



COMMON STRATEGY

**for Forest Fires Management
in the Bulgarian-Serbian Cross-border Region
2019 – 2024**

Elaborated within project CB007.1.31.126 “Joint Training Programme for Forest Fire Prevention and Management”, co-funded by EU through the Interreg-IPA CBC Bulgaria–Serbia Programme

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LIST OF THE MOST COMMONLY USED ABBREVIATIONS

Abbreviation	Description
AMoI	Academy of the Ministry of Interior
BAS	Basic academic studies
BC	Bachelor of Science
BRC	Bulgarian Red Cross
EU	European Union
FAS	Firefighting Association of Serbia
FOS	Faculty of Occupational Safety
FSCP	Fire Safety and Civil Protection
GDFSCP	General Directorate Fire Safety and Civil Protection
MoI	Ministry of Interior
SEM	Sector for Emergency Management
The project	Project CB007.1.31.126 “Joint Training Programme for Forest Fire Prevention and Management”



INTRODUCTION

The forest is an important part of the living nature, which maintains the biological equilibrium of the Bulgaria-Serbia cross-border region. It provides shelter for animal species, regulates air currents and rainfalls, protects soils from erosion, purifies the air.

Forest fires in the region cause serious damage to the economy and the environment. They often lead to human casualties. That's why it is necessary to identify the reasons for their occurrence, to know how to provide protection against them and to be familiar with the different approaches for reaction.

In the coming decades, climate change in the region is expected to increase the incidence and scale of forest fires. More frequent and longer-lasting droughts and devastating forest fires can have a significant adverse impact on society's capabilities for existing after such dangerous events. Due to that reason and because of the complexity and extent of forest fires, it is necessary to join the efforts of all responsible institutions, including the international ones, and to actively involve them in forest fire risk mitigation activities. These activities are expected to lead to a significant reduction in human, social, economic and natural damages and losses.

Although the problem with the forest fires is addressed with caution and their prevention is in line with climate change adaptation measures, the institutional efforts and mechanisms still need to be further developed at regional and international level.

In general the political, social and economic changes that have occurred over the past two decades have a negative impact on the prevention of forest fires in the cross-border region.

Institutional capacity needs further strengthening. There is also a need for bilateral interaction between Bulgaria and Serbia in the field of forest fire protection and especially in the field of forest fire management.

Collaboration is the first step towards the ultimate goal of strengthening bilateral processes in the region and ensuring security and stability in environmental protection.

The development of the present strategy was planned in connection with the above mentioned and after carrying out the activities under Project CB007.1.31.126 "Joint Training Programme for Forest Fire Prevention and Management".



The strategy is elaborated in the period September 2018 – June 2019 and includes general measures that can be applied throughout the cross-border region in case of forest fires which are crossing the borders. The measures are based on forest fires analyzes targeting the regions of Pernik - Bulgaria, Nis - Serbia and a pilot area of two border municipalities, one from each of the two countries in the Pernik - Nis region, as an example - the municipality of Treklyano in Bulgaria and the municipality of Bosilegrad in Serbia, elaborated within the project in the period September 2017 – September 2018.

The strategy is supported by forest fire maps covering the two pilot border regions of the cross-border area (Treklyano - Bosilegrad). The maps can be found online (<http://ipacbc-bgrs-forest-fire-hazard-map.eu/>).

The study, accompanying the development of the forest fire maps is valuable source of information and could also be found online(<http://ipacbc-bgrs-forest-fire-hazard-map.eu/pdf/study.pdf>).

The strategy aims to outline a coherent framework for defining the strategic priorities for forest fire management in the region and to support the implementation of measures for their implementation at cross-border, national, regional, municipal and local levels. The strategy will also contribute to identify and prioritize specific areas for cross-border and regional cooperation, and will ensure that problems are addressed in a coordinated way with a view to developing long-term forest fire risk reduction capacity.

The strategy has been developed in accordance with the applicable European and national (Bulgarian and Serbian) legislation as well as with the program and strategic documents in the field of forest fire management. It includes the most up-to-date and modern methods and measures forest fire prevention and management. The strategy also provides procedures for coordinated actions between the local authorities and the specialized institutions in the field of forest fire safety.

The Strategy for forest fire management in the Bulgarian-Serbian cross-border region has an implementation period from 2019 to 2024.



1. KEY VALUES

The strategy is based on the following key values: positive thinking, perspective, awareness, culture, equality, responsibility, cooperation, continuity and political will.

Positive thinking

The importance of preventive activity is often underestimated. Through implementation of such activities the forest fires can be not only foreseeable but also manageable. The efforts of responsible institutions are primarily aimed at building response capacity to forest fires. The management and expert staff should have a positive attitude towards the possibility of managing the risk of forest fires.

Perspective

The perspective approach overcomes the shortcomings of a purely planning approach, which only relies on the existing trends and possible forecasts, allowing for a certain uncertainty and variance in forecasting when organizing governance. Because of this reason, sustainable development planning should be done by applying a prospective approach to forest fire management activities.

Awareness

The basis of forest fire management in the region is the collection and dissemination of information on good practices and the successful development of comprehensive policies in this area. The awareness of the responsible institutions ensures that good practices are used in the planning of preventive measures and activities, while awareness of the population facilitates their implementation. The first step to address the gaps in available information on the risk of forest fires is to do the risk assessment. Next step is to study the good practices that help forest fires risk reduction and increase the responsible attitude of the management institutions and of the society towards them.

Culture

Factor for reducing the risk of forest fires is also the formation of a forest fire prevention culture as well as the correct behavior of the whole society during such fires. Enhanced public awareness of forest fire risk influences decision-making, regulatory development, organization/collection and allocation of resources for forest fire management. This will ensure an effective policy to reduce this type of fires.



Equality

A very important principle in the field of forest fire management is the equal treatment of citizens. Disadvantaged citizens and social groups with a lower social status (which is often seen in the cross-border region) have limited access to relevant organizational and material resources, which is a prerequisite for increased vulnerability of these social groups in forest fires. For this reason, it is necessary to create a level playing field for all social groups in the region, including in the field of protection and response to forest fires.

Responsibility

The management of forest fires is an expression of moral and social responsibility at all levels of government. Both the directly and indirectly responsible leaders must believe and seek realization in the human cause of fight against forest fires. The serious social responsibility they take with their involvement in the management of forest fires requires a strict public definition of responsibilities and a clear personalization of their implementation.

Cooperation

Modern countries, especially neighbors, such as Bulgaria and Serbia, are not alone in the face of the challenges of forest fires. Their joint efforts to reduce the risk are supported by concerted actions and through a coordinated regulatory framework. A number of EU documents are the basis for improving and coordinating the actions and results of forest fire management at the international level between the relevant competent authorities. The cooperation between Bulgaria and Serbia will strengthen the preparedness and the response capacity in forest fires through a balanced approach, guided by two principles: national responsibility and solidarity at the international level.

Continuity

Ensuring continuity in the development of national forest fire management policies mitigates their consequences and reduces their impact on people, economy and environment.

Political Will

The complexity of social planning and governance today requires clear political will to impose an integrated approach to forest fire management. The existence of political will is one of the main prerequisites for including forest fire management when planning the development of every sector of public life in the cross-border region.

2. ANALYSIS OF THE CURRENT STATE

2.1. Defining the threat of forest fires in the region

Over the last decade the cross-border region Bulgaria-Serbia has been hit by a large number of intensive forest fires. For this reason, the region falls into areas characterized by a high risk of forest fires.

The identification of forest fire hazards is a continuous process, not only aimed at the current ones, but also in their development over time. It is important to take into account the historical development of hazards, as incidents that have occurred or have been avoided can contribute to analyzing the recurrence of some natural or man-made forest fires.

The cross-border region is exposed to a relatively high threat of forest fires.

Forest fires are one of the major hazards to the structure and functioning of forest ecosystems. Climate change over the last decade has increased the incidence of forest fires and it also contributed for enlargement the size of the affected areas. Global warming and droughts are logical reasons for increasing the fire hazard in forest ecosystems.

