli, F. Morandini, A.Pieri, P.A. Santoni, T. Barboni, Vulnerability thresholds for shutters exposed to vegetation fire in WUI, Interflam 2025 (Londres, Royaume-Uni, 30 juin au 2 juillet 2025) |

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## Optimizing landscape configuration and fire management policies to minimize expected losses from EWE (IA 2.4)

| | |
|---|---|
| **User group(s)** | Policymakers and Forest Managers |
| **Area(s) of application** | Landscape Management and Fuel Treatment Planning |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 7 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | Implementation of a new optimisation approach to model expected losses from EWE, directly integrating fire behaviour (burn probability, mortality and fire spread). This solution explores how optimisation models can be adapted for short-term wildfire risk mitigation across different Mediterranean landscapes, using a common Mixed Integer Linear Programming (MILP), but different fire behaviour is modelling approaches. Comparison of implementation and outcomes allows assessment of the flexibility, practicality, and data needs of each method, as well as their transferability across ecological and institutional contexts. The emphasis is on freeing up computational resources to optimise the spatial distribution of novel fire management practices. |
| **Testing Living Lab(s)** | Nouvelle Aquitaine – France, Catalonia – Spain, Chile, Greece, Portugal |
| **Coordinator** | UAEGEAN ISA |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia2-4-optimizing-landscape-configuration-and-fire-management-policies-to-minimize-expected-losses-from-ewe/<br><br>D2.5. IA brief 2.4: Optimizing landscape configuration and fire management policies to minimize expected losses from EWE (https://zenodo.org/records/15259802)<br><br>Optimizing Forest Landscape Configurations to Reduce Wildfire Risk : Comparative Application in Portugal and Greece, (ISA and UAEGEAN team) |

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## Designing strategic networks of managed areas to improve suppression efforts against EWE (IA 2.5)

| | |
|---|---|
| **User group(s)** | Policymakers and forest administration |
| **Area(s) of application** | Landscape management |
| **Wildfire management phase(s)** | Prevention via restoration activities |
| **TRL at end of project** | TRL 7 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | An integrated system - consisting of an open access data server (fuels, climatic data, fire hazard, exposed values, infrastructures, etc..), multi-criteria decision analysis, and mathematical optimisation to inform management planning for the mitigation of large fires impacts and facilitate suppression efforts. It creates a network of well managed forest areas that serve to tame large fire behaviour and provide firefighters with improved opportunities to attack fires. |
| **Testing Living Lab(s)** | Bulgaria, Catalonia – Spain, Portugal |
| **Coordinator** | CTFC |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia2-5-designing-strategic-networks-of-managed-areas-to-improve-suppression-efforts-against-ewe/<br><br>Deliverable D2.6: https://fire-res.eu/wp-content/uploads/2024/11/D2.6_FIRE-RES_Designing-strategic-networks-of-managed-areas-to-improve-suppression-efforts-against-EWE.pdf<br><br>Krsnik, G., Olivé, E.B., Nicolau, M.P., Larrañaga, A., Terés, J.Á., Garcia-Gonzalo, J. and Olabarria, J.R.G., 2024. Spatial multi-criteria analysis for prioritising forest management zones to prevent large forest fires in Catalonia (NE Spain). Environmental Challenges, 15, p.100959. |

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## Designing post-fire restoration strategies (IA 2.6)

| | |
|---|---|
| **User group(s)** | Administration and forest planners and managers |
| **Area(s) of application** | Landscape management |
| **Wildfire management phase(s)** | Restoration & Adaptation |
| **TRL at end of project** | TRL6 |
| **Innovation status** | Still under development the design of a prioritization tool to assign restoration priorities |
| **Innovation technical description** | Multi-criteria analysis tool for the prioritisation of advanced restoration actions to facilitate cost-effective post-fire recovery. Parameters include fine-grained pre-fire vegetation, burn severity and ecological conditions, as well as monetary and operational constraints, etc. |
| **Testing Living Lab(s)** | Canary Islands – Spain, Catalonia – Spain, Portugal |
| **Coordinator** | CTFC GOBCAN |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-2-6-designing-post-fire-restoration-strategies/<br><br>Deliverable D2.7: https://fire-res.eu/wp-content/uploads/2025/06/D2.7_FIRE-RES_Post-fire-restoration-strategies.pdf<br><br>Casados S. M., Rodríguez-Fernández S., Marques S., Monsalve Cuartas A.M., de Frutos S., Coll L., Borges J.G. 2025. A participatory multi-criteria approach to post-fire restoration planning after extreme wildfire events. Forests 16, 1090 |

## Landscape design strategies, using tactical planning methods (IA 2.7)

| | |
|---|---|
| **User group(s)** | Researchers, with future potential forest administration |
| **Area(s) of application** | Landscape and Economy |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 6 |
| **Innovation status** | Still under development / coming soon |
| **Innovation technical description** | A combination of fire and forest growth / yield simulators informs landscape-level planning and practices to minimize expected losses from large fires while meeting production targets deemed critical for the socio-economic sustainability. |
| **Testing Living Lab(s)** | Catalonia – Spain, Chile, Greece, Portugal |
| **Coordinator** | CTFC |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia2-7-landscape-design-strategies-using-tactical-planning-methods/<br><br>Deliverable 2.8: https://fire-res.eu/wp-content/uploads/2025/09/D2.8_FIRE-RES_Landscape-design-strategies-using-tactical-planning-methods.pdf |

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## Trade-off ES assessment of fire-resilient landscape design (IA 2.8)

| | |
|---|---|
| **User group(s)** | Forest planners (forest owner associations) and managers |
| **Area(s) of application** | Landscape management |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 8 |
| **Innovation status** | Not available |
| **Innovation technical description** | Innovative analysis tools to assess trade-offs between EWE regulatory ecosystem services and other ecosystem services (e.g. CO2 storage/emissions reduction, biodiversity effects) over extended planning horizons, taking into account the ecological and socioeconomic dimensions of planning for resilient landscapes. |
| **Testing Living Lab(s)** | Catalonia – Spain, Greece, Portugal |
| **Coordinator** | ISA |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia2-8-trade-off-es-assessment-of-fire-resilient-landscape-design/<br><br>Deliverable 2.9: https://fire-res.eu/wp-content/uploads/2025/10/D2.9_FIRE-RES_Trade-off-Ecosystem-Services.pdf |

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## Fire wine – engaging wineries in maintaining fire-resilient territories through a label (IA 3.1)

| | |
|---|---|
| **User group(s)** | Wineries, wine growers, farmers |
| **Area(s) of application** | Economic drivers, Incentives and Insurance Solutions |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 7 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | A public-private mechanism to leverage the territorial environmental commitment of wineries surrounding forests: companies following circular economy principles (e.g. using bioenergy from chips derived of nearby preventive silviculture) are awarded a label as a market distinction. |
| **Testing Living Lab(s)** | Catalonia – Spain |
| **Coordinator** | CTFC |
| **Further information** | FIRE RES page of IA: https://fire-res.eu/ia-3-1-fire-wine-engaging-wineries-in-maintaining-fire-resilient-territories-through-a-label/<br><br>Bridging wine and forestry sectors to reduce wildfires: Wine actors' perceptions, their role in risk reduction and externality labelling Gorriz E., Darnay S., Rovellada M., Forests, Trees and People, march 2025 |

