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## **EUFOFINET: EUROPEAN COLLABORATION TO IMPROVE PREPARATION AND RESPONSE TO WILDFIRES AND FOREST FIRES IN EUROPE\***

**EUFOFINET: Europejska współpraca w zakresie doskonalenia przygotowania  
i reagowania na pożary przestrzenne i pożary lasów w Europie**

**EUFOFINET: Европейское сотрудничество для улучшения готовности  
к природным и лесным пожарам в Европе и реагирования на них**

### **Abstract**

Northumberland Fire and Rescue Service (UK), the Forest Research Institute (Poland) and 11 other international partners have recently completed some substantial work on an innovative and highly successful 2 year project focused on wildfires and forest fires. The European Forest Fire Networks Project (EUFOFINET) was launched in October 2010 and came to a conclusion in December 2012. The principal aim of the project was to improve and enhance regional and local approaches to wildfire prevention and suppression through European cooperation, collaboration and exchange of good practice. This article provides a summary overview of some of the key activities delivered during the project and makes specific reference to a new common glossary of terminology which was produced. The article is punctuated with illustrative examples from the British and Polish partners of the project to provide some specific context to the project activities and deliverables.

**Keywords:** wildfires, forest fire, international working, glossary, suppression, prevention, training;

**Type of article:** review article

### **Abstrakt**

Straż Pożarna i Służba Ratownicza hrabstwa Northumberland (Wielka Brytania), Instytut Badawczy Leśnictwa (Polska) oraz jedenastu pozostałych, międzynarodowych partnerów, ostatnio z wielkim sukcesem ukończyło pracę w dwuletnim, innowacyjnym projekcie dotyczącym pożarów lasu. Projekt pod nazwą „Europejskie sieci dotyczące pożarów lasu” (EUFOFINET) rozpoczął się w październiku 2010 r. i został zakończony w grudniu 2012 r. Głównym celem projektu było poprawienie i udoskonalenie rozwiązań regionalnych i lokalnych w zakresie zapobiegania i zwalczania pożarów lasu, poprzez współpracę, współdziałanie i wymianę dobrych praktyk na poziomie europejskim. W artykule dokonano krótkiego przeglądu prac wykonanych w ramach projektu, ze szczególnym uwzględnieniem nowego, wspólnego słownika terminów. Artykuł prezentuje szczegółowo przykłady działań brytyjskich i polskich partnerów projektu, które zostały zrealizowane w ramach projektu EUFOFINET.

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**Slowa kluczowe:** pożary przestrzenne, pożar lasu, współpraca międzynarodowa, gaszenie, szkolenie, zapobieganie;  
**Typ artykułu:** artykuł przeglądowy

## Аннотация

Пожарно-спасательная Служба графства Нортамберленд, Исследовательский Институт Лесничества (Польша), а также одиннадцать остальных международных партнёров в последнее время с большим успехом закончили работу в двухлетнем инновационном проекте, касающимся лесных пожаров. Проект под названием „Европейские сети лесных пожаров (EUFOFINET)“ начался в октябре 2010 и закончился в декабре 2012 года. Главной целью проекта было улучшение и совершенствование региональных и местных мер в области предупреждения и препятствования пожаров лесов благодаря сотрудничеству, взаимодействию, а также обмену хорошими практиками на европейском уровне. В статье сделан короткий обзор работ, выполненных в рамках проекта. Авторы подробно описали новый общий терминологический словарь. В статье подробно представлены примеры работ, проведенных польскими и британскими партнерами в рамках проекта EUFOFINET.