More than 90% of the fires have an anthropogenic character, because of this reason the forests near urbanized areas are categorized as high-risk. At present, over half of the forests in the region are categorized as high-risk.

In this regard, fire-fighting and forest fire management in the cross-border area should be designed and implemented similar to those in the Mediterranean (Greece, France, Spain, Portugal, etc.) where the whole or most of the territory is defined as severely threatened by fires.

One part of forest fire prevention planning is to make an analysis of the fire risk and causes. The various types of risks and hazards in the cross border area should be considered in a forest fire prevention analysis.

Natural causes of forest fires. Vegetation does not self-ignite, even during droughts. The most important natural cause is lightning. This phenomenon is relatively rare in the cross border area, where it accounts for only 1 to 5 % of all ignitions.

Human causes are the major factor for forest fire ignition. They are determined as involuntary and voluntary causes.



Involuntary causes (negligence and accidents) are the principal cause for forest fires in the cross border region. Negligence results from carelessness vis-a-vis the fire hazard and is correlated with the visitor frequency in the forest or its immediate surroundings. The type of carelessness depends on the activities in the forest and its immediate surroundings:

- farming activities;
- forest work;
- tourists;
- hunters;
- dwellings.
- Accidents

Accidental fires are much less frequent than fires due to negligence. The main reasons of this type are:

- traffic in the forest or its periphery – the projection of fire sparks during the passage of a railway train, or by the muffler of a vehicle can cause a fire. It is the same for not well maintained agricultural and forest machines.
- power lines - strong winds can cause electric arcs between swaying lines and set vegetation at fire;
- garbage dumps – either authorized or clandestine, in any case, garbage dumps constitute a potential fire source by ignited papers or internal combustion caused by fermentation.

Voluntary causes percentage are variable, the main types being:

- pyromania - certain individuals set a fire out of pleasure, as a game, to draw attention, to see fire engines in action, etc.;
- revenge - fire can be a tool of revenge caused by a controversy with the administration (hunters) or a neighbour, social exclusion (dismissed worker), expropriation, etc.;
- economic stakes - arson fires can bring a direct material profit (improvement of pastures, wood utilization, etc.) or indirect by land appropriation.

2.2 Damage caused by forest fires

At first glance, a fire-affected area can be identified because of the appearance of the landscape, it deteriorates - the different forms and colors of the vegetation disappear and everything turns into a gray desert. People who live nearby lose the picture of the landscape from their childhood. However, the



consequences of forest fires go much further. Nature, and forests in particular, are the source of life, health and wealth. This is the place where a large number of different living beings live together: animals, plants, microorganisms. All living organisms that inhabit the forests interact and play an important role for each other as well as for humans. They produce clean air and water, as well as many other necessary things, such as wood, wild mushrooms, honey, livestock feed. As a result of forest fires, not only the plants are burned, the animals are also affected - they either die or need to move to other places because they lose their food and shelter.

Forest fires destroy many resources used by people, especially in rural areas. Many people lose their property (homes, campsites) or part of their income (agricultural crops, pastures, hunting, honey, wood, etc.). Sometimes people living in the area affected by forest fires lose their life, but also people who extinguish the fire.

But that's not all. In addition to that the soil quality is greatly deteriorated because of the high temperatures during fire. Organisms that live underground and decompose organic matter, thus enabling plants to grow, die. The soil loses plant protection against erosion, and after heavy rains the water takes it alongside, polluting rivers, dams, and sometimes even the cities. Air is polluted not only by the smoke, but also by the fact that the absorption of carbon dioxide from the atmosphere is impaired.

Damage caused by secondary effects. Forest fires cause significant economic losses. They destroy houses and almost everything on their way. In addition, in the event of fires, a lot of money is spent on chemicals, logistics, airplanes, trucks and personnel. The economic damage and costs of forest fires are difficult to estimate. Beyond the direct costs of fire prevention, suppression and reforestation, and the damage through loss of timber, buildings and infrastructure, there can be additional financial implications for the entire region. When factories and production facilities are affected, jobs are lost in addition to economic losses, with according social implications.

However, some researchers believe that forest fires also have some advantages. They believe that many animals are able to escape or move away from the fire, although many young individuals are dying. Birds fly, deer and reptiles find their own ways to save themselves and so on. Many plants grow again and usually recover quickly after a fire. Seeds of some plants develop well in ash-enriched soils. Tree species such as white pine and yellow birch benefit from forest fires in a similar way.

2.3 Legal framework

Bulgaria, as an EU member, and Serbia as a country seeking EU membership, are working towards harmonization of their legislation with the legislation of the European Union.

Being an important issue for many European countries, the prevention and management of forest fires are well established in the national legislation in both countries.

2.3.1. Bulgaria

Constitution of the Republic of Bulgaria is a supreme law, it is the first normative act to consider. The "Constitution" is the basic law of the state which establishes the principles of governance - the form, structure and procedures of state and local authorities, the economy and society, and the relationship between the state and the citizens.

According to the Bulgarian constitution, the normative texts concerning the protection of forest areas from fires are as follows:

The Republic of Bulgaria ensures the conservation and reproduction of the environment, the maintenance and diversity of the living nature and the reasonable use of the natural resources and resources of the country.

Underground resources, coastal beaches, republic roads, as well as water, forests and parks of national importance, natural and archaeological reserves designated by law are exclusive state property.

Citizens have the right to a healthy and favorable environment in accordance with established standards and norms. They are obliged to protect the environment.

The Bulgarian legislation in the field of prevention and management of forest fires includes the following strategies, normative acts and documents:

- National Security Strategy;
- Strategy for Reduction of Disaster Risk 2014-2020;
- Law of the Ministry of Interior;
- Disaster Protection Act;

- Environmental Protection law;
- Law on defense and armed forces of the Republic of Bulgaria;
- Forestry Act;
- Rules for the application of the Forestry Act;
- Law on the Bulgarian Red Cross;
- National Disaster Protection Program 2014-2018;
- National Disaster Protection Plan;
- Ordinance № 6 of 5 February 2004 on the structure of forests and lands in the forest areas and of the hunting areas in the Republic of Bulgaria;
- Ordinance No 8 of 11 May 2012 on the conditions and procedures for protection of forest areas against fires;
- Ordinance on the terms and conditions for the assignment of activities in the forest territories - state and municipal property, and for the use of wood and non-timber forest products;

The **Rules for the application of the Forestry Act** regulates the conditions and order for the management, reproduction, use and preservation of forests and lands from the forest fund, as well as the rules for their ownership.

According to the regulations, timber users are obliged to observe the established rules and requirements for technical and fire safety while working in the forests. It is strictly forbidden to clean a site by burning waste during the fire season.

The immediate organization and implementation of the forest fires prevention activities in the forests and the lands of the forestry fund are carried out by the state forestry and by the forest management and forestry entities. During the fire season the state forestry, respectively the state game breeding stations and the forest management and land management entities, if necessary, appoint persons to monitor the properties and report in the event of fires. Surveillance agents shall be provided with portable radio or mobile telephones.

For all forests and lands of the forest fund, irrespective of their ownership, fire plans are prepared, which are an integral part of their forest management plans and programs.

Forest owners are obliged to carry out forest fire prevention activities and to participate in forest fires suppression.

2.3.2 Serbia

The legal framework in the field of forest fire management in Serbia include:

- **Strategy for Fire Protection for 2012–2017** (Official Gazette of RS No. 21/2012);
- **National Strategy for Protection and Rescue in Emergency Situations** (Official Gazette of RS No. 86/2011);
- **National Programme for Environmental Protection** (Official Gazette of RS No. 12/2010);
- **Forestry Development Strategy of the Republic of Serbia** (Official Gazette of RS No. 59/06);
- **Law on Fire Protection** (Official Gazette of RS No. 111/09);
- **Law on Emergency Situations** (Official Gazette of RS No. 111/09);
- **Law on Forests** (Official Gazette of RS Nos. 30/10 and 93/12).