## Financial incentives for fire-resilient landscape measures (IA 3.2)

| | |
|---|---|
| **User group(s)** | Private forest owners |
| **Area(s) of application** | Financing mechanisms for wildfire risk reduction, fuel management |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 6 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | A bonus grant system to transfer funds raised from beneficiaries of landscape resilience to cover the additional costs of land managers implementing concerted fuel reduction measures. |
| **Testing Living Lab(s)** | Catalonia – Spain |
| **Coordinator** | CTFC |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia3-2-financial-incentives-for-fire-resilient-landscape-measures/<br><br>Publications:<br><br>https://9cfe.congresoforestal.es/wp-content/uploads/2025/9cfe-1630.pdf<br><br>https://www.youtube.com/watch?v=NFC5os9lyIw |

## Parametric solutions for insurance products (IA 3.3)

| | |
|---|---|
| **User group(s)** | Insurance companies |
| **Area(s) of application** | Landscape and Economy |
| **Wildfire management phase(s)** | Prevention & Preparedness; Detection & Response; Restoration & Adaptation |
| **TRL at end of project** | TRL 7 |
| **Innovation status** | Seeking collaboration partners |
| **Innovation technical description** | A specialised wildfire parametric insurance product covering accurate assessment of burnt area (and severity) to allow for more efficient pay-out and claim resolution schemes, and the design and definition of the triggering conditions for the parametric products. |
| **Testing Living Lab(s)** | Catalonia – Spain, Galicia – Spain, Portugal |
| **Coordinator** | MITIGA |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-3-3-parametric-solutions-for-insurance-products/<br><br>Deliverable 3.5:https://fire-res.eu/wp-content/uploads/2024/06/Attachment_0-32.pdf<br><br>Deliverable 3.6:https://fire-res.eu/wp-content/uploads/2024/07/D3.6_FIRE-RES_Modelling-agent-report.pdf |

## Fire forums (IA 4.1)

| | |
|---|---|
| **User group(s)** | Fire community stakeholders: landowners, land managers, forest managers, farmers, emergency services, and organisations working in the environmental, conservation, and public sectors. |
| **Area(s) of application** | Engaged communities |
| **Wildfire management phase(s)** | Prevention & Preparedness, Detection & Response, Restauration & Adaptation |
| **TRL at end of project** | TRL 7 |
| **Innovation status** | Not available |
| **Innovation technical description** | Multi-actor discussion platforms within a territory that are organised to settle the framework to rethink and reformulate liabilities, agree on fire management aims and reach a consensus on ways to solve the different scenarios that the emergency may rise. The fire forum constitutes a tool for community engagement in a co-creation process of territorial strategies. Field visits and experience sharing trigger guided debates to reach a common view of the desired future scenario and its related prevention, preparedness, response, and restoration measures. |
| **Testing Living Lab(s)** | Nouvelle Aquitaine – France, Catalonia – Spain, Portugal |
| **Coordinator** | CFRS |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-4-1-fire-forums/<br><br>Deliverable 4.2: https://fire-res.eu/wp-content/uploads/2025/09/D4.2_FIRE-RES_IA-4.1-brief-Report-on-Fire-Forums-workshop-and-visits-and-recommendations.pdf |

## Testing a new methodology for risk communication to improve WUI homeowners' culture of risk (IA 4.2)

| | |
|---|---|
| **User group(s)** | WUI homeowners; Fire affected people; Municipalities; Rural agents; Country councils; National or regional policymakers; Public agencies; Regional government, Culture- and media-based public and civil actors. |
| **Area(s) of application** | Governance, Society, Communication and Risk Awareness |
| **Wildfire management phase(s)** | Prevention & Preparedness; Detection & Response; Restoration & Adaptation |
| **TRL at end of project** | TRL6 |
| **Innovation status** | Still under development / coming soon |
| **Innovation technical description** | Tailored communication strategies based on mental models of the targeted population. Contents include co-construction of expert and lay mental models, comparative analysis of dissonances, and behavioural recommendations related to accidental fire ignitions caused by debris burning and leisure activities (as well as behavioural recommendations in case of a wildfire.). |
| **Testing Living Lab(s)** | Nouvelle Aquitaine – France, Portugal, Sardinia – Italy |
| **Coordinator** | FWISE |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-4-2-testing-a-new-methodology-for-risk-communication-to-improve-wui-homeowners-culture-of-risk/ |

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## Fire Education Platform – An immersive tool for policy-makers, schools and families (IA 4.3)

| | |
|---|---|
| **User group(s)** | Policy Makers, Schools (Teachers and Students), Fire Technicians and Investigators |
| **Area(s) of application** | Governance, Communication and Risk Awareness |
| **Wildfire management phase(s)** | Prevention & Preparedness, Recovery & Rehabilitation. |
| **TRL at end of project** | TRL 7 |
| **Innovation status** | Still under development / coming soon |
| **Innovation technical description** | An online education platform to disseminate fire contents, composed of a learning hub and an awareness and culture modules. Learning hub contains technical and pedagogical materials, awareness and culture games, interactive narratives and storytelling. |
| **Testing Living Lab(s)** | Portugal |
| **Coordinator** | ISA |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-4-3-fire-education-platform-an-immersive-tool-for-policy-makers-schools-and-families/ |

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## Fire-safe villages (IA 4.4)

| | |
|---|---|
| **User group(s)** | Firefighters, Public administration, Emergency services |
| **Area(s) of application** | Response, Training and Risk Awareness |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 6 (Virtual Reality as a Training Tool)<br><br>TRL 9 (Double-Effect Forest Lance) |
| **Innovation status** | Still under development / coming soon (Virtual Reality as a Training Tool)<br><br>Ready and seeking adopters (Double-Effect Forest Lance) |
| **Innovation technical description** | Municipal initiatives to reduce household and community vulnerability with two key tools: a virtual reality training tool that strengthens awareness and response behaviour, and a double-acting firefighting lance that both suppresses flames and shields firefighters from heat. |
| **Testing Living Lab(s)** | Chile, Galicia – Spain, Portugal |
| **Coordinator** | XUNTA |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-4-4-fire-safe-villages/<br><br>Publication:<br><br>https://fire-res.eu/nurturing-resilience-the-journey-of-fire-res-galicia-living-lab/<br><br>https://agader.xunta.gal/es/recuperacion-de-tierras/aldeas-modelo |

## Testing regional-level policy clinics for inclusive and coherent firesmart risk governance (IA 4.5)

| | |
|---|---|
| **User group(s)** | Policy makers and regulators. Communities and civil society. |
| **Area(s) of application** | Governance, Society, Communication and Risk Awareness |
| **Wildfire management phase(s)** | Prevention & Preparedness; Detection & Response; Restoration & Adaptation |
| **TRL at end of project** | TRL 7 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | A new public-private participative consultation mechanism at regional level to identify policy setups that support or hinder coherent fire risk governance across risk management phases and multi-risk interactions. |
| **Testing Living Lab(s)** | Catalonia – Spain, Portugal |
| **Coordinator** | EFI |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-4-5-testing-regional-level-policy-clinics-for-inclusive-and-coherent-firesmart-risk-governance/<br><br>Deliverable 4.6: https://fire-res.eu/wp-content/uploads/2025/08/D4.6_FIRE-RES_Report-on-Policy-clinics.pdf<br><br>Publications:<br><br>Plana, E., et al (2024) Framing Coherence Across EU Policies Towards Integrated Wildfire Risk Management and Nature-Based Solutions: https://doi.org/10.3390/fire7110415 |

