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Project Facts

Work programme:
Horizon 2020
Duration
42 months | Starting from 1 December 2021
Total cost
€ 22.918.035,01
Coordinator:
RISE FIRE RESEARCH AS

Consortium

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TREEADS

A Holistic Fire Management Ecosystem for Prevention, Detection and Restoration of Environmental Disasters

TREEADS is an EU-funded Horizon 2020 project that has developed an innovative and integrated approach to wildfire management. Running from December 2021 to May 2025, TREEADS has built a comprehensive ecosystem of advanced technologies and strategies that span the entire fire management cycle: Prevention & Preparedness, Detection & Response, and Restoration & Adaptation.

Through large-scale pilot demonstrations across Europe and Taiwan, the project delivered cutting-edge solutions in risk assessment, early detection, resilient infrastructure, and ecological restoration. As TREEADS reaches its conclusion, it leaves behind a new standard for wildfire resilience and adaptive environmental management in the face of escalating climate challenges.

ADVANCED SUPPORTING TECHNOLOGIES

TREEADS computational system is supplemented by state-of-the-art technologies regarding monitoring, safety, evacuation, prediction, restoration and training activities:

- **Forest 3D mapping:** 3D models of the current state of the forest which provide info about plant and tree species and their physical characteristics
- Hotspot early detection, fire and smoke spread analysis and simulation
- Resilient Materials for key infrastructures and residential buildings for increased fire safety in high-risk areas
- Four layered approach: Low and Medium altitude UAVs, airship for high altitude tasks and satellite data
- Advanced restoration techniques: restoration of ecological balance, seed container capsules, development of a decision support system for adaptive postfire management
- Infrastructure fire emergency management strategy, risk analysis and transfer solutions

PILOT ACTIVITIES

All TREEADS technologies will be tested and validated in real-life simulations covering all three stages of fire management.

1. Prevention & Preparedness
2. Detection & Response
3. Restoration & Adaptation

Seven large-scale pilot demonstrations across Europe and one in Taiwan validated TREEADS technologies in real wildfire conditions, covering diverse landscapes and climate zones. Key highlights include:

Italy

In the scenic Sorrento Peninsula, the Italian pilot focused on crisis management and evacuation drills. Using real-time UAV surveillance and smart command dashboards, responders coordinated simulated evacuations and fire monitoring. The event demonstrated how TREEADS improves situational awareness and emergency response in densely populated areas.

Spain

Spain hosted a full-scale demonstration of TREEADS' advanced aerial detection systems. Drones equipped with EO/IR cameras and LiDAR mapped fire hotspots and terrain, supporting fire behavior modeling and early warning systems. The pilot validated precision monitoring technologies in a Mediterranean wildfire context.

Greece

In the rugged terrain of the Samaria Gorge, TREEADS deployed UAVs, AR-equipped helmets, and AI-powered route planning tools to help responders assess risks and navigate challenging wildfire environments. The Greek pilot emphasized situational awareness and safe evacuation strategies in hard-to-access areas.

Norway

The Norwegian pilot focused on fire-resistant materials and restoration methods in boreal forests. Innovations included bio-based coatings for building protection, logistics optimization for firefighting, and drone-deployed seedballs for forest regeneration. TREEADS addressed wildfire risks specific to northern climates.

Austria

Austria demonstrated TREEADS' VR training system and drone-assisted reforestation. Participants engaged in immersive wildfire response simulations, while drones dispersed biodegradable seed containers over fire-prone landscapes—showcasing TREEADS' commitment to both prevention and recovery.

Germany

The German pilot concentrated on post-fire reforestation. Following controlled burn tests, over 500 trees were planted to restore biodiversity and soil stability. The pilot exemplified TREEADS' ecological restoration strategy using native species and innovative planting techniques.

Taiwan

In Taiwan, TREEADS adapted its tools to tropical wildfire environments, testing the effectiveness of UAVs and bio-based materials under unique climatic and ecological conditions. The pilot highlighted the system's scalability and international applicability.

Romania

The Romanian pilot focused on enhancing wildfire response and ecological restoration in challenging terrains. Key innovations demonstrated included the use of Augmented Reality (AR) helmets for responders, drone-assisted coordination for real-time data collection, and ecological post-fire recovery techniques.

These technologies aimed to improve situational awareness, facilitate effective coordination among firefighting teams, and promote sustainable landscape recovery in the region.

TREEADS leaves behind a blueprint for resilient, tech-enhanced wildfire management, setting a benchmark for future integrated fire and environmental response systems in Europe and beyond.