According to the legislative framework entities that manage forests (public enterprises) must prepare forest fire protection plans for all categories of forest ownership within their territory. The plans should include:

- review of the current state of fire protection;
- an assessment of the fire risk;
- the organization and the obligations of the institutions taking care about the implementation of measures for fire protection;
- listed measures (technical, organizational, etc.) to increase the level of fire safety through prevention;
- calculations of the necessary financial resources;
- available resources - number of professional and volunteer firefighters or personnel specially trained for forest fires, available equipment (both private or public), organization of the prevention and suppression activities, etc.

The Ministry of the Interior and the Ministry of Agriculture and Environmental Protection participate in the approval of the plans.

The inter-agency mechanisms for fire protection and rescue in emergency situations are defined by the **Law on Fire Protection**, the **Law on Emergency**

Situations and the Law on Forests. The Sector for Emergency Management has the main responsibility to coordinate the activities of the different participants.

The Republic of Serbia has different cross-border agreements and activities in the field of forest fire protection, implemented by the above mentioned institutions, including among others:

- Agreements on cooperation in the field of emergency and disaster management signed with Slovakia, Azerbaijan, Bosnia and Herzegovina, Montenegro, the Russian Federation and Ukraine, Bulgaria, Croatia, the former Yugoslav Republic of Macedonia, Greece and Hungary, and in process with Romania;
- A letter of intent for cooperation in the field of emergency situations signed with France;
- A memorandum of understanding signed with the Danish Emergency Management Agency.

2.3.3. Conclusions

On the basis of the above, it can be concluded that, in response to the strategic challenges of forest fire threats, the Republic of Bulgaria and the Republic of Serbia have established the basic conceptual and institutional norms for the implementation of the prevention policy in this area. This policy is in line with the requirements of the European Union. Implementation of the policy for strengthening the legal framework should be developed in a coherent and rational way, with priority being given to serious monitoring and control of the state of forests and to the continuous improvement of the existing institutional and administrative capacity.

2.4. Education and training in the field of prevention and management of forest fires in Bulgaria and Serbia

Essential members of the system for prevention and management of forest fires in both countries are the specialist with higher education. It is more likely that they will be in charge of development and implementation of different rules, plans and measures for common actions both in prevention and management of forest fires. They will take part in resource planning and deployment, training of

different groups (population, community and forest workers, etc.). That is the reason why the current report is focused mainly on the institutions providing higher education in the field of forest fires prevention and management in both countries.

2.4.1. Bulgaria

The leading educational institution in the field of prevention and management of forest fires in Bulgaria is the Academy of the Ministry of Interior (AMoI).

AMoI is an independent legal entity funded by the Government and granted with a university status. It is established as such by a Decision of the National Assembly of Bulgaria (St. Gaz. Nr. 62/25.06.2002). The Academy's capacity is set at 2000 people. According to the Organization and Operation Regulation of the Academy, it is a state university for professional training of specialists and also a research institution (Regulation EC 2014/C 198/01) serving the needs of the Ministry of Interior (MoI) and the civil society. The Academy provides education and training for both students and candidates for cadets and officers of the MoI.

In this capacity, the Academy possesses unique functions on state level and is the only organization in Bulgaria responsible for the specialized qualification of the MoI personnel.

Besides education and training activities, the Academy performs fundamental and applied scientific researches, organizes scientific events and other publishing, cultural, sport activities.

The Academy has two faculties - Police and Fire Safety and Civil Protection (FSCP). Police Faculty provides professional high education of government officials for the specialized police structures, as well as for the MoI administration and anti-terrorism units. FSCP Faculty provides professional higher education of engineering staff for the needs of the fire safety structures in Bulgaria. Fundamental engineering disciplines, as well as specialized, sport and language course are encompassed by the curriculum.

The lecturing personnel of the Academy is highly qualified and ensures competitiveness and quality of education.

Integral part of the structure of the Academy is the Center for Specialization and Professional Qualification for fire safety personnel. The center

is responsible for the professional training of entry level firefighters and team commanders for the needs of General Directorate Fire Safety and Civil Protection. Practically the main part of the human resources used in firefighting and rescue operations in Bulgaria is trained there. The center is working under the methodological supervision of the Faculty of Fire Safety and Civil Protection. The initial training for professional firefighters in Bulgaria lasts six months.

The highest level of training in the field of fire prevention and management is provided by the Faculty of Fire Safety and Civil Protection. In relation to the obligations of its students as future managers in the structures of GDFSCP, the Faculty of Fire Safety and Civil Protection, has included the the following subjects in the different specialties and forms of training, dealing with the prevention and management of forest fires:

Practical training

The subject is included in the study plans for Bachelor of Science (BS) degree in “Fire and Emergency Safety” and “Crisis Management”. It is also included in the initial professional qualification courses.

The trainees receive practical skills and experience as members of the operational units of GDFSCP. The training forms are dependent on the place where the training is conducted (Operational unit of the Faculty of Fire Safety and Civil Protection, First Aid Medical Center – Sofia, Sofia Metropolitan Fire Department) and usually consists of 12 or 24 hours shifts. Every student has at least six shifts for every semester.

The students have the opportunity to participate in firefighting and rescue operations, including forest fires.

Firefighting equipment

The subject is included in the study plans for BS degree in “Fire and Emergency Safety” and “Crisis Management”. Main topics in relation to forest fires that are included are:

- the intended purpose, general requirements, general regulations, classification and trends for the development of forest fire-fighting equipment;
- the technical characteristics and constructional characteristics of the fire-fighting equipment used in forest fire-fighting and rescue operations;
- exploitation of forest fire-fighting equipment;
- occupational safety and operational rules for working with forest fire-fighting equipment.



First Aid

The subject is included in the study plans for BS degree in “Fire and Emergency Safety” and “Crisis Management”. It provides the basic knowledge for giving first aid in emergency situations, including forest fires.

Fire Drill

The subject is included in the study plans for BS degree in “Fire and Emergency Safety”. It provides the most rational and effective ways for work with fire-fighting equipment, as well as the commands given by the team commanders during fire-fighting operations.

Ecology

The subject is included in the study plans for BS degree in “Crisis Management”. It gives knowledge for relationships with the surrounding environment, including forests, as part of the environment.

Occurrence, development and termination of combustion

The subject is included in the study plans for BS degree in “Fire and Emergency Safety” and “Crisis Management”. It gives knowledge for the combustion of substances and materials, including peat and wood. The subject gives knowledge about the types of fires, their zones and parameters as well as the energy of the fire and the principles of the spread of the combustion in open and internal fires.

Hydraulics and firefighting water supply

The subject is included in the study plans for BS degree in “Fire and Emergency Safety” and “Crisis Management”. It provides basic knowledge for the theory of hydraulics and supply of water for firefighting operations.

Search and rescue activities, and emergency recovery works

The subject is included in the study plans for BS degree in “Fire and Emergency Safety” and “Crisis Management”. It provides knowledge for the methods for limiting and eliminating the consequences of disasters, accidents and catastrophes, including working with portable cutting tools, removing risky trees, etc.

Fire Tactics

The subject is included in the study plans for BS degree in “Fire and Emergency Safety” and “Crisis Management”. Main topics, in relation to forest fires, included are:



- obligations of the incident commander during the whole period of executing operational activities, including receiving the signal, travel, size-up, deployment of forces and resources, decision making, etc.;
- classification and features of the operational activities of the fire-fighting units;
- the main principles, that must be followed during the execution of operational activities
 - principles, methods and forms for fire-tactical training;
 - putting fires under control;
- the methodology for determining the necessary forces and resources for fire-fighting operations;
- the specifics of the development of forest fires, the tactics for their suppression, and the specific obligations of the incident commander.

Fire Expertise

The subject is included in the study plans for BS degree in “Fire and Emergency Safety”. It teaches the foundation knowledge for investigation of the causes of fires, including in fires in forest areas.

Working with chainsaws

The subject is included in the study plans for BS degree in “Fire and Emergency Safety” and “Crisis Management”. It teaches topics related to the use of the chainsaw in specific cases from the firefighter's practice.