FIRE-RES

## Piloting a Firesmart planning platform and conceptualization tool (IA 4.6)

| | |
|---|---|
| **User group(s)** | Land and urban planners and other land planners |
| **Area(s) of application** | Governance, Society, Communication and Risk Awareness: Land and Urban planning |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 3 |
| **Innovation status** | Ready and seeking adopters; Still under development / coming soon |
| **Innovation technical description** | It includes three tools developed to enhance fires-smart spatial and urban planning: (1) a platform of wildfire risk management resources for professionals, (2) a guide for land planners and (3) a prototype application for integrated risk assessment and planning, and collaborative governance. |
| **Testing Living Lab(s)** | Catalonia – Spain, Portugal |
| **Coordinator** | CTFC |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-4-6-piloting-a-firewise-planning-platform-and-conceptualization-tool/<br><br>Deliverable 4.7 Parts A, B, C: https://fire-res.eu/wp-content/uploads/2025/06/D4.7_FIRE-RES_IA4.6-Fire-smart-planning-1-37.pdf |

## Testing an Interoperability evaluation tool (IA 4.7)

| | |
|---|---|
| **User group(s)** | Response agencies; policy makers. |
| **Area(s) of application** | Response, training and post incident analysis |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | TRL 8 |
| **Innovation status** | Seeking collaboration partners |
| **Innovation technical description** | An interoperability monitoring and assessment tool to rate the quality and efficiency of collaborative emergency efforts when disasters need international responders' cooperation (e.g. Union Civil Protection Mechanism). |
| **Testing Living Lab(s)** | Norway-Sweden |
| **Coordinator** | TIEMS |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-4-7-testing-an-interoperability-evaluation-tool/<br><br>Deliverable 4.8: https://fire-res.eu/wp-content/uploads/2023/11/D4.8_FIRE-RES_Matricial_Tool.pdf.<br><br>Mannaioni A., Saint Jonsson A., Schaller P., Monet J.P. (2018). Comment diagnostiquer l'interopérabilité des secours? in Face au Risque, Paris, CNPP ed.<br><br>Mannaioni A., Schaller P., Saint Jonsson A., Joseph X., Monet J.P. (2024) Interoperability for join civil protection operations, a monitoring tool: Definition of a methodology, study cases at national and international level; proceedings of 21st ISCRAM conference; Münster, Germany. |

## Demonstrating strategies and tools for smart communication to citizens (IA 4.8)

| | |
|---|---|
| **User group(s)** | Local Authorities and Communities, Civil protection authorities, Public Agencies |
| **Area(s) of application** | Citizen communication, Local authority processes |
| **Wildfire management phase(s)** | Prevention & Preparedness, Detection & Response |
| **TRL at end of project** | TRL 7 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | Advanced emergency framework for establishing a standardized real-time warning and alert messaging system across the European Union. It identifies key principles, challenges, and opportunities for harmonizing communication protocols among EU Member States. Drawing on global best practices and international standards, it proposes policy recommendations and a step-by-step implementation roadmap, respecting national sovereignty and ensuring inclusive, multilingual, and accessible communication during emergencies. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | TIEMS |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-4-8-demonstrating-strategies-and-tools-for-smart-communication-to-citizens/<br><br>Deliverable 4.10: https://fire-res.eu/wp-content/uploads/2025/09/D4.10_FIRE-RES_IA-4.8-brief-Framework-for-real-time-communication-to-citizens.pdf |

FIRE-RES

## Demonstration of an integrative umbrella system for estimating EWE risk and impact in real time with HR weather data (IA 5.1)

| | |
|---|---|
| **User group(s)** | Civil protection agencies, environment protection agencies, researchers, firefighters, forestry companies, forest management and protection entities. |
| **Area(s) of application** | Advanced Technology Solutions; Emergency management |
| **Wildfire management phase(s)** | Prevention & Preparedness, Detection & Response, Restoration & Adaptation |
| **TRL at end of project** | TRL 9 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | A software system, inspired by the Californian wildfire emergency system (CAL FIRE and investor-owned electrical utilities including PGE, SCE and SDGE). The ISS is a modular web platform that integrates several FIRE-RES partners solutions with the aim of allowing their implementation and demonstration in the addressed Living Labs. It encompasses real-time simulation of fire incidents (including EWE) through the use of high-resolution weather and fuel data as well as the estimation of daily fire risk. It is adaptable to the specific requirements of fire analysts and their fire agencies. |
| **Testing Living Lab(s)** | Nouvelle Aquitaine – France, Canary Islands – Spain, Catalonia – Spain, Galicia – Spain, Germany–The Netherlands, Portugal |
| **Coordinator** | TSYLVA |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia/ia-5-1-demonstration-of-an-integrative-umbrella-system-for-estimating-ewe-risk-and-impact-in-real-time-with-hr-weather-data/<br><br>Deliverable 5.1: https://fire-res.eu/wp-content/uploads/2023/10/D5.1_FIRE-RES_Technical-requirements-and-system-architecture-of-the-integrative-software-system-2.pdf<br><br>Deliverable 5.2: https://fire-res.eu/wp-content/uploads/2025/03/Attachment_0_compressed-1.pdf<br><br>Deliverable 5.15: https://fire-res.eu/wp-content/uploads/2025/08/D5.15_FIRE-RES_Integrative-Umbrella-System-for-EWE-decision-making.pdf |

FIRE-RES

## Demonstration of real-time EWE simulation and smoke spread based on coupled fire-atmosphere approaches using of HR weather data (IA 5.2)

| | |
|---|---|
| **User group(s)** | Firefighters, wildfire analysts, first responders |
| **Area(s) of application** | Advanced Technology Solutions; Emergency management |
| **Wildfire management phase(s)** | Prevention & Preparedness, Detection & Response |
| **TRL at end of project** | TRL7 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | Encompasses two main simulation solutions: One is based on the operational simulation capabilities of Wildfire Analyst (Technosylva), providing real-time wildfire (including EWE) behaviour modelling and spread prediction through deterministic and stochastic modelling approaches, offering forest fire behaviour results and pyroconvective indicators based on HR weather and fuels in a couple of minutes, as well as a daily service of risk and fuel conditions assessment. The second consists of a coupled fire-atmosphere spread model by CNRS, accounting for pyroconvection in fire behaviour and progression. The latter includes: Validation of EWE erratic propagation due to pyroconvection / extreme winds through large scale coupled fire/weather simulation re-analyses on extreme large fires in Europe since 2010; Plume and smoke in-drafts qualified through numerical tools (ForeFire); European Centre for Mid-Range Weather Forecast. |
| **Testing Living Lab(s)** | Nouvelle Aquitaine – France, Canary Islands – Spain, Catalonia – Spain, Germany–The Netherlands, Portugal |
| **Coordinator** | TSYLVA |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-5-2-demonstration-of-real-time-ewe-simulation-and-smoke-spread-based-on-coupled-fire-atmosphere-approaches-using-of-hr-weather-data/ |

FIRE-RES

## Advanced vegetation characterization based on Earth Observation data fusion and Artificial Intelligence over forestland ecosystems (IA 5.3)

| | |
|---|---|
| **User group(s)** | Policymakers and researchers involved in forestland policies, recovery and management |
| **Area(s) of application** | Advanced Technology Solutions; Landscape management |
| **Wildfire management phase(s)** | Restoration & Adaptation, Recovery & rehabilitation |
| **TRL at end of project** | TRL 8 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | Advanced forestland fuel mapping, including changes (e.g. soil moisture, vegetation water) and trends, and post-fire vegetation recovery (e.g. geospatial wildfire contours, fire severity), which relies on data fusion of Earth Observation multi- and hyperspectral datasets, LiDAR data and machine learning approaches. |
| **Testing Living Lab(s)** | Catalonia – Spain |
| **Coordinator** | ICGC |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia5-3-advanced-vegetation-characterization-based-on-earth-observation-data-fusion-and-artificial-intelligence-over-forestland-ecosystems/ |