**Ключевые слова:** природные пожары, пожар леса, международное сотрудничество, словарь, тушение, обучение, предупреждение;

**Вид статьи:** обзорная статья

## 1. Introduction

Uncontrolled vegetation fires, commonly referred to as wildfires, bushfires and/or forest fires, are a significant problem around the globe. Annually they destroy property and rare habitats and present a significant risk to human health [1]. Some reports suggest that in recent years there have been an increasing number of large-scale wildfire events across the World and that these fires have left unprecedented long-lasting social, economic and environmental impacts (see for instance [2]). Many people will recall news stories and images that were streamed around the World of a number of catastrophic wildfire events that have occurred within recent memory, including: the Black Saturday Bushfires in Australia on 7<sup>th</sup> February 2009, where 173 people were killed and more than 2,000 homes were destroyed [3]; the Bastrop County wildfire in Texas, USA, which destroyed 1,500 homes in 2011; and, the very recent tragic fire at Yarnell Hill in Arizona, USA, where 19 firefighters were killed. While these events all occurred on other continents, it would be wrong to assume that Europe is immune to the risk and problems posed by wildfires. According to statistics, more than 65,000 wildfires/forest fires burn half a million hectares of land and cause estimated economic losses of around 2 billion Euros every year within the EU [4].

While wildfires are a natural phenomenon, sometimes ignited by lightning, they are *a predominantly human-influenced hazard that can be predicted, controlled and, in many cases, prevented* [5, p.1]. Where statistics are collected, we know that the majority of wildfires are caused by a combination of accidental and deliberate human actions, with only a small percentage of fires attributed to natural causes [6]. Some of the current problems associated with wildfires stem from significant changes in the ways that humans now use the land in comparison to previous generations. A recently published White Paper reveals that, globally, societies are becoming increasingly vulnerable to wildfires [7]. Significant social, demographic and cultural changes across Europe in particular have led to significant changes in land use and a decline in the number of skilled people managing the land, which is in turn increasing the risk of wildfires, both in terms of

their frequency and the potential damage they will cause. Indeed, the risks posed by wildfires and forest fires are not likely to dissipate anytime soon: current predictions on climate change suggest an increase in the frequency of favourable conditions for wildfires and forest fires across Europe over the coming years [8].

Wildfires and forest fires have been a well-established cause for concern in the Mediterranean Region of Europe for many years and there is now a relatively long history of prediction prevention and control work. There is also a relatively long history of cross-border cooperation and collaboration within this region, as evidenced by the existence of numerous bilateral agreements for sharing wildfire suppression resources (see [9]). However, the situation has been markedly different in other areas of Europe. It was only recently that wildfires became an increasingly visible problem in northern Europe. During the last five to ten years, northern European countries like the UK and the Netherlands have experienced a number of large wildfire events which have caused significant damage, disrupted daily life for citizens and stretched the resources of the Fire and Rescue Services. Recent examples of major wildfire incidents include the Swinley Forest Fire in May 2011 in Berkshire, UK, and the fire on scrubland and dunes between the towns of Schoorl and Bergen aan Zee in the Netherlands in 2010. Critical evaluations of wildfire response activities within northern Europe during the last five years have identified a standard check-list of common problems and shortcomings, including: a lack of wildfire-specific safety protocols and Standard Operating Procedures; a lack of wildfire-specific training courses and material; and, a lack of wildfire-specific Personal Protective Equipment and equipment (see, for instance, [10]). There is now an acceptance in the UK and other northern European countries that Fire and Rescue Services (or the other agencies responsible for wildfire suppression) require specific knowledge and understanding in order to undertake safe and effective suppression operations. This acceptance is now driving significant improvements in wildfire/forest fire suppression training and practices in northern Europe. It is also part of the driving force behind the increased participation of northern Eu-

ropean countries in debates and collaboration projects related to wildfires and forest fires.

## 2. The Birth of the EUFOFINET Project

The previously described “awakening” in the North to problems associated with wildfires and forest fires was partly responsible for driving the EUFOFINET Project and the assemblage of partners from the four corners of the EU. EUFOFINET was developed around the premise that bringing partners together from across Europe to share knowledge and good practice across national borders would be of significant mutual benefit to the organisations and countries involved and would facilitate and drive the improvement of local, regional and national approaches to wildfire and forest fire issues. 13 partner organisations representing 9 European countries subscribed to this cross-border exchange ethos and joined the EUFOFINET partnership. The Lead Partner was the Association of Municipalities and Town Councils of Attica in Greece (PEDA) and the entire partnership included:

- The Association of Municipalities and Town Councils of Attica (PEDA) (Greece)
- Regione Toscana (Italy)
- Office National des Forêts (France)
- ENTENTE pour la Forêt Méditerranéenne (France)
- The National Forest Center (Slovakia)
- The Centre for Servicing Woods and Forests of Castilla y Léon (CESAFOR) (Spain)
- The Region of the North Aegean (Greece)
- The Region of Epirus (Greece)
- The Region of Thessaly (Greece)
- The Galician Academy of Public Security (Spain)
- Frederikssund-Halsnæs Fire and Rescue Service (Denmark)
- The Forest Research Institute (Poland)
- Northumberland Fire and Rescue Service (United Kingdom)

The EUFOFINET Project was launched in October 2010 and came to a conclusion in December 2012. It was co-financed by the European Union through the INTERREG IVC Programme and had the principal aim of improving and enhancing regional and local approaches to wildfire prevention and suppression through European cooperation, collaboration and exchange of good practice. In order to achieve this aim, the partners organised and delivered a range of events and activities which were designed to address 5 key themes related to wildfires and forest fires, including: detection and prevention of wildfires; wildfire suppression strategies; mapping risks and hazards; training and simulation strategies and restoration of land burned by wildfire. The key activities delivered during the project included: eight technical workshops; five technical guides addressing the five project themes; three staff exchange workshops; the creation of the *European Glossary for Wildfires and Forest Fires (2012)* [11]; the organisation of an international conference in Brussels, Belgium; and, the production of thirteen Action Plans detailing the future implementation of good practice within the partner regions.

The remainder of this article provides a summary overview of some of the key activities delivered during the EUFOFINET project, making specific reference to the technical workshops, the staff exchange workshops and study visits, the European glossary and the partners’ action plans. Illustrative examples have been included from the UK and Polish partners of the project to provide some specific context to the project activities and the long-lasting impacts of the project at the local and national level. The UK and Polish partners and their expertise with regards to wildfires and forest fires are now briefly introduced prior to the description of the specific project activities.

## 3. Northumberland Fire and Rescue Service (UK)

Northumberland Fire and Rescue Service (NFRS) provides fire and rescue cover to the County of Northumberland in northern England. The County covers an area of almost 2,000 square miles (approximately 500,000 hectares) and is home to approximately 310,000 residents. NFRS has a long term strategic aim of improving the social, economic and environmental well-being of the residents of the county it serves. Central to this is preventing fires and other emergencies happening and in doing so reducing death, injury and damage to property.

One of the primary risks facing the County of Northumberland, as identified within NFRS’s Fire and Rescue Plan 2011-2014, is a major wildfire incident. In order to effectively and efficiently manage this risk, NFRS has worked with individuals and organisations at a local, regional and national level and from countries across the World. NFRS is now recognised as the UK’s leading fire and rescue service for wildfire training and operational policy and has engaged extensively in partnership working at the local, national and international levels to improve cooperation, understanding and awareness of wildfire issues. Chief Fire Officer Alex Bennett currently holds the Chair of the England and Wales Wildfire Forum, a national strategic advisory body to UK fire and rescue services and rural agency partners. Also, Deputy Chief Fire Officer Paul Hedley holds the Chair of the Chief Fire Officers’ Association’s (CFOA) Wildfire Group.

Due to its pre-eminent role amongst UK Fire and Rescue Services with regard to knowledge and understanding of wildfires, Northumberland FRS was commissioned by the Scottish Government to develop the first Scottish Operational Wildfire Guidance Manual. The final draft was delivered by NFRS project officers to the Scottish Government in May 2013. Following talks between the Scottish Government and the UK Government’s Department for Communities and Local Government, the manual is anticipated to be adopted across the UK soon as a benchmark for wildfire pre-planning, response and suppression.

## 4. Forest Research Institute (Poland)

The Forest Research Institute (FRI) was established in 1930 as an Experimental Station of the State Forests Organisation, and in 1934 it was transformed into the Fo-

rest Research Institute of the State Forests. Since 1945 it has been acting as the Forest Research Institute, currently being subordinated to the Minister of Environment. The Director and the Scientific Council are the head bodies of the Institute. The Scientific Council is a decisive, initiating and advisory body of the Institute and is empowered to award PhD degrees and habilitation (qualifying for associate professor positions). It is also authorized to submit candidates for the title of professor of forest sciences. FRI conducts a variety of work, directly and indirectly related to forestry. FRI's main research areas are forest ecology and forest protection, silviculture and forest management, monitoring of the forest environment, forest economy and policy.