Individual and collective remedies

The subject is included in the study plans for BS degree in “Crisis Management”. Main topics, in relation to forest fires, included are:

- the purpose, basic requirements, general regulations, classification and trends for the development of individual and collective means of protection, including those used for forest firefighting;
- the technical and constructional characteristics of the individual and collective means of protection used in forest fire-fighting and rescue operations;
- exploitation of the individual and collective means of protection used for forest fire-fighting;
- occupational safety and operational rules for working with the individual and collective means of protection for forest fire-fighting.

Topography, cartography and GIS

The subject is included in the study plans for BS degree in “Crisis Management”. Main topics included are the topographic methods for planning the operational activities of the forces, including in forest area.

Crisis management

The subject is included in the study plans for BS degree in “Crisis Management”. Main topics included are the theory for crisis management in case of large emergency situations, including forest fires.

Fire Technics

The subject is included in the study plans for BS degree in “Fire and Emergency Safety” and “Crisis Management”. Main topics in relation to forest fires that are included are:

- the intended purpose, general requirements, general regulations, classification and trends for the development of forest fire-fighting technics;
- the technical characteristics and constructional characteristics of the fire-fighting technics used in forest fire-fighting and rescue operations;
- exploitation of forest fire-fighting technics;
- occupational safety and operational rules for working with forest fire-fighting technics.

On the basis of the above, it can be concluded that, in response to the challenges of the threats from forest fires, the Faculty of Fire Safety and Civil Protection at the Academy of the Ministry of Interior has included solid amount of training in the field of forest fire prevention and management in its study plans.

There are also other higher educational institutions in Bulgaria, that teach topics which are connected with prevention and management of forest fires. Among them are the Military Academy and the National Military University, Varna free university and others. Their training is actually directed to personnel working in local authorities and other private and state institutions that have obligations related to civil and environmental protection.

In the recent years there have been made steps towards organizing of special training for volunteer firefighters and local authorities. The experience from the management of large forest fires has shown that more training is needed including, refreshment trainings, etc. Many trainings of personnel working at different level in the field of prevention and management of forest fires and other disasters have been conducted as activities of European funded projects.

Another important issue was the common training of flying crews for the Bulgarian armed forces and representatives of GDFSCP, directed at coordination between both institutions in case of forest fires and other rescue operations.

2.4.2. Serbia

Faculty of Occupational Safety (FOS), University of Nis is a modern, dynamic academic institution. It is one of the leading educational and research institution in Serbia covering occupational safety, fire protection, emergency and environmental issues. Each year more than 300 students enroll the two fully accredited bachelor programmes: Occupational Safety and Environmental protection. These programmes provide unique interdisciplinary academic foundation and scholarly training needed to address complex engineering problems with emphasis on the occupational safety and environmental protection.

Moreover, more than 100 students each year attend one of the five accredited master programmes: Occupational safety, Fire protection, Environmental protection, Emergency management and Communal system management. Occupational safety programme provides students with the competences to assess professional risk and perform supervision in the field of occupational safety. The primary aim of the study programme Fire protection is to enable students to acquire and apply knowledge and skills regarding: identification and analysis of hazards and protection against fires and explosions, fire and explosion expertise as well as organization and management of interventions, rescue, evacuation and recovery after fires and explosions. The study programme Environmental protection is designed to provide acquisition of competences and development of academic skills in environmental engineering. Objectives of the study programme Emergency management is designed so as to enable students to develop: strategic and tactical plans for emergency intervention and rescue, plans and programs for accident response and coordination and management of activities for accident recovery as well as strategies for safety system development during emergencies. And finally, master programme Communal system management is designed so as to enable students to apply scientific and professional achievements in communal system management.

Each year 10 students enroll integral and comprehensive, accredited PhD studies in the fields of Occupational Safety Engineering and Environmental engineering. Faculty is committed to maintaining a high level of teaching and



research activities and to further developing its collaborative links with educational and research institutions internationally.

The basic activity of the faculty is the educational activity, as well as scientific and research work, are successfully implemented through the work of 19 laboratories (chemical, electrical, physics, water protection, fire alarm systems, technical fire protection, ergonomic and health risks laboratory, etc.) at the Faculty. Laboratories were equipped for teaching purposes, but also through the work of the Institute of the Faculty and cooperation and services provided to other organizations. Laboratory work is an essential part of the Faculty curriculum, because they can gain valuable practical knowledge necessary for their future scientific work and work in business.

The Students from the Faculty of Occupational Safety in Nis receive basic knowledge about forest fires during the bachelor degree and more advanced acquaintance during the master degree. The exact subjects which provide knowledge about the forest fires are:

Occupational and environmental chemical parameters

The subject is included in the study programme for the first year of basic academic studies (BAS). It provides knowledge about chemical parameters of the occupational and living environment. The students get information about the classification of chemical parameters according to the type of harmfulness – toxic parameters, fire and explosion parameters (parameters of flammability, ignition, combustion, self-combustion, smoulder, and explosions) and other parameters. They learn how to determine the pollution level of the occupational and living environment resulting from forest fires as well.

Fire and explosions

The subject provides knowledge about fire and explosions as physicochemical phenomena of mass and heat transfer under certain conditions of their development. The students acquire ability to identify and assess hazard from fire and explosions and to take appropriate preventive, suppressive, and recovery measures of fire protection.

Fire extinguishing agents and equipment

The subject provides information about the types and the properties of the fire extinguishing agents, the extinguishment processes and the extinguishing equipment. The students acquire knowledge to properly select and use fire extinguishing agents and equipment depending on the type of burning material, its location, and type of fire. They also acquire skills to calculate the required quantities of fire extinguishing agents.

Ecological risk

The subject provides knowledge about characteristics and sources of hazards affecting environmental degradation (habitats, species, populations, communities, and ecosystem). The students acquire knowledge about risk types and classification. They also get information about forest fires as a specific form of ecological risk. The students get the ability to identify and predict physicochemical environmental hazards and describe ecological risks and hazards, to analyse cause-and-effect environmental phenomena in order to manage ecological risk.

Emergencies

The subject provides knowledge about causes, development, and effects of emergencies and about institutional frameworks for emergency management. The students learn the different kinds of emergencies – natural, technogenic, ecological and social emergencies. They acquire the ability to recognize emergency phenomena and to understand causes, effects, and institutional frameworks for emergency management. The forest fires are considered as type of emergency.

Legal fundamentals of safety

The subject provides elementary theoretical knowledge about legal fundamentals and law of safety. The students acquire knowledge about general aspects of legal fundamentals of occupational safety, environmental protection, fire protection, emergency management, and communal system management, and the major categories and institutions in this field.

Intervention and rescue tactics

The subject provides students with knowledge necessary for organizing and participating in operative tactical activities during accidents. The course gives information about:

- the term fire and classification according to development stages, point of origin, and type of flammable material;
- tactical capabilities of fire and rescue units;
- tactical activities of fire and rescue division and company;
- basic tactical activities during extinguishment and rescue;
- reception of fire alarm signal and alerting of the fire and rescue unit;
- tactical development;



- technical equipment setup;
- development and extinguishment of forest fires.

The students acquire the ability and knowledge for devising plans for command and operative tactical activities during accidents.

Fire dynamics

The subject provides students with knowledge about fire as a dynamic process occurring in time and space. They learn to understand the fire dynamics, which represents the basis for conducting activities in the area of preventive, repressive, and recovery fire protection.

Fire protection organization

The course objective is acquiring knowledge about fire protection subjects, about organization and activities of professional and volunteer fire fighting, and about types of fire protection activities and the manner of their organization in companies. Such knowledge provides students with practical skills for specialized fire protection jobs. The students also acquire knowledge about:

- domestic and international organizational systems of fire protection;
- government bodies, their tasks and authority;
- rights and obligations of local communities;
- normative organization of fire protection;
- professional fire units, territorial and industrial (foundation, activity, organization, hierarchy, and personnel);
- volunteer fire fighting associations (organization, tasks, activity).

Fire expertise

The subject provides students with knowledge necessary for determining circumstances and causes leading to fires.

Emergency management systems

The students acquire knowledge about causes, development, and effects of emergencies and about institutional frameworks for emergency management. The forest fires are considered as emergencies.

