



WILDFIRE



POLICY RECOMMENDATION

Forest firefighting training standard in Europe

**WILDFIRE PROJECT – LEARNING AND TEACHING TO COMBAT FOREST
FIRES CREATING A HARMONIZED EUROPEAN APPROACH TO WILDFIRE
PREPAREDNESS AND RESPONSE**



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WILDFIRE

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FOREWORD

As Europe faces an rise in the frequency and intensity of wildfires, the need for a coordinated, cross-border response has never been more urgent. This document presents a vital step forward in shaping a unified European standard for forest firefighting training. The WILDFIRE project, funded by Erasmus+, seeks to harmonize training protocols, ensure operational readiness, and foster interoperability among Member States' firefighting forces. Through a shared European framework, we aim to enhance the technical, tactical, and digital competencies of firefighters, ultimately saving lives, protecting ecosystems, and supporting climate resilience. These policy recommendations are rooted in research and practical experience and address both the urgency of climate-driven challenges and the opportunity to build a more resilient and connected Europe. By investing in education, collaboration, and innovation, we empower our first responders and contribute to a safer future for all Europeans.



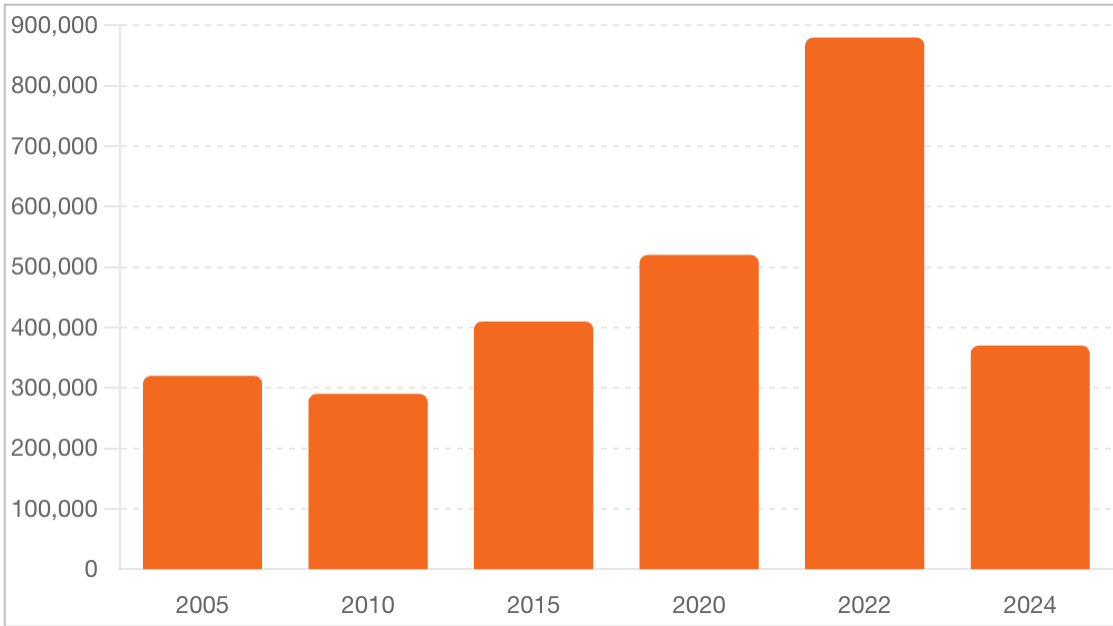
Preamble

“Forests and other wooded land cover over 43.5 % of the EU’s land space and they are essential for the health and wellbeing of all Europeans. We depend on them for the air we breathe and the water we drink, and their rich biodiversity and unique natural system are home and habitat for most species found on land around the world. They are a place to connect with nature, thus helping us to strengthen our physical and mental health, and are central to preserving lively and prosperous rural areas” (European Commission, 2021).