FRI is an institution which cooperates closely with the State Forests National Forest Holding and the Ministry of the Environment, implementing the results of research works. This cooperation has a steady character and all organizational solutions within the scope of forest fire protection are consulting with FRI. Among others, the Poland forest fire protection system was developed by FRI and then implemented within Polish law. Earlier this year, the Department of Forest Fire Protection within FRI celebrated its 50<sup>th</sup> anniversary.

During recent years, FRI has been involved in many different projects financed by European Union sources, including the 5, 6 and 7 Framework Programme RTD, the Leonardo da Vinci Programme, and the Forest Focus Directive). The names of these projects were: PROFOREST, FOREST FOCUS, FIRE PARADOX, and FORFIRE.

## 5. Technical Workshops on Key Wildfire Issues

Both NFRS and FRI were involved in the majority of activities completed during EUFOFINET, including the technical workshops. The technical workshops were organised throughout the duration of the project and enabled partners and external experts from around the World to present and discuss good practice and innovation with regards to wildfires and forest fires. All of the workshops involved both lecture room-based presentations and discussions and practical-based field visits to observe demonstrations of equipment and procedures. The workshops were hosted by eight of the partner organisations and were held in France (May 2011), Denmark (September 2011), France (November 2011), Greece (January 2012), Spain (February 2012), Northumberland, UK (March 2012), Slovak Republic (May 2012) and Italy (October 2012).

All of the technical workshops were designed to address different issues but they were designed to adopt a common structure and approach. For the sake of brevity and the purpose of illustration, the authors will present further information here about just one of the workshops. In March 2012, NFRS hosted a workshop focused on good practice in fighting and suppressing wildfires. Countries represented at the event included: Greece, France, Italy, Spain, Poland, Denmark, Slovak Republic, Portugal, the Netherlands, the USA and the UK. During the

workshop, specially trained Wildfire Support Officers and Wildfire Training Officer from NFRS discussed a number of suppression tools and techniques that have been developed within the county. One of these is the innovative Northumberland Wildfire Prediction System (WPS). WPS is an important management and health and safety tool, which allows both firefighters and fire officers to predict likely behaviour and spread of a wildfire. In addition to explaining WPS, officers from NFRS also discussed other health and safety systems adopted by NFRS at wildfire incidents and Northumberland's Wildfire Incident Command System. Many of the tools and techniques presented by NFRS were developed in the county and are now being adopted by other fire and rescue services in the UK, Republic of Ireland and Denmark.

Another key part of the Northumberland Workshop programme was the organisation of two field demonstrations within the Northumberland countryside. On Wednesday 21 March, a live burn exercise took place on a section of New Moor, near Longframlington. Northumberland's wildfire support officers demonstrated how fire can be used in a controlled manner as an effective technique for fighting wildfires. On Thursday 22 March, Northumberland Fire and Rescue Service coordinated a multi-agency exercise near the village of Linhope in the Northumberland National Park. The exercise demonstrated the practical use of a specially designed Wildfire Water Resource Pond - which included the use of a high volume pump unit, a mobile command unit and a demonstration of how multiple agencies work together at wildfire incidents. The Linhope exercise was delivered in close cooperation with Northumberland National Park Authority, Linhope Estates, the Cheviot Futures Project and the North of Tyne and Northumberland National Park Mountain Rescue Teams. Both of the field exercises provided practitioners with interesting opportunities for observing theory being put into practice and for further discussion and debate.

Following the completion of the eight technical workshops, synthesis documents were produced to provide a summary of the presentations delivered, the good practices discussed and the conclusions and recommendations that were formulated. The end result is the publication of a series of five informative technical guides, each of which addresses one of the project themes.