FIRE-RES

## Piloting models for fire combustion and Pyrocumulonimbus with use of HR data (IA 5.4)

| | |
|---|---|
| **User group(s)** | Researchers |
| **Area(s) of application** | Advanced Technology Solutions,<br><br>Emergency management |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 6 |
| **Innovation status** | Seeking collaboration partners |
| **Innovation technical description** | Advanced models based on EWE-inducing combustion processes to estimate fire behaviour and impacts. The models integrate factors like forest materials, humidity, weather, and behaviour in downward flow conditions, including the momentary thermal stress on objects, e.g. buildings |
| **Testing Living Lab(s)** | Norway-Sweden |
| **Coordinator** | VTT |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-5-4-piloting-models-for-fire-combustion-and-pyrocumulonimbus-with-use-of-hr-data/<br><br>Deliverable 5.4: https://fire-res.eu/wp-content/uploads/2024/12/D5.4_FIRE-RES_Modelling-of-fire-combustion-and-convective-processes_compressed.pdf<br><br>FIRE-RES – Towards greater resilience to extreme wildfire events, Palotutkimuksen päivät, Helsinki, 2023 |

FIRE-RES

## Testing of vertical atmospheric structure models based on satellite constellation in EWE (IA 5.5)

| | |
|---|---|
| **User group(s)** | Researchers |
| **Area(s) of application** | Advanced Technology Solutions,<br>Emergency management |
| **Wildfire management phase(s)** | Prevention & Preparedness, Detection & Response, |
| **TRL at end of project** | TRL 8 |
| **Innovation status** | Not available |
| **Innovation technical description** | Detailed and frequent (every 6 h) satellite-based global analysis of upper air weather at different pressure levels for EWE or large fires, including vertical atmosphere profile (including Temperature, Humidity, Geopotential Height, Vertical Velocity, Absolute Vorticity, Horizontal winds) to anticipate growth and fall of Pyrocumulonimus and provide detailed weather forecasting across operational regions. All this data feeds into the integrative umbrella system to estimate the EWE behaviour and risk. |
| **Testing Living Lab(s)** | Nouvelle Aquitaine – France, Canary Islands – Spain, Catalonia – Spain, Galicia – Spain, Germany–The Netherlands, Portugal |
| **Coordinator** | SPIRE |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-5-5-testing-of-vertical-atmospheric-structure-models-based-on-satellite-constellation-in-ewe/ |

## Prototyping HAPS (High Altitude Pseudo Satellites) contribution to Europe's resilience against EWE (IA 5.6)

| | |
|---|---|
| **User group(s)** | Regional Governments in charge of Firefighters efforts and strategy. |
| **Area(s) of application** | Emergency management |
| **Wildfire management phase(s)** | Detection & Response,<br>Crisis management/Eradication/Control |
| **TRL at end of project** | TRL4 |
| **Innovation status** | Still under development / coming soon |
| **Innovation technical description** | High Altitude Pseudo Satellite Earth Observation service from stratosphere based on past flight campaigns and payload design experience to cover multiple phases of wildfire management: risk assessment, fire detection and active fire monitoring. (Simulation; concept of operations and roadmap) |
| **Testing Living Lab(s)** | Nouvelle Aquitaine – France, Bulgaria, Catalonia – Spain, Galicia – Spain, Greece, Portugal, Sardinia – Italy |
| **Coordinator** | AIRBUS |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-5-6-prototyping-haps-high-altitude-pseudo-satellites-contribution-to-europes-resilience-against-ewe/<br><br>Deliverable 5.7: https://fire-res.eu/wp-content/uploads/2024/12/D5.7_FIRE-RES_HAPS-fleet-simulation_compressed.pdf |

FIRE-RES

## Quantifying impacts of exposure to air pollutants from wildfires (IA 5.7)

| | |
|---|---|
| **User group(s)** | Firefighters, regional governments and policymakers |
| **Area(s) of application** | Advanced Technology Solutions, Emergency management |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | TRL 6 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | A new system for air quality monitoring in areas impacted by wildfire events, using sensor technologies and passive dosimeters (for VOCs and NO2): outdoors and indoors tracked data enables adaptation of evacuation or confinement protocols and sensors on fire fighters provide novel information for occupational health protocols and DSS. A wearable system is capable to collect both environmental and physiological variables from the firefighters and transmit them in real-time to a dashboard. Geolocation plus data processing techniques are applied to the +20 variables collected to retrieve KPIs and easily support quick decision making. |
| **Testing Living Lab(s)** | Catalonia – Spain, Galicia – Spain, Portugal |
| **Coordinator** | CSIC INESCTEC ANEPC FWISE |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-5-7-quantifying-impacts-of-exposure-to-air-pollutants-from-wildfires/<br><br>Deliverable 5.10<br><br>Gili, J., Viana, M., Hopke, P.K., 2024. Application of quasi-empirical orthogonal functions to estimate wildfire impacts in northwestern Spain. The Science of The Total Environment 172747.<br><br>Gili, J., Maín, A., van Drooge, Barend.L., Viana, M., 2025a. Source-resolved black carbon and PM2.5 exposures during wildfires and prescribed burns. Environmental Pollution 368, 125660.<br><br>Gili, J., Viana, M., van Drooge, B.L., 2025b. Firefighter exposure to polycyclic aromatic hydrocarbons and black carbon during prescribed burns and wildfires. Chemosphere 386, 144615. |

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## Prototyping and testing innovative tools for EW ICS training certificates (IA 5.8)

| | |
|---|---|
| **User group(s)** | Firefighters and other personnel participating in emergency response, who play the role of Incident Commander and Fire Analyst |
| **Area(s) of application** | Advanced Technology Solutions, Emergency management |
| **Wildfire management phase(s)** | Prevention & Preparedness, Detection & Response |
| **TRL at end of project** | TRL 8 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | Use of virtual reality for Incident Command System (ICS) training, through exercises at a landscape level to improve decision making, involving training schools (ENB) to upscale and implement EW ICS certifications at a European scale. |
| **Testing Living Lab(s)** | Portugal |
| **Coordinator** | ENB |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-5-8-prototyping-and-testing-innovative-tools-for-ew-ics-training-certificates/<br><br>Deliverable 5.11: https://fire-res.eu/wp-content/uploads/2025/03/Attachment_0-2.pdf |

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## Tools for international collaboration through shared operational information for specialized stakeholders (IA 5.9)

| | |
|---|---|
| **User group(s)** | Fire community society: journalists, general population. Emergency managers: Incident Commanders and Fire analysts. |
| **Area(s) of application** | Advanced Technology Solutions, Emergency management |
| **Wildfire management phase(s)** | Prevention & Preparedness, Detection & Response |
| **TRL at end of project** | TRL 8 |
| **Innovation status** | Not available |
| **Innovation technical description** | Adaptation of tools to incorporate EWE and facilitate communication considering the specific situations that EWE involves. 2 tools have been developed: a website for external communication (public) and a GIS platform for internal communication (non-public) for fire analysts and incident commanders from emergency response organizations for remote and collaborative work in EWE situations. |
| **Testing Living Lab(s)** | Catalonia – Spain |
| **Coordinator** | CFRS |
| **Further information** | IA page on FIRE-RES website: https://fire-res.eu/ia-5-9-tools-for-international-collaboration-through-shared-operational-information-for-specialized-stakeholders/<br><br>Deliverable 5.12: https://fire-res.eu/wp-content/uploads/2024/03/D5.12_FIRE-RES_Tools-to-comunicate-scenarios-in-EWE-1.pdf |