Background

Modern and effective wildfire firefighting is an indispensable prerequisite for safeguarding communities, ecosystems, and economies – and a resilient response infrastructure is a clear advantage for Europe combating climate change, which has brought to light previously hidden vulnerabilities leading to conditions under which the extent and intensity of forest fires in the EU will increase in the next years (Costa et al., 2020). The increasing frequency and intensity of wildfires — driven by climate change — are already having a measurable impact: in 2022, nearly 900,000 hectares of land burned in the EU, marking the second-worst year since monitoring began (Climate Adapt, 2025). In the first nine months of 2024 alone, figure 1 shows that 370,000 hectares of forest were destroyed by wildfires (European Environment Agency, 2025). These figures illustrate the urgent need to scale up prevention and response efforts across the continent.

Figure 1. Burned forest area in EU 2005 - 2024



Therefore, it needs a coherent European approach to effectively address the growing frequency and severity of wildfires, and the European Union's disaster response policy aims to enhance the coordination, preparedness, and efficiency of wildfire prevention, suppression, and emergency response across Member States with the following key frameworks and mechanisms:

Union Civil Protection Mechanism (UCPM):

Established to strengthen cooperation among EU countries in the field of civil protection, the UCPM facilitates coordinated responses to disasters, including wildfires. It enables Member States to request assistance during emergencies that overwhelm national capacities (Decision No 1313/2013/EU, Decision (EU) 2019/420 and Regulation (EU) 2021/836).

rescEU:

As an enhancement of the UCPM, rescEU provides additional capacities, such as a reserve of firefighting planes and helicopters, to respond to disasters like wildfires. In the 2024 wildfire season, the EU established a fleet of 32 aerial firefighting assets and pre-positioned 556 firefighters across Europe to ensure rapid deployment where needed. This reserve is fully funded by the EU and ensures a faster and more comprehensive response (Decision (EU) 2019/570 and Decision (EU) 2021/88).

Commission Recommendation on Union Disaster Resilience Goals:

This recommendation outlines non-binding common baselines to support prevention and preparedness actions for disasters with potential transboundary effects. It emphasizes the need for comprehensive disaster risk management, including anticipation, preparedness, early warning, response, and securing robust civil protection systems (2023/C 56/01).

European Forest Fire Information System (EFFIS):

It supports services responsible for forest protection against fires by providing updated and reliable information on wildfires in Europe. It offers tools for wildfire risk assessment and monitoring, aiding in prevention and preparedness efforts (Reg. EEC 2158/92, Reg. EEC 804/94 and Reg. (EC) 2152/03).

In light of increasing deployments across borders and the growing complexity of wildfire response, the European Union, including the Commission's Directorate General for Humanitarian Aid, Crisis Preparedness and Management, Civil Protection, and Equality, and also the corresponding Commissioner for 2024–29 Hadja Lahbib, seeks to strengthen national wildfire firefighting systems through enhanced training and education of firefighters. According to the Treaty on the Functioning of the European Union (TFEU), one of the objectives of the EU (Art. 176c) is to support and supplement the activities of the Member States at national, regional and local level with regard to risk prevention, the training of those involved in civil protection in the Member States and intervention in the event of natural or man-made disasters in the European Union. This will make it possible to provide support in firefighting training right down to the lower national, regional and local levels.

For this purpose, a European training framework for transparency and transferability of firefighter trainings is needed, and this Erasmus+ project shall and will deliver exactly this. The efforts are targeted at building up the experience and know-how of first responders on the coordination of extreme fire events through the provision of technical training on the safe and efficient use of suppression fire, water, retardants and heavy equipment by terrestrial or aerial means. This professional training shall be certified by a European qualification framework and should improve the efficiency of operational systems. This formulation of minimum requirements for firefighters at national, regional and local level will naturally be in accordance with subsidiarity, proportionality and shared responsibility.

"A unified European training framework will strengthen firefighter preparedness across all levels, ensuring safe and effective response to extreme wildfires through certified, transferable, and technically advanced education."