## 6. Staff Exchange Training Workshops

During the second technical workshop of the project in France on November 2011, some of the project partners identified that there would be significant potential benefits of providing additional opportunities for partners to exchange knowledge and good practice on training-related issues. The partners decided to organise additional study visits and staff exchange training workshops which the partners could opt to attend. These additional visits and workshops were held in Zvolen (Slovak Republic), Aix-en-Provence (France), Galicia (Spain), and Region of Tuscany (Italy) during August, September, November and December 2012 and were attended by a number of specialists and trainers.

Northumberland Fire and Rescue Service, Frederikssund-Halsnæs Fire and Rescue Service (Denmark) and the Slovak Fire Brigade opted to send four specialist wildfire officers to attend the staff exchange workshop in Aix-en-Provence, an event which was coordinated and hosted by ENTENTE pour la Forêt Méditerranéenne (referred to as ENTENTE from this point forward). The event focused on the use of ENTENTE's innovative real-time simulator to deliver wildfire incident command training to fire officers working at different levels of the command hierarchy. Officers from the UK, Denmark, Slovak Republic and France used the simulator in a number of different ways to respond to incidents using the different incident command systems used within the four represented countries. Upon returning to the UK, the four officers from Northumberland wrote a report evaluating the simulator and training delivered. NFRS is now liaising with ENTENTE regarding the potential for tailor-making and delivering Wildfire Incident Command Training to NFRS and other UK specialists in the future.

During August 2012, FRI took part in the Study Visit to Zvolen (Slovakia) and invited 3 individuals from the Regional Directorates of the State Forests of Poland to participate. The aim of the study visit for the Polish delegation was to gain knowledge and develop an understanding of the forest fire fighting techniques which are currently in use within the Slovak Republic. An important part of the visit was the presentation of the use of fire as a suppression tool, i.e. the use of controlled burns as part of a fire suppression plan (sometimes referred to elsewhere as the use of backfire). The Slovak Fire and Rescue Service developed training for firefighters in these specialist burning techniques in cooperation with the Army of the Slovak Republic and the participation of the Minister of Interior Affairs and Defense. At present, legislation within the Slovak Republic does not yet allow the use of fire as a suppression tool, which means that it is currently strictly forbidden to set controlled fires as a means of preventing fire spread. However, the Slovak Fire Brigade is currently lobbying for changes to be made to the law to allow the use of fire as a suppression tool in the near future.

The training day also gave an overview of some of the IT technologies which can be used for forest fire protection management. Firefighting exercises were divided into a presentation session followed by a live demonstration. The exercises took place within The Institute of Health Care and Training (ISHCT), which is under the jurisdiction of the Ministry of Internal Affairs of the Slovak Republic. An overview of relevant laws within particular EU countries was integrated within the general presentations. The exercises were extremely useful and informative for the Polish participant as they provided the opportunity to learn about the practical use of fire for extinguishing purposes. In Poland, the use of fire as a suppression tool is not forbidden by the law but there are no specific rules and no training is currently provided to fire fighters. Fire as a suppression tool is considered by FRI to be an example of good practice worthy of inclusion within FRI's Action Plan for the EUFOFINET project. The EU-

FOFINET Action Plans are explained in more detail later in this article.

## **7. The European Glossary for Wildfires and Forest Fires**

For effective collaboration across national borders on any technical or emergency issue, the establishment of a common language is crucial. The EUFOFINET partners identified during the early stages of the project that there was no existing European glossary of terminology for wildfires and forest fires and, therefore, no common language for the partners to use. This situation posed a problem to the partnership in terms of establishing a common understanding around technical and practical issues related to wildfires and forest fires. It was evident that some partners were using terminology borrowed from other countries outside of Europe, for instance from the excellent glossaries developed by the National Wildfire Coordinating Group, USA [12] and the Australasian Fire Authorities Council [13]. However, none of these existing imported documents was entirely compatible within the European context. In addition, some other very good glossaries had been developed within the EU during previous collaboration projects (for instance, by the Global Fire Monitoring Center [14] and Corpo Forestale dello Stato and Dipartimento della Protezione Civile [15]), but, although these glossaries provided some key inspiration, neither provided the comprehensive terminology solution that the partners required.