It can be summarized that the Faculty of occupational safety has included large enough topics concerning forest fires prevention and management in its study plans. Because the faculty is not so strongly connected with the Serbian



national fire and disaster protection authorities, as is the case with the Faculty of fire safety and civil protection in Bulgaria, it is clear that one of the best possibilities to improve the training programs would be through common hands on trainings with specialized equipment. Also training at the sites of former forest fires along with Bulgarian cadets, representatives of local authorities and firefighting professionals will enhance the preparedness of the students to work towards improving the capabilities for prevention and management of forest fires in the cross-border area.

The highest level of professional training for forest fires prevention and management, not included in a university curriculum in Serbia, is organized and conducted by the Ministry of Interior via its Sector for Emergency Management and National Training center for Emergency management which includes the Specialists Training Department and the Civil Protection Training department

The aim of the National Training Center for Emergency Management is the standardization and enhancement of the protection and rescue training, in accordance with the Law and the European Standards.

The task of the National Training center for Emergency Management is the basic training and enabling all the members of the protection and rescue system:

- employees of the Sector for Emergency Management;
- headquarters for emergency management (state, province, district, town and municipality headquarters for emergency management);
- specialized units of civil protection;
- other legal entities important for protection and rescue;
- citizens, in order to gain necessary knowledge of personal and collective protection;
- foreign citizens who can be trained in accordance with the regulations and bilateral and multilateral contracts.

Serbia has participated in joint fire management trainings through terrain simulation exercises in Croatia, Slovenia and many others.

2.4.3. Conclusions

The results from the conducted analysis show that the theory of forest fires prevention and management is well set out in the curriculum of both educational institutions - Faculty of Fire Safety and Civil Protection and Faculty of Occupational Safety. Anyway there is still lack of good organization concerning the cross-border activities in the field of prevention and management education and practical training of participants of different level.

Insufficiency of equipment, both for training and for operational activities, is still an issue in the cross-border area, but steps have been done in this direction.

In many cases the competent authorities lack capacity and financing to secure adequate training and education in the field of forest fires prevention and management. It leads to decreased competence and reduced effectiveness of intervention of relevant public and regional institutions in emergency situations.

Specially trained specialists with higher education in the field is one of the essential points when establishing strong and well working system for prevention and management of forest fires. That is why the important assets from the implementation of the project shall be:

- the enhanced opportunities of both FOS in Nis and Faculty of FSCP in Sofia to provide the base knowledge for the properties of the forest vegetation, that will lead to better risk assessment of possibilities of forest fires ignition and spreading;

- the implementation of software products in the training, which will be useful not only for managers and incident commanders, but also for all practitioners who are aware of the problems surrounding the emergency situation and the real challenges for incident commander and the staff members;

- the enhanced educational capabilities of both faculties will provide opportunity for hands on training with specialized equipment for forest firefighting;

- the opportunity for students from both faculties, firefighting professionals and local authorities' representatives from the cross-border area to work with the equipment that is actually used in the emergency operational centers, which will be provided on the Alternative National Operational Center;

Last but not least it is essential to mention the possibilities for development for future networking in the field of prevention and management of forest fires between professionals, volunteers, local authorities, educational institutions, students, etc.

2.5. Bodies responsible for the forest fire management

2.5.1. Bulgaria

Responsible structures for the prevention of forest fires are all ministries and departments, district administrations, municipalities, emergency medical care centers, other medical and healthcare establishments which have obligations to carry out the preventive activities under Art. 6 of the Disaster Protection Act and on the implementation of disaster protection plans, including legal entities and sole traders, voluntary units and units of the armed forces.

The General Directorate for Fire Safety and Civil Protection of the MoI is a national specialized organization for fire safety, rescue and disaster protection under the Law of the Ministry of Interior and the Disaster Protection Act.

Directorate General Fire Safety and Civil Protection (DGFSCP), Bulgaria is responsible for fire safety, rescue and protection of the population in cases of fires, accidents and emergency situations pursuant to Ministry of the Interior Act and Disaster Protection Act. Main activities performed by DGFSCP are: prevention and control; fire extinguishing and state fire control, rescue activities; emergency rescue and recovery activities, operational protection in case of floods and search and rescue operations; authorization and control activities of traders operating in fire safety in premises and/or operation of facilities and equipment related to fire safety; authorization and control activity of products for fire extinguishing in regards to their effectiveness; CBRN protection in case of incidents and accidents with dangerous substances and materials and mitigation of ecological incidents; early warning and announcement in case of disasters and aerial danger of the executive authorities and the population; protection of the population in case of “wartime” or “emergency situation” in compliance with the Geneva Conventions; assistance in the activities of the Interagency Commission for recovery and relief to the Council of Ministers; methodical and expert support for disaster protection to the territorial executive authorities; operational cooperation with the EU and NATO structures and other international organizations in the field of fire safety and civil protection, humanitarian aid and civil-military emergency planning.

DG FSCP is a national specialized organization within the Ministry of the Interior. It is structured into a central level administration and at regional level at 28 territorial structures, called Regional Directorates, covering the territory of all districts of Bulgaria. The organizational structure of DGFSCP is represented on fig. 1.

Directorate “Protection of the Critical Infrastructure and Prevention” is responsible for the organization of the prevention measures, including forest fire prevention, and other activities. The directorate is constantly monitoring the activities in the field of fire and emergency prevention, state fire control, critical infrastructure protection and many others, conducted by the territorial structures of DGFSCP.

Directorate “Operational activities” is responsible for the management and control of the territorial structures of DGFSCP in relation to the operational activities, including firefighting and rescue operations, CBRN operations, emergency and urgent recovery works, maintenance of the fire and rescue equipment, professional training of the operational staff, etc.

The National Operational Center is responsible for the management and coordination in case of large scale emergencies on the territory of two or more regions. It also serves as a contact point with other Bulgarian and International institutions.

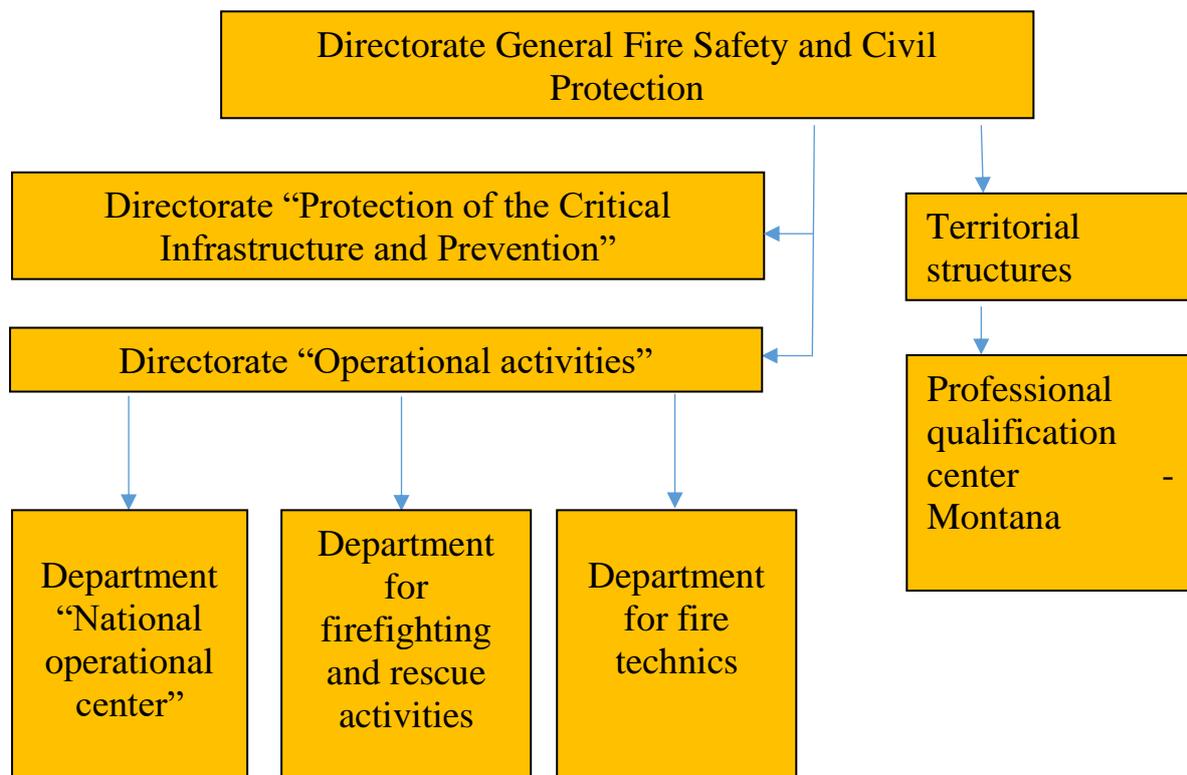


Figure 1: Organizational structure of the Directorate General Fire Safety and Civil Protection, Republic of Bulgaria