## Development of a Pan-European system to define management priorities to mitigate fire impact (IA 5.10)

| | |
|---|---|
| **User group(s)** | Researchers, Policy makers |
| **Area(s) of application** | Advanced Technology Solutions, Emergency management |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 5-6 |
| **Innovation status** | Still under development / coming soon - some modules available |
| **Innovation technical description** | Integrated EU-level system, including an open access data server (fuels, climatic data, fire hazard, exposed values), a fire spread simulator, and mathematical optimisation, to define where fuel management should be applied to mitigate the impact of fires - applicable to any region / country. |
| **Testing Living Lab(s)** | Nouvelle Aquitaine – France, Bulgaria, Canary Islands – Spain, Catalonia – Spain, Galicia – Spain, Greece, Norway-Sweden, Portugal, Sardinia – Italy |
| **Coordinator** | CTFC |
| **Further information** | IA page on FIRE-RES website<br><br>Kutchartt, E., González-Olabarria, J.R., Trasobares, A., Aquilué, N., Guerra-Hernández, J., Nunes, L., Sequeira, A.C., Botequim, B., Hauglin, M., Palaiologou, P. and Cardil, A., 2024. Satellite-based mapping of canopy fuels at the pan-European scale. Geo-spatial Information Science, pp.1-29.<br><br>Kutchartt, E., González-Olabarria, J.R., Aquilué, N., Trasobares, A. and Pirotti, F., 2024. Estimating canopy fuels across Europe with satellite data and allometric equations. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, 48, pp.279-285.<br><br>Kutchartt, E., González-Olabarria, J.R., Trasobares, A., de-Miguel, S., Cardil, A., Botequim, B., Vassilev, V., Palaiologou, P., Rogai, M. and Pirotti, F., 2023. FIRE-RES Geo-Catch: a mobile application to support reliable fuel mapping at a pan-European scale. iForest-Biogeosciences and Forestry, 16(5), p.268. |

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# Open Innovation Challenge

## Monitoring population mobility during forest fires (OIC 04)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Policy makers |
| **Area(s) of application** | Risk Communication and Awareness |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Monitor real-time population mobility using cellphone data to assess evacuation plan compliance and restricted access. Utilize the system to enhance prevention plan design. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | University of Chile |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/ |

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## FireWiseTeam: when ecology met community (OIC 09)

| | |
|---|---|
| **User group(s)** | Communities and civil society, Emergency managers, Fire community stakeholders |
| **Area(s) of application** | Engagement and Empowerment, Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Firewise community building. Engagement and training of professionals by a trainee / mentor model including prescribed burning. Empowering local communities by tailored professional assistance in fire management. |
| **Testing Living Lab(s)** | Catalonia-Spain |
| **Coordinator** | Eva Valese |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/ |

## Smoke Meter (OIC 10)

| | |
|---|---|
| **User group(s)** | Firefighters, Wildfire analysts, Fire technicians and investigators |
| **Area(s) of application** | Forecasting and Decision Support |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Smoke Meter is a mobile application that calculates and collects data on smoke plumes during wildfire events. |
| **Testing Living Lab(s)** | Catalonia-Spain |
| **Coordinator** | Pau Costa Foundation |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.paucostafoundation.org/en/ |

## ALERTWest AI Wildfire Detection System (OIC 11)

| | |
|---|---|
| **User group(s)** | Incident commanders, Emergency managers, Firefighters |
| **Area(s) of application** | Monitoring |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | ALERTWest's Advanced AI Wildfire Detection System detects incipient stage wildfires before the first 112 reports are received. The system offers real-time feeds for improved response and live incident monitoring. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | ALERTWest |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.alertwest.org/ |

## LookOut Wildfire Detection SaaS (OIC 12)

| | |
|---|---|
| **User group(s)** | Incident commanders, Emergency managers, Firefighters |
| **Area(s) of application** | Monitoring, Risk Communication and Awareness, |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | TRL 9 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | An integrated SaaS to detect early-stage wildfires, monitor forest conditions, visualize trends, and send real-time alerts to users. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | RoboticsCats |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://roboticscats.com/<br>Innovation factsheet: https://bioregions.efi.int/lookout-smarter-surveillance-with-ai-wildfire-detection/ |

## Typhoon Firefighting System (OIC 13)

| | |
|---|---|
| **User group(s)** | Firefighters, Incident commanders, Emergency managers |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | TYPHOON is a fire extinguishing system with a powerful centrifugal blower that produces a long-range air-water stream with very high extinguishing efficiency and advanced handling capabilities. |
| **Testing Living Lab(s)** | Norway-Sweden |
| **Coordinator** | Typhoon Fire-Fighting System / National University of Athens |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://firefightingsystem.gr/<br>Innovation factsheet: https://bioregions.efi.int/typhoon-a-new-firefighting-tool-to-improve-water-use/ |

## Wildflyer - Wildfire Intelligence (OIC 14)

| | |
|---|---|
| **User group(s)** | Incident commanders, Emergency managers, Fire analysts |
| **Area(s) of application** | Forecasting and Decision Support |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Wildflyer is developing an easy-to-use wildfire intelligence application. It is designed to help fire suppression teams create easy fire forecasts, situation overviews during incidents and easy post-fire reports. |
| **Testing Living Lab(s)** | Nouvelle Aquitaine- France |
| **Coordinator** | Wildflyer |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.wildflyer.co/en<br>Innovation factsheet: https://bioregions.efi.int/wildflyer-advanced-wildfire-data-management-for-wildfire-team/ |

## Rainmaker (OIC 16)

| | |
|---|---|
| **User group(s)** | Firefighters, Incident commanders, Emergency managers |
| **Area(s) of application** | Engagement and Empowerment, Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | TRL 9 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | The system utilizes Rainmakers to create targeted rain barriers to enhance wildfire control, efficiency and safety for firefighters. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | MJSammutus / Kulmio Oy |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.mjsammutus.fi/en/ |

## Hephaesnus Forest Firefighting Projectiles (OIC 17)

| | |
|---|---|
| **User group(s)** | Firefighters, Incident commanders, Emergency managers |
| **Area(s) of application** | Forecasting and Decision Support, Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Hephaesnus' projectiles are made using sustainable (biodegradable and compostable) solutions, carrying an efficient extinguishing load inside. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Hephaesnus |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://hephaesnus.com/en/homepage_en/<br>Innovation factsheet: https://bioregions.efi.int/hephaesnus-projectile-solution/<br>FIRE-RES news story: https://fire-res.eu/innovation-collaboration-takes-off-to-new-heights-fire-res-brings-together-wildfire-entrepreneurs-working-with-drones-and-firefighting-projectiles/ |

## FIRE CHASER (OIC 18)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Municipalities |
| **Area(s) of application** | Risk Communication and Awareness |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Fire Chaser is a French association specializing in social media for emergency forest management. We assess real-time information during wildfires and work with firefighters, camping and cities' crisis centres. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | FIRE CHASER ASSOCIATION SPÉCIALISÉE DANS LES MÉDIAS SOCIAUX EN GESTION D'URGENCE |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/ |

## Train decision making in XR (OIC 19)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Firefighters |
| **Area(s) of application** | Training and Education |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Fynd CORE allows simple and affordable customization of experiences, training, immersive learning and operational uses in AR and VR. Build and customize your own scenarios - and use them to train decision making. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Fynd Reality |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.fyndreality.com/ |

## ENVIRONMENTAL SERVICE-LEARNING PROJECTS to FACE FOREST FIRES (OIC 21)

| | |
|---|---|
| **User group(s)** | Schools (teachers and students), Communities and civil society, Policy makers |
| **Area(s) of application** | Training and Education |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Our initiative aims to involve citizens in the problem of forest fires, transferring knowledge and civic values to the youth population through innovative educational methodologies, as the development of Service-Learning projects |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | USC |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.usc.gal/en |