The EUFOFINET partners subsequently decided to set themselves the ambitious but very important task of addressing the identified gaps in common terminology by creating a European glossary of terminology that could be used across the whole of Europe both during and after the project. This task was led and coordinated by NFRS, with the assistance and contributions of FRI and all of the EUFOFINET partners and more than 80 external experts from across the World. The partners evaluated the existing glossaries and developed a design which structured the terminology into thematic chapters to enhance the document's usability and flexibility as a training and reference resource. The end result of more than 18 months of intensive work is an impressive English language glossary of more than 800 terms and associated definitions arranged within thirteen thematic chapters. The EUFOFINET partners believe that this glossary has significant potential to improve cross-border work before, during and after wildfire and forest fire incidents and will be a very useful tool for maintaining and improving health and safety for suppression teams composed of individuals of multiple nationalities.

Following the publication of the glossary in November 2012, all EUFOFINET partners have begun to implement the glossary within their own countries and to promote the adoption of the glossary across Europe. A number of partners have already translated the entire glossary document into their native language. Full translations are already available in Polish, Greek and Slovak and French and Italian translations will follow later in 2013. In Poland, FRI coordinated the translation of the glossary into

Polish. FRI decided that the Polish translation of the glossary would include Polish translations of all terms and definitions positioned alongside the English translations of the terms. The premise of this approach was that it would assist Polish practitioners when trying to communicate across national borders on wildfire issues. The official and symbolic occasion for promoting and distributing the electronic copies of the Polish translation of the glossary was the 50<sup>th</sup> anniversary of Forest Fire Protection Department of FRI. During this important event, original paper copies of the English translation of the glossary were distributed among the invited guests from the State Fire Service, the State Forests, Ministry of Environment and other institutions directly and indirectly related to the forest fire protection in Poland. The National Seminar on forest fire protection, which followed the anniversary, was the second key meeting for promoting and distributing the glossary to Polish stakeholders. This is a very important meeting in Poland, organized twice a year at both the beginning and end of the fire season. The participants are employees from the State Forests involved in forest fire protection, officers from the State Fire Service, guests from the media and other relevant bodies such as local authorities. During this seminar, key wildfire and forest fire issues are discussed and decisions are made for the whole area under the supervision of the State Forests NFH.

Within the UK, NFRS has already begun promoting the adoption of the glossary to local and national audiences. As part of this work, NFRS has worked with the Scottish Government to harmonise the glossary with the new Scottish Operational Guidance Manual for Wildfire which will be published later in 2013. Following discussions between the Scottish Government and Department for Communities and Local Government, it is anticipated that the manual will be adopted across the whole of the UK soon after publication. In addition to this important work, NFRS has been presenting and promoting the glossary to important local, national and international stakeholders in wildfires and forest fire issues including: the CFOA Wildfire Operations Group; the England and Wales Wildfire Forum; the Northumberland Fire Group; the Federation of European Fire Officer Associations (FEU); and, the International Association of Fire and Rescue Service (CTIF).

## 8. Action Planning for Future Improvements to Wildfire Practices

The EUFOFINET Glossary represents an important legacy of the project, but one of the other key deliverables of the project will also have a profound and long-lasting impact on wildfire practices within the partner regions. A key element of the EUFOFINET project has been the development of individual action plans which outline how individual partners will integrate and implement good practices exchanged during the project within their own localities and regions. These action plans have been designed to have a positive impact on local, regional and national policies and procedures related to wildfires. It is important to note here that many of the partners, including both NFRS and FRI, will not be working in isolation to

implement their action plans. All of the partners have tried to be cognizant of the benefits of close partnership working which were advocated throughout the EUFOFINET Project and the fact that their action plans should be complimentary to and synergistic with existing wildfire operational programmes. The implementation of the action plans within Northumberland and Poland is being driven and supported through close liaison between NFRS and FRI and a range of other stakeholders at the local, regional and national levels. Some specific examples of the actions being implemented within Northumberland and Poland are now briefly described.