2.5.2. Serbia

Similar to the organization of the forest management and forest fire protection in Bulgaria and other European countries, the obligations and tasks are divided between different stakeholders. The Government of the Republic of Serbia administers the forests and forest lands in state ownership through different institutions, including but not limited to the following institutions and stakeholders:

- Ministry of Agriculture and Environmental Protection;
- 7 public enterprises responsible for the management of state forests divided on geographical principle;
- Ministry of Interior;
- legal and natural persons owning forests.

The above mentioned public enterprises are also engaged in professional activities in private forests. They are funded from the budget of the Republic of Serbia.

In the system there also educational and research institutions like: Faculty of Forestry and Institute of Forestry in Belgrade; Institute of Lowland Forestry and Environment in Novi Sad.

Forest fires pose a significant threat to the Republic of Serbia, which is evidenced by the different statistics. It is enough to mention the number of forest fires in 2007 and 2012, and the number of forest firefighters who was injured during the 2012 fire season.

According to the legislative framework entities that manage forests (public enterprises) must prepare forest fire protection plans for all categories of forest ownership within their territory. The plans should include:

- review of the current state of fire protection;
- an assessment of the fire risk;
- the organization and the obligations of the institutions taking care about the implementation of measures for fire protection;
- listed measures (technical, organizational, etc.) to increase the level of fire safety through prevention;
- calculations of the necessary financial resources;

- available resources - number of professional and volunteer firefighters or personnel specially trained for forest fires, available equipment (both private or public), organization of the prevention and suppression activities, etc.

The Ministry of the Interior and the Ministry of Agriculture and Environmental Protection participate in the approval of the plans.

Among the main stakeholders in the field of forest fire prevention and management in the Republic of Serbia are the Ministry of the Interior and, in particular, the Sector for Emergency Management (SEM).

The SEM is responsible for developing, improving and maintaining the ability of the whole country to prevent risks, respond to emergencies and mitigate the consequences of various disasters. The sector combines all existing resources in terms of protection, rescue and emergency response.

More than 3000 professional firefighters maintain a 24-hour shifts to respond to forest fires and other emergencies. Priority is given to the high level of professionalism and the ability to respond in a timely manner.

The structure of SEM is shown in Fig. 2. It consists of a headquarters with 4 departments and the National Training Center and 27 regional units in accordance with the administrative division of the country.

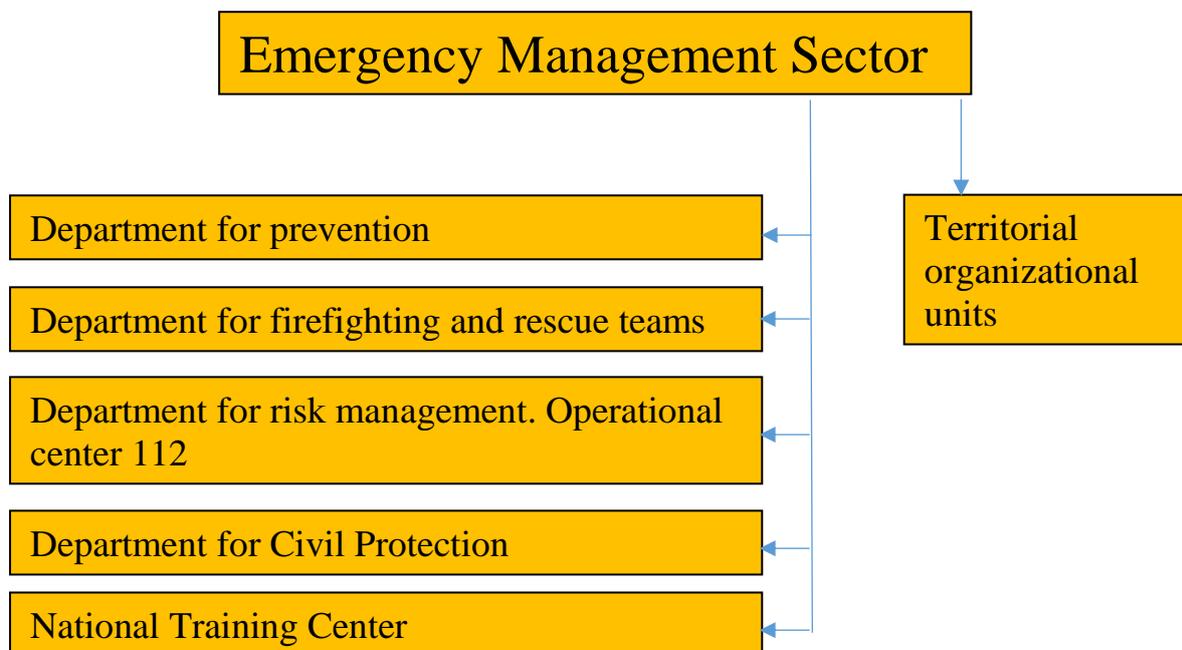


Figure 2: Organizational structure of the Emergency Management Sector, Republic of Serbia



The Fire and Rescue Department makes timely legal supervision of the operation of fire and rescue units and industrial and voluntary fire services as well as their coordinated actions in the event of major emergencies.

The Department for firefighting and rescue teams consists of two subdivisions: Fire and Rescue Teams Control Department and Department for Coordination of the Operations.

The Fire and Rescue Teams Control Department is responsible for the fire and rescue units and also for the industrial and voluntary fire services. It controls their work and offers appropriate measures to improve the fire services.

The Department for Coordination of the Operations is responsible for assessing the vulnerability of the site and for determining the need to create new fire and rescue units and the necessary number of employees. It is also responsible for coordinating the work of all departments involved in emergencies. It offers and participates in the development and harmonization of protection plans and operational plans with state, regional, city and local authorities. It maintains direct contact with other emergency services. Its activities are essential in the case of major emergencies or forest fires which are expected to involve different stakeholders during the operations.

The Firefighting Association of Serbia (FAS) brings together voluntary associations and trade unions on the territory of the Republic of Serbia within the framework of programs in the field of fire and preventive activities and vocational training. The association is represented at different levels according to the administrative division of the country. It is established and operates in accordance with the norms of the Associations Act. FAS performs a wide variety of fire safety activities including prevention, emergency preparedness, firefighting and rescue. The number of volunteer firefighters in Serbia is about 3,500, mainly operating in the eastern part of the country. They are also included and have obligations under the Law on Fire Protection. Standards for the qualification of volunteers are compatible with those of professional firefighters.

Interdepartmental fire and emergency rescue agencies are defined by the Law on Fire Protection, the Law on Emergency Situations, and the Forest Law. SEM has the main responsibility to coordinate the activities of the various actors.

2.5.3. Conclusions



The legislation in both countries envisages participation of voluntary firefighters and local authority representatives, private and legal bodies, along with the professional firefighters in the suppression of forest fires. Also envisaged is the use of equipment, property of different of the above mentioned groups.

In the Republic of Bulgaria and in the Republic of Serbia there are still places where equipment (special vehicles, hand tools, personal protective equipment, etc.) are obsolete or lacking. Different measures have been taken to provide special vehicles and equipment for forest fires.