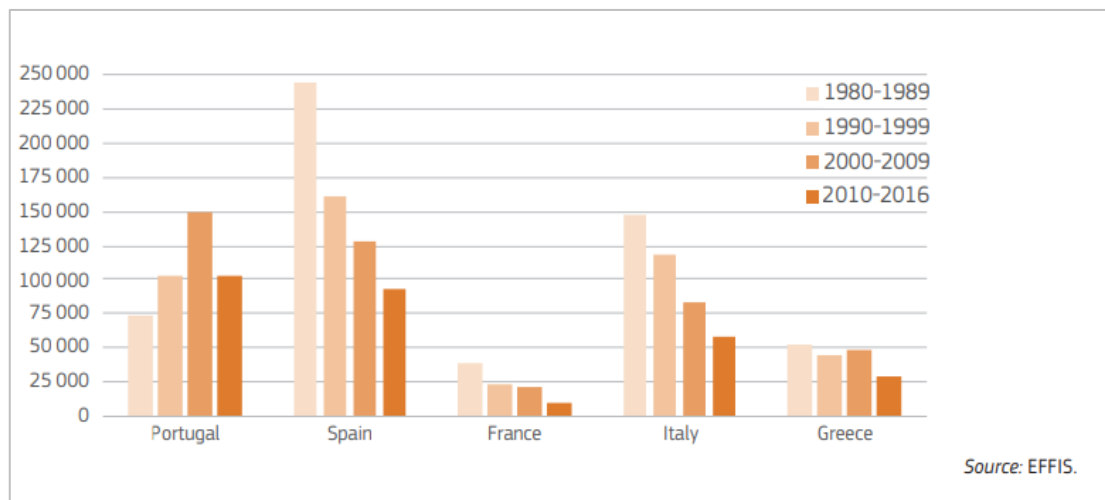




Introduction

European landscapes, especially Mediterranean ecosystems, have been shaped by human activities, climate variability and disturbances such as fire, which naturally influence plant evolution in fire-prone areas. However, changes in fire patterns, including increased intensity and size, are outpacing the ability of ecosystems and communal/regional response systems to adapt. Extreme wildfires, driven by drought and heat waves, can spread rapidly, burn intensely, and affect entire regions, as seen in recent years e.g. in Greece and Portugal. These wildfires are characterized by rapid spread, intense burning, erratic shifts, and long-range fire spotting, posing severe ecological and societal challenges. These increasingly severe and destructive wildfires caused a need for a European training concept for firefighters as part of coherent European response structure to this challenge.

Figure 2: The average annual area burned by forest fires in the five largest southern European countries since 1980



For more than two decades, the EU has supported forest fire research through its Framework Programs and other funding instruments, investing more than €100 million in some 60 projects (please see annex 1). These ranged from large-scale initiatives to individual fellowships such as the Marie Skłodowska-Curie (European Commission, 2025b). This policy recommendation has critically assessed the results of these efforts, with a focus on highlighting the need for coherent European firefighting training pattern for facing the challenges posed by wildfires. Because the life-saving response of firefighters in the event of an alarm requires comprehensive technical and tactical training. This training for the specific challenges in forest fires is currently provided by fire brigades in Europe with varying degrees of intensity. Therefore, the aim of WILDFIRE is to develop a regulatory recommendation for the standardization of training in this area in the participating project countries and beyond, and to present it to regulators in committees and associations. Accordingly, this paper has two objectives for the Erasmus+ WILDFIRE project: a framing one and an attention-grabbing one. Framing here means to realign the focus and to develop a European, dimensionally stable framework for firefighting training in the face of wildfires. Attention-grabbing by describing the need of a supportive policy framework for a comprehensive European training approach against the background of the common challenge of climate change. By that these recommendations can be a keystone to enhance firefighting and rescue capabilities.



WILDFIRE – Why a standard in the training of firefighters?