## FireGard (OIC 22)

| | |
|---|---|
| **User group(s)** | Incident commanders, Emergency managers, Firefighters |
| **Area(s) of application** | Monitoring |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | The AI solution with proven results for the early detection of vegetation fires. FireGard allows detection from the first vegetation smoke, with a high degree of reliability. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Midgard |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.midgard-ai.com/ |

## Increasing Resilience of Assets Facing the Risk of Wildfires (OIC 23)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Policy makers |
| **Area(s) of application** | Forecasting and Decision Support, Monitoring, Risk Communication and Awareness |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Integrate the Portuguese Living Lab in a Decision Support System, with the capacity of simulating the predicted spread of detected ignitions and sending an automatic notification to the interested parts. |
| **Testing Living Lab(s)** | Portugal |
| **Coordinator** | REN |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.uc.pt/en/adai/ / https://www.uc.pt/ / https://www.ren.pt/ |

## Extreme wildfire prevention using ForestSIM (OIC 24)

| | |
|---|---|
| **User group(s)** | Forest planners and managers, Policy makers, Land managers and forest managers |
| **Area(s) of application** | Engagement and Empowerment |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 8 |
| **Innovation status** | Still under development / coming soon |
| **Innovation technical description** | Our solution aims to gather knowledge on wildfire prevention from landowners with certified forests, 2BForest technicians and FIRE-RES partners to improve the content of ForestSIM - a WebGIS-based forest management platform. |
| **Testing Living Lab(s)** | Portugal |
| **Coordinator** | 2bforest |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://2bforest.pt/<br>Innovation factsheet: https://bioregions.efi.int/2bforest-extreme-wildfire-prevention-using-forestsim/ |

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## W4I Fire-Cylon (OIC 25)

| | |
|---|---|
| **User group(s)** | Firefighters, Incident commanders, Fire analysts |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events, Monitoring |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | The Cylon is set up on a vehicle facing a wildfire: the box gains quantities as temperature, air moisture, heat radiation, wind, gas concentration and transmits them by radio communication protocols |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Inizia |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.universita.corsica/it/ |

## Early forest fire detection and prediction system (OIC 26)

| | |
|---|---|
| **User group(s)** | Incident commanders, Emergency managers, Fire analysts |
| **Area(s) of application** | Monitoring, |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Providing hybrid solutions, hardware and AI cloud computing, to detect high risk zones before the disaster, detecting the smoke in an early stage through edge and cloud computing. |
| **Testing Living Lab(s)** | Nouvelle Aquitaine- France |
| **Coordinator** | Binary Labs Technology AS |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://bit.africa/ |

## PREVENT: The Firefighting Vase (OIC 29)

| | |
|---|---|
| **User group(s)** | WUI homeowners, Communities and civil society, Municipalities |
| **Area(s) of application** | Forecasting and Decision Support, Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Prevention & Preparedness. |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | PREVENT: A Vase made to protect your assets from wildfires. |
| **Testing Living Lab(s)** | Galicia – Spain |
| **Coordinator** | Hephaesnus |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://hephaesnus.com/en/homepage_en/<br>Innovation factsheet: https://bioregions.efi.int/sallus-guard-a-vase-made-to-protect-your-assets-from-wildfires/ |

## FireIce Eco-Friendly Firefighting Water Additive (OIC 31)

| | |
|---|---|
| **User group(s)** | Firefighters, Incident commanders, Emergency managers |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | A small quantity of low-cost, non-toxic, non-corrosive FireIce fire control water additive, can knockdown extreme high intensity wildland fire behaviour, leaving blanketed (treated) vegetation resistant to ignition and associated fire spread by absorbing large amounts of heat, eliminating combustion oxygen, and breaking the fire triangle, in both Air and Ground applications. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | GelTech Solution |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://fireice.com/ |

## Tree Angel by Global Smart Rescue (OIC 33)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Fire analysts |
| **Area(s) of application** | Monitoring |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Strategically located environmental sensors for effective area monitoring. Measured data is first analysed within the sensor, before being sent in real time to a hybrid (3G / satellite) communication gateway. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Global Smart Rescue |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/ |

## Swarm Heavy-Duty Drones for Firefighting (OIC 34)

| | |
|---|---|
| **User group(s)** | Firefighters, Incident commanders, Emergency managers |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Collaborative approach to firefighting of forest fires using heavy-duty autonomous drones 24/7 with no human lives at risk. At low price. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Drone Hopper |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.drone-hopper.com/ |

## PRETRES (OIC 36)

| | |
|---|---|
| **User group(s)** | Policy makers, Forest planners and managers, Fire analysts |
| **Area(s) of application** | Forecasting and Decision Support |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Development of a fire risk index that, based on topographic and fuel variables extracted from 3D point clouds, offers rapid results for the design of fire prevention measures. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Rodrigo Hersanz |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/ |

## TEP - The Emergency Programme (OIC 37)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Firefighters |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events, Training and Education |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL9 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | TEP is the first global training program on wildfires that brings together, in one place, the knowledge, experience, and lessons learned from more than 40 active experts worldwide to tackle future extreme wildfire challenges. |
| **Testing Living Lab(s)** | Chile |
| **Coordinator** | The Emergency Program |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.emerprogram.com/en |

## Trigan: Responsive & Collaborative Wildfire Preparedness (OIC 38)

| | |
|---|---|
| **User group(s)** | Communities and civil society, Policy makers, Emergency managers |
| **Area(s) of application** | Engagement and Empowerment, Forecasting and Decision Support, Training and Education |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | We transform wildfire preparedness through AI-assisted, decentralised coordination; focusing on community-specific risk assessment, resource sharing, and tailored funding for effective, bottom-up planning, response strategies and immediate enactment. |
| **Testing Living Lab(s)** | Norway-Sweden |
| **Coordinator** | TRIGAN |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://trigan.org/https://trigan.org/<br>Innovation factsheet: https://bioregions.efi.int/trigan-societal-operating-system-for-disaster-management/ |

## Wildfire awareness videos (OIC 41)

| | |
|---|---|
| **User group(s)** | Communities and civil society, WUI homeowners, Schools (teachers and students) |
| **Area(s) of application** | Risk Communication and Awareness |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Create and disseminate clear, factual demonstration videos of wildfire risks that could be easily reduced by citizens through behavioural change |
| **Testing Living Lab(s)** | Chile |
| **Coordinator** | AGIF |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.agif.pt/en |

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## FireAI by Robotto (OIC 42)

| | |
|---|---|
| **User group(s)** | Firefighters, Incident commanders, Emergency managers |
| **Area(s) of application** | Forecasting and Decision Support, Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Real time high precision wildfire detection, mapping, and monitoring. Utilizing Robotto's autonomous drones, powered by edge-level AI. Firefighters will receive mission critical fire data on location, site, local wind information. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Robotto |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://robotto.ai/ |

## Axon Protocol – Forest Dynamic Digital Identity (OIC 44)

| | |
|---|---|
| **User group(s)** | Policy makers, Forest planners and managers, Communities and civil society |
| **Area(s) of application** | Engagement and Empowerment, Management Before, During and After Extreme Wildfire Events, Monitoring, Policy and Governance |
| **Wildfire management phase(s)** | Restoration & Adaptation |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Axon's simple software facilitates forest restoration projects in unlocking capital to enhance forest resilience. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Axon Protocol |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/ |

## Forest Fire Assistant (FFA) (OIC 45)

| | |
|---|---|
| **User group(s)** | Emergency managers, Policy makers, Fire analysts |
| **Area(s) of application** | Engagement and Empowerment, Forecasting and Decision Support, Management Before, During and After Extreme Wildfire Events, Policy and Governance, Risk Communication and Awareness, Training and Education |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | TRL 6 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | It is a web platform specialized in environmental monitoring and forest fire management. It simultaneously monitors multiple locations and collects weather data through meteorological stations or external services. It uses advanced algorithms to analyse and generate strategic, tactical, and operational information based on estimated risk and hazard levels. |
| **Testing Living Lab(s)** | Sardinia- Italy |
| **Coordinator** | Forest Fire Assistant \| F6S |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.forestfireassistant.com/ |