In both countries are running a variety of projects funded by the European Union, with major beneficiaries being municipalities, state agencies, universities and other institutions. The projects aim to improve the capabilities of the population, fire prevention professionals and the institutions themselves in the field of emergency prevention and management.

Although there are specially trained and equipped firefighters in both countries, they are still not enough. Taking into account the fact that representatives of different institutions, legal and private bodies are involved in the forest fire prevention and management system, there is a constant need for trainings, appropriate to the various stakeholders. In this regard it is essential to have well educated and trained specialists in the field of environmental protection and civil protection in the different institutions. They should have experience in fighting forest fires, working with the specialized equipment, safety rules, etc.

2.6. Threats and opportunities of the existing situation preceding Project CB007.1.31.126 “Joint Training Programme for Forest Fire Prevention and Management”

Among the major challenges for the current situation is the lack of a joint, interstate, strategic framework for management of forest fires in the cross-border area. The activities carried out over the last decade do not have a coherent strategic focus on the required level. This required level has to match the generated threats, as the current approach is based mainly on existing old practices that are not adapted to the current natural and economic conditions.

The currently available data on forest fires can be described as - scattered, limited, unintended, and difficult to compare - different criteria are used, such as the affected forest area, the costs, the number of events occurring over a given



period of time. The data on the environmental and economic consequences of forest fires are, at best, indicative.

Another major challenge is the insufficient public awareness of the principles, objectives and actions taken to reduce the risk of forest fires as well as the response activities before, during and after them. The measures implemented so far have been inconsistent and limited in scope, with underestimation of the issue and the provision of resources.

The coordination between the responsible institutions at the interstate level has not been cleared. The frequent change of the legislation that regulates the subject, the lack of effective coherence, consistency and continuity of responsible structures has a negative impact on reducing the risk of forest fires. This reduces administrative capacity at interstate, national, regional, municipal and field levels, as well as loss of expertise and past experience.

The level of integration between the activities related to forest fires and climate changes. There is also a need for development of National Strategy for Adaptation to Climate Change.

In the Republic of Bulgaria there is an Integrated Rescue System (IRS) for disaster relief, which provides for the possibility of dispatching forces and resources in line with the development of the forest fires. It is necessary to adopt legislation for the cooperation of the activities of the IRS of the Republic of Bulgaria and the responsible authorities in the Republic of Serbia.

It is also necessary to adopt legislation for a sustainable and efficient system for the training of the population and the executive authorities on forest fires in the region.

The insufficient provision of financial resources for forest fire management activities in the region is another weak side.

2.7. Activities carried out under Project CB007.1.31.126 "Joint Training Program for Forest Fire Prevention and Management" as an example of good future practices

Considering the threats and opportunities of the existing situation the implemented activities under Project CB007.1.31.126 "Joint Training Program

for Forest Fire Prevention and Management" can be pointed out as an example of good practices:

1. Meeting between representatives of authorities, responsible for forest management in the cross-border area.

Meetings between representatives of fire services, local authorities and educational institutions provide great opportunity for discussions and finding innovative solutions for problems in the field of prevention and management of forest fires. The PMT meetings, the organization of the different events provided a lot of those opportunities. Contacts were established between the different stakeholders. Ideas regarding possibilities for future cooperation were discussed.

2. Using the opportunities of the Cohesion Fund of the European Union for the supply of specialized equipment.

The results from the project could be further enhanced by implementation of other projects. The main priorities considering the participating partners should be purchase of equipment for training and research in the field of fire and occupational safety, civil and environmental protection, and conducting of joint trainings of different stakeholders.

3. Development of joint training programs for classroom and on-field trainings.

The developed under the project joint training programs proved very successful and can be used as a base for further development of the study curriculum in different training and educational institutions.

4. Development of forest fires maps for the cross-border area.

The maps developed and the accompanying study are essential tool for specialist interested in forest fire prevention and management.



5. Classroom and on-field trainings of students from the Faculty of Occupational Safety in the University of Nis – Serbia and the Faculty of Fire Safety and Civil Protection in the Academy of the Ministry of Interior – Bulgaria

The trainings had great success according to the opinion of different groups involved. They provided opportunities for meeting between different stakeholder in process of ensuring prevention and good management of forest fires. Sustainability of the project shall be reached by further conduction of joint trainings.

6. Training of representatives of the cross border municipalities.

The training provided opportunity for the representatives to gain knowledge of the capabilities of the training institutions, for experience exchange, etc.

7. Field visits of sites formerly subjected to forest fires.

The field visits provided good visual idea and to complement the theoretical knowledge through examples and discussing some theoretical backgrounds, for example related to site plans and etc.

2.8. Synchronized measures and procedures for coordinated actions in the field of prevention and management of forest fires

The synchronized measures and procedures can be divided in 3 main groups: concerning the training and education of stakeholders; concerning the joint intervention in case of forest fires; concerning joint preventive actions including legislative changes, etc. They are all connected, the first group being already addressed with the elaboration of joint training programmes for students, for local authorities' representatives and for officials. The third group is discussed in details in the next chapter of the strategy.



The second group, namely the joint intervention in case of forest fires has been also subject of other EU funded projects. Different procedure has been developed during the years. The main difference in this project is that it is addressing mainly the specialist with higher education in the field of fire safety and civil protection. Thus it addresses not only the procedure themselves but the principles behind their development, adoption and implementation.

The parties affected by the procedures should be very well familiar with them, which requires additional training and testing of the procedures. For the proper development of such procedures broad knowledge is needed about: the legislation on all levels; the structure of the institutions involved; responsibilities of the participants in general and in specific circumstances; responsibilities of acting representatives; the organization of intervention; adopted tactics for intervention; information flow between participants (at national, regional, municipal, institutional and field level), etc.

According to the current legislation organization for joint intervention is provided at national level through the DGFSCP and SEM. For the local representatives of both services and the local authorities is needed to evaluate if such intervention is needed, to be familiar with the procedure and to follow it strictly.

For good quality field work joint trainings of intervention teams should be organized. Good base for such trainings are already provided through the current project and other projects.

3. MAIN STRATEGIC GOAL AND PRIORITIES FOR FOREST FIRES MANAGEMENT

Taking into consideration the strengths and weaknesses in the field of forest fires management in the cross-border area between Bulgaria and Serbia, following the good practices of project CB007.1.31.126 "Joint Training Program for Forest Fire Prevention and Management", the following **main strategic goal** can be formulated:

Prevention and/or mitigation of the adverse effects that forest fires in the cross-border area between Bulgaria and Serbia have on the human health, the socio-economic activities, the environment and the cultural heritage by improving: the regulatory framework, the planned actions, the preparedness and the response of the institutions and the population.

The following three **strategic objectives**, which define the priority actions, can be outlined:

1. Effective integration of forest fire risks in sustainable development policies by planning, prevention, risk and impact mitigation, preparedness and response activities at all levels.

2. Improvement of the institutional capacity and development of mechanisms in order to achieve lasting resilience to forest fires at all levels, and in particular at local level,

3. Combine approaches for development and implementation of plans and programs for forest fires management (including preparedness, response and recovery from forest fires) and turning the risk mitigation policies into a priority for the Bulgarian and the Serbian society.

Pursuant the achievement of the strategic objectives set in this Strategy, the following **priorities** for action have been defined:

I. Development of sustainable interstate policy and provision of legal and institutional framework for forest fires management.

II. Identification, assessment and monitoring of the forest fires risks. Establishment and maintainance of effective national forecasting, surveillance and warning systems for major forest fires.

III. Implementation of past experience, training, research and innovation to build a forest fire protection culture at all levels of governance and in society.

IV. Reduce of the significant risk factors and improvement of the preparedness for effective response effectively to forest fires at all levels of management.

Priority I: Development of sustainable interstate policy and provision of legal and institutional framework for forest fires management.

Activities:

1. Development of sustainable inter-state policy for forest fires management.

The presence of a political commitment is of key importance for addressing the issues related to forest fires management at all levels. Over the last few years, the policy on forest fires management has been identified as one of the main priorities of both countries, thus reducing the risk and increasing forest fires resilience.