Forest firefighting is a highly complex field requiring tailored strategies for operations and training, influenced by specific local and regional factors like terrain, vegetation, climate, and available resources. In Europe, training concepts are fragmented across national borders, with limited unified frameworks or collaboration. Currently, supranational exchanges primarily occur after major incidents by improving aerial firefighting support and ground forest fire fighting

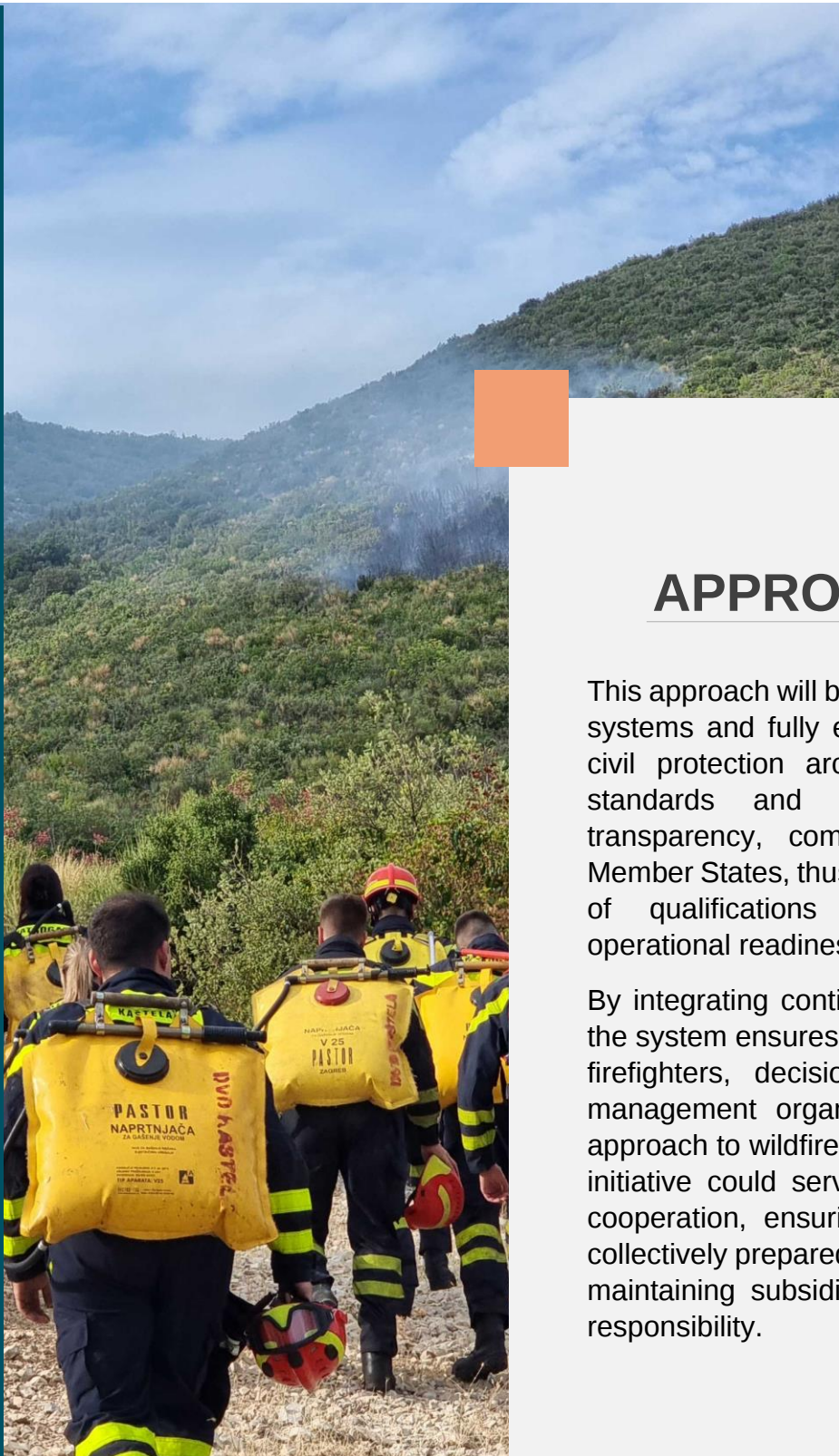
A harmonized European training standard could address these gaps by sharing knowledge, harmonized frameworks, and promoting joint exercises. This standard would be aligned with the European Qualifications Framework (EQF) (Europass, 2025) and use an adapted European Credit System for Vocational Education and Training (Cedefop, 2025) to create consistent, comparable, and scalable training programs. It would also ensure alignment across Member States, fostering cross-border collaboration and innovation in forest firefighting. The standard could focus on developing shared strategies for common wildfire challenges, such as equipment interoperability, risk assessment, and operational planning.