## SuperNanogel (OIC 46)

| | |
|---|---|
| **User group(s)** | Forest planners and managers, Land managers and forest managers, Policy makers |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | SuperNanogel, a plant-based material, prevents wildfires by being fire-retardant, retaining moisture on vegetation, and mitigating lightning discharge. Additionally, it nourishes and regenerates the land through unique fertilizer properties. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | CellON |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.cellon.one/ |

## Raised-relief maps (OIC 48)

| | |
|---|---|
| **User group(s)** | Communities and civil society, Policy makers, Forest planners and managers |
| **Area(s) of application** | Engagement and Empowerment, Risk Communication and Awareness, Training and Education |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Deploy raised-relief maps and participative cartography for better knowledge, engagement and awareness of communities and professionals in fire-prone landscapes |
| **Testing Living Lab(s)** | Sardinia- Italy |
| **Coordinator** | Yannick Le Page |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/ |

## ADA Wildfire - Action Plan (OIC 49)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Policy makers |
| **Area(s) of application** | Forecasting and Decision Support |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | A SaaS platform combining maps, drawing tools, icons and datasets to handle wildfires. Giving the users immediate situational understanding and the ability to put in the right measures in the right place. |
| **Testing Living Lab(s)** | Norway-Sweden |
| **Coordinator** | ADA Technologies |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/ |

## School Scientific Congress Sierra de las Nieves (OIC 51)

| | |
|---|---|
| **User group(s)** | Schools (teachers and students), Communities and civil society, Policy makers |
| **Area(s) of application** | Training and Education |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | This is a pedagogical innovation proposal aimed at schools in the Sierra de las Nieves National Park. The students of the centres participating in the MADRE project carry out different research about the connection of agricultural and livestock activities with the conservation of this natural space. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | J. Ruiz-Mirazo |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/ |

## Socioecological Fire Resistance via Forest Associations (OIC 52)

| | |
|---|---|
| **User group(s)** | Communities and civil society, Forest planners and managers, Policy makers |
| **Area(s) of application** | Engagement and Empowerment |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Application of social innovation methodologies to raise awareness of forest management and co-create an association of forest owners capable of improving socio-ecological resilience to forest fires in Mediterranean environments. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Dendron Soluciones |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://dendron.es/en/home/ |

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## From Devastation to Preservation: Post-Wildfire Resilience in Spain (OIC 57)

| | |
|---|---|
| **User group(s)** | Communities and civil society, Forest planners and managers, Policy makers |
| **Area(s) of application** | Engagement and Empowerment, Risk Communication and Awareness |
| **Wildfire management phase(s)** | Restoration and adaptation |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | From Devastation to Preservation: Post-Wildfire Resilience in Spain"! Is a reforestation project carried out by Explorers of the National Geographic Society. It embodies a holistic approach to wildfire recovery in Ávila, Spain, by integrating ecological restoration, community-led initiatives, educational programmes, and narrative-driven outreach to ensure ecosystem and societal resilience against wildfires. This project leverages multidisciplinary collaboration to address the multifaceted challenges of current wildfire impacts, aiming for sustainable recovery and prevention strategies. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | MUSEU ETNOLÒGIC I DE CULTURES DEL MÓN |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/ |

## Flashover XR (OIC 58)

| | |
|---|---|
| **User group(s)** | Firefighters, Incident commanders, Fire technicians and investigators |
| **Area(s) of application** | Training and Education |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Flashover is a plug & play VR training solution which guides you through the extinguishing process step by step and lets you explore all the hazards of firefighting at its core. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Flashgroup |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://flashgroupxr.com/ |

## Water supply to firetrucks and fire helicopters in wildfires (OIC 60)

| | |
|---|---|
| **User group(s)** | Firefighters, Incident commanders, Emergency managers |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | The FlexCon (TM) and the HeliPack (TM) are ideal solutions to minimize the time that fire trucks and fire helicopters are spending on traveling to and from the water re-filling area. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | EZPack – Water Storage & distribution |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.ezpackwater.com/ |

## Autonomous Fire Safety Through Advanced Intelligence (OIC 65)

| | |
|---|---|
| **User group(s)** | Emergency managers, Policy makers, Forest planners and managers |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | The modular structure of Digiversum allows you to try it out on a small scale and expand seamlessly with more units as your needs grow. Boost efficiency, strengthen planning and improve preparedness with the most cost-effective fire safety network in the universe. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | INCA Tech |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://incatech.se/ |

## MEJOR Technologies, Data- and AI-driven Wildfire Prevention and Mitigation (OIC 66)

| | |
|---|---|
| **User group(s)** | Policy makers, Emergency managers, Fire analysts |
| **Area(s) of application** | Monitoring |
| **Wildfire management phase(s)** | Prevention & Preparedness. |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | MEJOR Technologies is a Software-as-a-service (SaaS) company. MEJOR Technologies has developed two SaaS wildfire management solutions, LUCI, AI-powered Wildfire Prevention, and CHRIS, Near Real-Time Wildfire Mapping. |
| **Testing Living Lab(s)** | Bulgaria |
| **Coordinator** | MEJOR Technologies |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.mejortechnologies.com/<br>Innovation factsheet: https://bioregions.efi.int/luci-and-chris-ai-and-data-driven-wildfire-prevention-and-mitigation/ |

## Demonstration of the Eco-Guardian System (OIC 67)

| | |
|---|---|
| **User group(s)** | Firefighters, Incident commanders, Emergency managers |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | The FireRein / Caylym Eco-Guardian System solution will demonstrate the modular 1000l bio-degradable Guardian tote system filled with the Eco-Gel™ fire suppression hydrogel for enhanced aerial wildfire control. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Caylym / FireRein |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://firerein.com/ / https://caylym.com/ |

## Halo Fire Fighting Rig (OIC 68)

| | |
|---|---|
| **User group(s)** | Firefighters, Incident commanders, Emergency managers |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | The HALO firefighting rig is a cost-effective, high-capacity, modular and multi-functional firefighting solution designed for rough terrain. It can be transported by trucks, forest machines or as helicopter sling load. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Halo SB |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://halosb.no/our-products-1 |

## Accelerating Post-Wildfire Natural Restoration (OIC 69)

| | |
|---|---|
| **User group(s)** | Forest planners and managers, Land managers and forest managers, Policy makers |
| **Area(s) of application** | Training and Education |
| **Wildfire management phase(s)** | Restoration and adaptation |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Autonomous drones and tailor-made soil amendments for rapid post-wildfire restoration and land rehabilitation, leveraging precision seeding and ecological monitoring to restore ecosystems, habitats, and biodiversity efficiently. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Terrafarmers |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://terrafarmers1.odoo.com/pt<br>Innovation factsheet: https://bioregions.efi.int/terrafarmers-accelerating-post-wildfire-natural-restoration/<br>FIRE-RES news story: https://fire-res.eu/innovation-collaboration-takes-off-to-new-heights-fire-res-brings-together-wildfire-entrepreneurs-working-with-drones-and-firefighting-projectiles/ |