NFRS's action plan outlines six key actions that will be implemented between January 2013 and December 2015. The implementation of these six examples of good practice will help NFRS to further improve its response to wildfire incidents, the training it delivers to its personnel and to external agencies, and its collaborative partnership working towards wildfire prevention. More specifically, NFRS is investigating opportunities for organising specific Incident Command Training for Wildfires and Wildfire Investigation Training for officers from NFRS and other UK Fire and Rescue Services. The provision of wildfire-specific training will provide an opportunity for NFRS and other organisations in the UK to further develop their knowledge and skills so that they can prepare for and react more effectively when responding to wildfire incidents. The provision of fire investigation training will also assist UK Fire and Rescue Services to improve the rate of cause determination for wildfire incidents. This will subsequently provide a more comprehensive and reliable statistical foundation from which to identify specific problems and to tailor-make effective local prevention strategies. Another important action will involve NFRS working very closely with the Northumberland National Park Authority and the Cheviot Futures Programme to pilot an automatic detection system for wildfires within the Northumberland National Park. The installation of an automatic detection system within the Northumberland National Park will provide the opportunity for more rapid detection of wildfires during their early stages and more rapid deployment of fire crews.

Among the examples of good practice that were exchanged during the project, FRI has chosen to implement the French training system for ground patrol crews. Intervention techniques for wildfires are the most crucial activities which determine further development of fire and rescue actions. Ground patrol systems in France and Poland are based on similar principles and are performed in a similar way. The main purpose of the ground patrolling system is the early detection of wildfires and the rapid intervention in emergency situations. The French training system provides a full range of skills needed to fulfil all of the tasks of a ground patrol, including certification needed for each trained crew member. The most important criteria behind the decision to implement this example of good practice were:

- Simplicity of integrating the training programme within the existing system that is implemented by State Forests (80% of the forest cover in Poland is un-

der the jurisdiction of the State Forests National Forest Holding),

- Expected, realistic effects of the direct transfer between countries corresponding to an increase in the professional skills of the ground patrols' crews and deputies of the Forest District Chief's,
- Relationship between the effort and financial input and the expected time for implementation of the Action Plan.

In Poland, there is currently no homogenous training programme for ground patrol crews. The synergy between the adopted targets within the Action Plan and the real needs reported by State Forest employees is therefore very strong. The main aim of the FRI's EUFOFINET Action Plan is the elaboration and complete implementation of the homogenous training programme for ground patrol crews and Forest District Chief's deputies, elaboration of the required training materials, and preparation of the training instructors and training centres. It is anticipated that the successful implementation of the project activities will result in:

- a number of trained people with certificates;
- homogenous training system;
- increase of the success rate of rescue actions taken to suppress wildfires at an early stage (in the bud, i.e. not exceeding 0.05 ha) and a subsequent decrease in the costs of suppression actions through a reduction in the need to use heavy equipment, planes and helicopters;
- a larger share of ground patrols engaged in early detection duties, leading to shorter response times for wildfire incidents;
- an increase in safety levels and a reduction in the number of accidents experienced by personnel;
- an increase in the efficiency of employees, leading to a shorter time period required to prepare vehicles.

## 9. Conclusion: the Need for Future European Collaboration on Wildfire Issues

The entire project partnership has concluded that participation in EUFOFINET has been extremely rewarding and beneficial. The EUFOFINET Project has enabled a number of specialists from a number of EU countries to develop their technical knowledge and understanding of wildfire through multiple and regular constructive and instructive exchanges. The involvement of a number of partners and external experts in the EUFOFINET Project from the four corners of Europe is significant as it reflects the growing concern for wildfire across the whole continent. Furthermore, the collaboration of this diverse partnership is symbolic of the need and desire for practitioners from across Europe – from the North, South, East and West – to work together to share and develop effective techniques and strategies for wildfire suppression, detection, prevention, risk mapping and restoration. The exchange of knowledge, experience, skills, good practice and lessons learned is of key importance for developing safer and more effective approaches to wildfire management. Wildfires will continue to burn across Europe over the coming decades and NFRS, FRI and the other EU-

FOFINET partners will continue to work together for mutual benefit to exchange knowledge and good practice to help continually drive improvements to wildfire and forest fire prevention, preparedness, response and restoration in Europe.

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