To ensure a professionalized, coherent, and future-proof training approach, the initiative will include a comprehensive competence catalog outlining the essential knowledge, skills, and competencies required for effective wildfire management. This includes key points such as wildfire behavior assessment, suppression tactics, safety and risk awareness, interagency coordination, and the use of information and communications technology (ICT) systems (e.g. Geographic Information Systems and other early warning tools), as well as the safe handling of terrestrial and aerial firefighting equipment.

In line with the European Commission's communication "Forest Fires – Sparking Firesmart Policies in the EU" (European Commission, 2024), the standard emphasizes the importance of professional development, the promotion of common safety practices, and the preparation of firefighters and related personnel for extreme wildfire events. The learning outcomes will be clearly structured and adapted to operational needs at national, regional, and transnational levels. Special focus areas include:

• Suppression strategies and fire combat techniques
• Situational awareness and real-time decision-making
• Digital competencies and the use of other ICT in wildfire response
• Health, safety, and protective measures in extreme conditions





APPROACH

This approach will be compatible with existing national systems and fully embedded within the broader EU civil protection architecture. By aligning with EU standards and frameworks, it will promote transparency, comparability, and mobility across Member States, thus facilitating the mutual recognition of qualifications and enhancing cross-border operational readiness.

By integrating continuous professional development, the system ensures that all relevant actors – including firefighters, decision-makers, and other disasters management organizations – are aligned in their approach to wildfire suppression and prevention. This initiative could serve as a foundation for long-term cooperation, ensuring that European countries are collectively prepared for escalating wildfire risks, while maintaining subsidiarity, proportionality, and shared responsibility.

"By aligning with EU standards and supporting continuous development, this training system enhances cross-border readiness and fosters long-term cooperation in wildfire prevention and response."



WILDFIRE – A European training standard in forest firefighting

In the past, wildfires have caused numerous catastrophic incidents, sometimes with fatal outcomes. These events often stem from technical failures in firefighting systems or outdated and inefficient operational techniques. This highlights the urgent need to develop more cohesive and advanced training programs for wildfire response crews, chiefs, and instructors. A structured, harmonized, and digitalized approach to training in Europe is crucial. Wildfire management presents unique challenges that differ significantly from other types of firefighting, requiring specialized strategies to improve preparedness and response efficiency.

Firefighters and other emergency services must undergo structured, multi-stage training to effectively respond to wildfires. Council Directive 89/391/EEC mandates that EU Member States implement measures to enhance worker safety and health, which includes comprehensive training for firefighters. The goal is to ensure that firefighters are well-qualified and receive documented instruction on the use of vehicles, equipment, and materials specific to wildfire operations, thereby minimizing risks to both emergency personnel and the public.

Firefighters and rescue services have a unique responsibility to protect the public during wildfire emergencies. However, some national firefighting strategies heavily depend on aerial resources, which may prove inadequate if these resources are unavailable or unable to operate under extreme weather conditions. Fulfilling this duty, in accordance with existing building and landscape regulations tailored to specific regions, necessitates that these professionals receive training that exceeds standard European health and safety requirements. Comprehensive technical and tactical education enhances their ability to manage diverse operations, ensuring safety for both the public and the responders, while also providing legal clarity for fire brigade leadership.