## Pantera Platform: a complete solution for Wildland Fire Management and Impact Analysis (OIC 77)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Policy makers |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events, Monitoring |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | umgrauemeio's Pantera Platform integrates AI camera detection, satellite imaging, and remote sensing for comprehensive wildfire management, offering modules for prevention, detection, and response and impact analysis. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Umgrauemeio |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.umgrauemeio.com/en/solucoes<br>Innovation factsheet: https://bioregions.efi.int/pantera-a-complete-wildfire-management-solution/<br>FIRE-RES news story: https://fire-res.eu/from-writing-code-to-saving-lives-the-pantera-forefire-success-story/ |

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## Q.SYSTEM - Avionic System for Integrated Aerial Firefighting (OIC 79)

| | |
|---|---|
| **User group(s)** | Incident commanders, Emergency managers, Fire analysts |
| **Area(s) of application** | Forecasting and Decision Support, Management Before, During and After Extreme Wildfire Events, Monitoring |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | TRL 9 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | Q.System is an avionic multi-camera technology designed to aid pilots during Aerial Firefighting and deliver real-time aerial data to Q-Web, an Integrated Disaster Management Platform, to support Risk-Assessment and Decision-Making. |
| **Testing Living Lab(s)** | Canary Islands- Spain, |
| **Coordinator** | Hightek |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.hightek.it/<br>Innovation factsheet: https://bioregions.efi.int/q-system-an-aerial-firefighting-technology-focused-on-disaster-management/ |

## AI-Enabled Early Fire Detection (OIC 80)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Fire analysts |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | TRL 9 |
| **Innovation status** | Ready and seeking adopters |
| **Innovation technical description** | Firecatch is a comprehensive and high-tech web tool designed to detect and geolocate wildfires in early stages, leveraging AI, lookout cameras, and cloud computing to provide and manage precise alerts. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | ACOT SYSTEMS |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://acotsystems.com/ |

## FRIDA by ForestSAT.Space – Community Engagement App for Fire Prevention (OIC 81)

| | |
|---|---|
| **User group(s)** | Communities and civil society, Policy makers, Forest planners and managers |
| **Area(s) of application** | Engagement and Empowerment |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | FRIDA mobile app for science and data driven community awareness and engagement for protecting forests from wildfires through proactive preventive action for preservation of forest ecosystems and biodiversity. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | ForestSAT |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://forestsat.space/ |

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## MOSAICO (OIC 82)

| | |
|---|---|
| **User group(s)** | Communities and civil society, Policy makers, Land managers and forest managers |
| **Area(s) of application** | Engagement and Empowerment, Management Before, During and After Extreme Wildfire Events, Training and Education |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | MOSAICO, a tool kit for participatory, cost-effective governance reducing wildfire impacts through agrosilvipastoral practices and social innovation. |
| **Testing Living Lab(s)** | Germany-The Netherlands |
| **Coordinator** | Mosaico Fire-Smart Territories |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://mosaico-land.com/<br>Innovation factsheet: https://bioregions.efi.int/mosaico-building-resilience-against-wildfires/ |

## Real-time fuel moisture mapping for the EU (OIC 90)

| | |
|---|---|
| **User group(s)** | Fire analysts, Policy makers, Forest planners and managers |
| **Area(s) of application** | Monitoring |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | A real-time web application for pan-European live and dead fuel moisture content and fire weather at 500m resolution. Will be updated automatically every day. Data will also be available for download. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | University of Lleida |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.udl.cat/ca/en/ |

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## SILVA4BOS (OIC 91)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Fire analysts |
| **Area(s) of application** | Monitoring |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | SILVA (Latin: Forest) - Search and Identification of Looming wildfires by automatically operated unmanned Vehicles from the Air - is dedicated to the earliest possible wildfire detection using highly automated and cost-effective long-range drones. |
| **Testing Living Lab(s)** | Germany-The Netherlands, |
| **Coordinator** | mb+Partner |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://mbptech.de/en/home/ |

## IRIS, Incident Command Intelligent Assistant (OIC 92)

| | |
|---|---|
| **User group(s)** | Incident commanders, Emergency managers, Policy makers |
| **Area(s) of application** | Forecasting and Decision Support, Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | TRL8 |
| **Innovation status** | Still under development / coming soon. |
| **Innovation technical description** | Incident Command software, aggregating all relevant sources of information and providing digital collaborative tools for faster and safer response to wildfires. |
| **Testing Living Lab(s)** | Galicia – Spain |
| **Coordinator** | Unblur |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.unblur.co/en/about/<br>Innovation factsheet: https://bioregions.efi.int/unblurs-iris-core-technology-applied-to-emergency-response/ |

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## PyroPredict (OIC 94)

| | |
|---|---|
| **User group(s)** | Fire analysts, Policy makers, Emergency managers |
| **Area(s) of application** | Forecasting and Decision Support |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | PyroPredict allows a systematic data generation process extracting all fire activity on record to evaluate and enhance the predictability of statistically extreme fire behaviour. PyroPredict adjectively classifies fire danger. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Andrea Markos |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/ |

## EmberEye (OIC 95)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Fire analysts |
| **Area(s) of application** | Forecasting and Decision Support, Monitoring |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | EmberEye provides ultra-early wildfire detection, enabling rapid response and effective decision-making from first responders. A novel risk model informs the placement of robust infrared detectors near areas of high ignition risk. |
| **Testing Living Lab(s)** | Greece |
| **Coordinator** | EmberEye – Early Wildfire Detection |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://embereye.net/ |

## Mt. Olympus Pilot Project (OIC 96)

| | |
|---|---|
| **User group(s)** | Communities and civil society, Emergency managers, Forest planners and managers |
| **Area(s) of application** | Engagement and Empowerment |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | An ecotourism and disaster management program on Mt. Olympus, Greece. A civic service term that will train, and mobilize young Greeks in trail maintenance, fuel reduction, and community engagement. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | ECOGENIA |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://ecogenia.org/ |

## INFOFIRE (OIC 97)

| | |
|---|---|
| **User group(s)** | Emergency managers, Policy makers, Forest planners and managers |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Prevention & Preparedness |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Infofire encompasses the utilization of advanced technologies to safeguard forested areas, by leveraging comprehensive data and providing functionalities for the prevention, confrontation and restoration of areas due to forest fires. |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Infoδημ |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://infodim.gr/en/company.html |

## FireFence wildfire containment system (OIC 98)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Firefighters |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | TRL 8 |
| **Innovation status** | Seeking collaboration partners |
| **Innovation technical description** | The unmanned FireFence system protects remote communities and critical infrastructure ensuring high practitioner safety and consuming up to 1000x less extinguishing agent than traditional firefighting means. |
| **Testing Living Lab(s)** | Canary Islands |
| **Coordinator** | HoZe Solutions GmbH |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://hozesolutions.com/<br>Innovation factsheet: https://bioregions.efi.int/hoze-solutions-data-informed-asset-protection-strategies/<br>FIRE-RES news story: https://fire-res.eu/how-can-smarter-technology-reshape-how-we-fight-wildfires/ |

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## Silvanet (OIC 99)

| | |
|---|---|
| **User group(s)** | Emergency managers, Incident commanders, Fire analysts |
| **Area(s) of application** | Management Before, During and After Extreme Wildfire Events, Monitoring, Training and Education |
| **Wildfire management phase(s)** | Detection & Response |
| **TRL at end of project** | Not available |
| **Innovation status** | Not available |
| **Innovation technical description** | Silvanet provides a large-scale sensor network infrastructure with solar-powered and AI-enabled gas sensors detecting wildfires as early as the smoldering phase |
| **Testing Living Lab(s)** | Not applicable |
| **Coordinator** | Dryad |
| **Further information** | OIC website: https://fire-res.eu/oic-solutions/<br>Organisation: https://www.dryad.net/<br>Innovation factsheet: https://bioregions.efi.int/dryads-silvanet-early-wildfire-detection-and-growth-monitoring-solutions/ |