Effectively combating wildfires necessitates specialized and often costly vehicles, equipment, and materials, underscoring the importance of comprehensive firefighter training. Wildfire suppression demands unique tactics, as hazards may require traversing extensive distances, often under challenging conditions such as rugged terrain. While technical training on equipment is crucial, it is equally important to focus on developing operational competencies to ensure swift and accurate responses during emergencies. Therefore, a clear distinction must be made between the established requirements and the actual training provided to firefighters.

1. WILDFIRE – Requirements for firefighters and their fire chiefs and their instructors

Wildfire response personnel consist of various squad members, each playing a specific role in operations. Depending on the national framework, the danger level, and the type of wildfire scenario, leadership may be provided directly on-site by a fire chief or centrally through a command unit. Firefighters involved in wildfire suppression should have completed at least a "basic course for fire brigades in wildfire management" and undergone training in using equipment suitable for prolonged and intense operations under hazardous conditions. Fire chiefs are required to possess a diverse range of skills as dictated by national regulations. Instructors responsible for training these squads must have both applied and theoretical expertise to ensure the effective education and ongoing professional development of wildfire response personnel.

2. WILDFIRE – Training of forest fire firefighters and their fire chiefs

Regular training courses with specific operational tactical content should be provided for firefighters, their fire chiefs, and instructors involved in wildfire operations. These courses should encompass action sequences and impart knowledge of local conditions, including technical aspects such as the functioning of regional firefighting equipment and communication systems as well as early warning systems and fire propagation forecasts, which incorporate data on terrain, vegetation, and weather, can supplement surveillance and patrolling efforts, providing critical support for wildfire management. This approach aligns with the EU's emphasis on enhancing wildfire risk awareness and communication, as highlighted in the European Commission's publication on Wildfire Risk Awareness and Communication (2024a).

WILDFIRE course approach is a consecutive mode:

The prerequisites include completed firefighter training and possession of necessary driving licenses. Fire chiefs must also complete a basic course in forest fire management, which covers the fundamental principles of wildfire suppression and response.

All course participants should have access to operating instructions for the equipment used during training and comprehensive training materials, including guidelines for squad members and command protocols. Training content must include both theoretical foundations and practical exercises to ensure well-rounded preparation.

The training framework aims to establish a European standard for wildfire response, applicable to both squad members and fire chiefs. Differentiation should align with national training principles, incorporating learning objectives and levels e.g. as outlined in the European Credit System for Vocational Education and Training (ECVET) and relevant EU directives, such as those promoting vocational education and skill transparency (European Commission, 2009). This ensures consistency and effectiveness in knowledge acquisition and operational performance across Europe.

WILDFIRE – Contents of a "basic course for firefighters and fire chiefs of firefighters combatting forest fires fire chiefs of firefighters combatting forest fires"

1	<i>Basics about forest and vegetation fire</i>
2	<i>Legal basis on management in operation</i>
3	<i>Development and influencing factors of forest and vegetation fires</i>
4	<i>Operational tactics for forest and vegetation fires</i>
5	<i>Security / Safety</i>
6	<i>Fire prevention measures</i>
7	<i>Training for equipment</i>
8	<i>Areal fire fighting</i>
9	<i>Training for instructors</i>

3. WILDFIRE – Training for instructors for firefighters and their fire chiefs

High demands are placed on instructors of fire brigade personnel because the trainees are so-called high-risk teams. Characteristics of these teams are: physical and psychological damage can occur, there is responsibility for the lives of others and rescue operations cannot usually be aborted. As instructors, extensive knowledge of technology, operational principles and tactics is therefore required. The instructors must have completed the modules for instructors (operational or management) or an equivalent qualification. They should be competent in dealing with forest fire operations and have in-depth knowledge of the specific operational principles and the necessary resources. Comprehensive, specialized, practical and theoretical operational experience, knowledge for firefighting training including knowledge of the framework of knowledge and necessary expertise according to the EQF for lifelong learning should be considered (European Union 2020) because standardized professional training, will improve the efficiency of the operational systems naturally. It is important to underline that the instructors for the module for the basic module on forest fire operations for firefighters and fire chiefs should have at least the requirements of the EQF 5 qualification framework.

In addition to the technical content of the various modules, the instructors should also be able to control the effectiveness of the training and adapt the content to the internal and external environment of the fire service:

Training Principle	Description	Objective
1. Learn and Let Learn	Promote a culture of shared learning: encourage knowledge transfer, peer exchange, and mutual support.	Enable sustainable knowledge dissemination and collective professional growth.
2. Blended Learning Elements	Combine classroom sessions, e-learning, simulations, and hands-on exercises within firefighting training.	Ensure flexible, efficient, and practice-oriented learning across diverse formats.
3. Train-the-Trainer Skills	Equip instructors with didactic, technical, and intercultural skills to deliver high-quality instruction.	Build a qualified instructors network for consistent, scalable, and EU-compatible training.

WILDFIRE – Continuous training of all participants

Operational readiness should be regularly reviewed and continuously improved. In the event of a forest fire, the time required for the arrival of the rescue services must be kept as short as possible (Mohammadi et al, 2021). The knowledge gained from the respective training units must therefore be repeatedly refreshed, trained, and expanded in order to ensure smooth and safe operations in the long term. The contents of this recommendation are to be consolidated and updated through further training events and exercises on demand including the safe and effective use of suppression techniques, water, retardants, and heavy equipment via ground and aerial operations, in accordance with national regulations through practice, theory, and simulations.

In light of the transnational nature of wildfire threats, training programs should also integrate cross-border collaboration strategies, reflecting the operational realities across Member States. The UPCM, which has been activated over 770 times since 2001 (European Commission, 2025a) in response to emergencies including wildfires, underscores the necessity for coordinated European readiness.



The following recommendation for further training in theory and practice can be made:

Training Area	Description	Objective
1. Practical Exercises	Real-life wildfire training for all firefighting services.	Strengthen operational readiness and coordination.
2. Scenario-Based Simulations	Repeated training of various operational situations on-site and through virtual simulations.	Enhance situational awareness and decision-making under pressure.
3. Equipment & Vehicle Handling	Hands-on practice with vehicles, tools, and materials used in forest fire operations.	Improve familiarity with equipment and operational efficiency.
4. Technical Fault Management	Training on identifying and handling technical issues during operations.	Ensure smooth response under challenging conditions.
5. Special Tactics Training	Instructions on advanced tactics specific to forest fire scenarios.	Prepare teams for complex and evolving wildfire dynamics.
6. Technology Integration	Updating content to reflect technological advancements such as drones, early warning systems, and digital tools (Union Civil Protection Knowledge Network, 2024a).	Equip personnel with future-ready tools and methods.
7. Tactical Adaptation	Regular revision of tactical procedures based on new insights and lessons learned.	Maintain effectiveness and adaptability in response strategies.
8. Climate Adaptation Strategies	Training personnel to adjust tactics according to changing wildfire patterns (European Commission, 2024a).	Ensure preparedness for climate-driven fire behavior.
9. Fire Behavior Research Integration	Incorporate current fire science, dynamics, and predictive modeling into instructor training.	Guarantee up-to-date knowledge and relevant instruction.
10. Psychological Preparedness	Modules on mental resilience and stress management for large-scale wildfire deployments.	Support firefighter well-being and long-term capacity.

Additional (Role-Specific) Training Modules (Where Applicable)

Special Module	Description	Objective
1. Case Studies & Decision-Making	Operational training for fire chiefs on complex or atypical wildfire situations.	Improve strategic thinking and response leadership.
2. Leadership Skills Refresher	Training on current guidelines, coordination principles, and leadership methods.	Keep leaders aligned with best practices.
3. Instructor Module Training	Specialized training for trainers focusing on cross-border strategies and cultural competencies.	Foster EU-wide interoperability and consistent training standards.

To ensure sustainable learning outcomes and active professional engagement, all involved actors should also be encouraged to:

- Participate in workshops and conferences such as the "Wildfire Command and Control Practices" (Union Civil Protection Knowledge Network, 2025) or the "Fire Weather Training" (Pui Costa Foundation, 2025) to foster knowledge exchange among practitioners
- Subscribe to professional journals focusing on wildfire management, climate adaptation, and technological innovation
- Engage with expert communities like the Wildland Fire Lessons Learned Center (WFLLC, 2025) to access shared resources and training opportunities

This is the only way to close across Europe gaps in knowledge, harmonize cooperation and communication between the parties involved, and eliminate deficiencies for targeted deployment and rescue management. And will lead to enhancing the expertise of first responders in managing extreme fire events through specialized technical training.

WILDFIRE – Transparency in performance and knowledge for Europe

In general, the EU has only indirect influence on competences in the areas of fire protection, rescue, and civil protection. The same applies to the effect of European occupational safety and training standards on fire and rescue

services. WILDFIRE revolves around the effect of the latter point. The freedom of profession and establishment within the EU also means for firefighters that transparency in qualifications and competences, equal opportunities and anti-discrimination are ensured, and that international recruitment of young people is possible. The exercise of a profession learnt in an EU Member State must therefore be given the same recognition throughout the EU. WILDFIRE is one of the few projects in the field of fire and rescue services that pays attention to this issue. It is obvious that sharing the knowledge and practical experience in the fire service available throughout the EU for education and training purposes would promote the level of education and training within the EU in the long term.

WILDFIRE therefore aims to achieve common standards in Europe regarding the core competencies of fire brigades using the example of forest fire operations. Based on the content previously broken down, an adaptation to national, regional and local conditions is carried out – not the other way round. In accordance with the principle of subsidiarity, forest fire operations should continue to be carried out with various technical aids. It should be done based on a comprehensive platform encouraging the adoption of advanced firefighting products and fire suppression techniques such as innovative ICT solutions on the ground and aerial detection systems using cameras and sensors. By integrating this information into networks and systems, these technologies can support swift deployment and effective initial response. While these methods have the potential to lower costs, improve safety, and enhance firefighting efficiency, appropriate legislation and regulation are necessary for their implementation within the UCPM and training programs. Additionally, addressing the standardization and compatibility of existing wildfire equipment should be prioritized at a pan-European level within a coordinated response framework. All this can and should be recognized according to professional qualifications standards acquired in the respective Member States.



particular – promotion at administrative and decision-maker level within the public administration of the Member States, in the relevant fire brigades' associations and in the European structures, whether within the European Commission or with interest groups in the European area. Therefore, the cooperation between local and national authorities as well as among EU member states in general must be strengthened by fostering the adoption of systems that support decision-making, facilitate the exchange of risk-related information, supporting first responders in managing emergency responses and enhance tools for raising awareness and communication as well as collaboration like Erasmus+. Even with small public funding, the sustained presence of holistically informed, trained and educated voluntary and professional firefighters may ensure its effective spread. This can or should be integrated into a broader stakeholder dialogue that can be set across all administrative levels. These include improving understanding of the fire's natural role in ecosystems, enhancing public support for long-term landscape-level policies by highlighting the contribution of sustainable forest management as a tool for wildfire risk reduction, building trust in public institutions amidst changing risk landscapes and uncertainties, and fostering awareness among citizens and private sectors about the importance of wildfire prevention and preparedness (European Commission, 2024).

"WILDFIRE promotes common EU training standards and qualification recognition for firefighters, enabling cross-border mobility, technology adoption, and long-term cooperation—while respecting national systems and supporting sustainable wildfire preparedness."



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