Significant factor for the sustainability of the forest fires policy would be the development of strategy for adaptation to climate changes.

2. Integration of the existing legal framework for forest fires management



An integrated inter-state approach to forest fires management should be based on already existing legislation in the various sectors and at all levels of government.

Critical and in-depth review of the existing legislation, improvement of forest fires management mechanisms, adoption of necessary legal changes or adoption of new regulations are needed in order to achieve long-lasting sustainability of the communities to forest fires.

The different bodies responsible for forest management should be inspected. Changes should be made if necessary in order to clearly define the responsibilities of the authorities and their interrelation.

Clarifying the roles and responsibilities for forest fires management at interstate, national, regional and municipal level will improve the cooperation and communication between all sectors, the state and the municipal authorities, NGOs, business representatives and all stakeholders.

3. Development of institutional capacity for identification and implementation of forest fires management actions in all critical sectors

The management of forest fires requires a solid institutional basis, which should be strengthened through capacity building, good governance, promotion of appropriate policies, facilitation of the information exchange and adoption of effective coordination mechanisms. It is necessary to recognize the importance and specificity of the local self-governance and the decentralization of responsibilities and resources for forest fires management to the relevant local authorities where appropriate.

Assessment of the existing human resources for forest fires management at all levels should be conducted. Development of plans and programs for capacity building in the different institutions to meet the future challenges is of crucial importance. Encouraging local communities to participate in forest fires management activities and the development of volunteer units will significantly contribute to the objectives of the Strategy.

4. Strengthening the interaction between local authorities

Priority II. Identification, assessment and monitoring of the forest fires risk. Development and maintenance of effective national systems for forecasting, monitoring, early warning and disclosure in case of forest fires

Activities:

1. Identification, analysis and assessment of the risks of forest fires at national, regional, municipal and lower levels

Knowing the unfavorable phenomena, especially in the context of increasing volatility and climate instability, enables a better understanding of risks, their management, increasing preparedness for response and minimizing harmful impacts.

It is necessary for detailed list of existing sources of information related to forest fires to be developed. This will make it possible to identify issues of comparability as well as areas where such information is lacking. At the same time, this will provide a basis for assessing the possibilities for better use of information by different users. Information on the economic consequences of forest fires is also important because it provides an opportunity to assess the costs and benefits of various measures to prevent forest fires.

Description of one and multiple risks scenarios during the risk assessment, creation of maps and risk scenario assessment, data collection and analysis, aggregation and dissemination of statistical information on forest fires, harmful impacts and losses, are all possible through the use of international, national and local mechanisms. The risk assessment can enhance the prevention and preparedness, by improving the capacity analysis and capability planning, as well as by using appropriate geographic information systems and modeling technologies. The development of risks maps can identify areas that are vulnerable to specific risks, which is an important tool for planning authorities and provides substantial information to the public.

In order to reduce the risk, it is necessary to periodically develop and update cards for the main risks, that are widely disseminated and made publicly available to the relevant professionals, society and communities. The information should be provided in the format required.

For the management of the risk of forest fires, plans should be developed focusing on prevention, protection and preparedness, including meteorological impact and early warning systems.



A compulsory step in this direction is to take into consideration the probable consequences from climate changes on the risk of forest fires.

2. Planning, building and maintaining of monitoring, forecasting and early warning and disclosure systems

Reducing the risk of forest fires and promoting a culture of sustainability is achieved not only by providing information about the hazards, the physical, social and economic risks, but also through the effective use of monitoring, forecasting, early warning and disclosure systems.

The centralized collection, processing and analysis of information will enable efficient management decisions and the correct allocation of tasks between all governmental and non-governmental structures involved.

The development and modernization of the National Operational Center and the Regional Operational Centers and their integration through the establishment of basic emergency response infrastructure will contribute to the effective coordination, cooperation and management of forest fires, both at national level and with the authorities of the Republic of Serbia. Such development will enable rapid and accurate preparation of comprehensive and accurate analysis and exchange of experience and good practices.

3. Creating a database on the occurrence of fires in the cross-border region

4. Determination of indicators for the effectiveness of forest fires management, based on the activities carried out and the results achieved under other projects

Priority III: Implementation of experience, training, research and innovation for developing forest fires protection culture at all levels of government and in the society

Activities:

1. Development and use of research and innovation



Attracting of scientific potential for forecasting and preventing, or for mitigating the effects of forest fires, as well as training the population to respond adequately will lead to improved dialogue and cooperation between scientific communities and professionals, working in the field of assessment, management and reduction of the risk of forest fires.

It is also necessary to extend the technical and scientific capabilities for the development and implementation of studies and models to assess the risk and the impact of forest fires at all levels of government. For this purpose, easy and systematic access to the results of forest fires prevention research should be provided. Development of a database of experts with expertise should be considered.

2. Use of education and training to build a forest fires protection culture

It is essential for the risk reduce and for the enhancement of the readiness of the population to include the main principles, objectives and activities related to the reduction of the risk of forest fires in the training programs at all possible levels and to ensure equal access.

As an example can be given the organization of ganized on joint class and on-field trainings.

Both education and training should be complex, encompassing the efforts of competent responsible institutions with guarantees to acquire the necessary knowledge and skills by adopting training guidelines and state-of-the-art education standards. Considerable attention should be paid to the application of modern methods of transferring knowledge and skills, encouraging the implementation of risk assessment and preparedness programs for forest fires in primary, secondary and high schools. Development of training programs to reduce the risk of forest fires targeting planning specialists, local authorities and district administrations.

It will also be essential to use all possible formal and informal channels for provision of information, so that it can reach children and young people.

Work is needed to develop and adopt programs for conducting specialized training and simulation exercises to respond to forest fires, taking into account the role of volunteers in enhancing local capacity.

3. Raising the awareness and enhancing population participation in forest fires management activities

The public awareness can be enhanced by disseminating information on forest fires management among relevant authorities and the population. It is also essential to make effective use of the media, the Internet and all existing means of communication.

In order to promote civil participation in forest fires management activities, it is necessary to provide easily understandable and accessible information on forest fires risk and protection of the population, and to adopt specific policies, strategic management of the voluntary resources, allocation of roles and responsibilities and delegation of power and resources.

Strengthening the links between forest fire protection experts, managers, planning experts in individual sectors and regions requires the promotion of stakeholder partnerships, including those working to reduce the socio-economic dimensions of forest fires through creating networks and platforms for exchange of information and good practices.

4. Cooperation between the two countries' university institutions for the prevention and management of forest fires.

Priority IV: Decrease of the significant risk factors and enhancement of the preparedness for effective response in case of forest fires at all levels of government

Activities:

1. Efficient management of natural resources and development of socio-economic practices

The risk of forest fires increases due to a number of factors: the urbanization near forests, lack of social and financial security, increasing climate change, etc. Sustainable use and management of forest resources should therefore be promoted through the development of risk mitigation actions, including structural measures and integrated management.



It is necessary to establish a responsible, planned, open and predictable policy in the field of forest fires management in the short, medium and long term.

Improvement of the implementation of social assistance mechanisms for children, adults and other socially vulnerable groups, affected by forest fires is needed.

It is also necessary to develop mechanisms for financial risk sharing, in particular insurance, and for recovery after forest fires.

2. Measures to manage the risk of forest fires

The conduct of studies and zoning, as well as the implementation of investment projects will help to build sustainability and reduce the risk of forest fires in the affected areas.

The inclusion of forest fire risk assessments in spatial planning and the implementation of harm-avoidance measures will contribute to increasing the sustainability of the built environment and other infrastructure.

It is also necessary to take account of the risks of forest fires in the planning procedures for major infrastructure projects and to include design, acceptance and implementation criteria and to develop and promote the use of guidance and monitoring tools to reduce the risk of forest fires in the context of structural policy and forest planning.

Intergovernmental standard operating procedures should be developed to ensure enhanced and more effective cooperation between stakeholders / institutions at the local level with regard to complex risk, using, for example, the developed procedure in the Republic of Bulgaria.

To reduce risk factors, a practice should be established to monitor and prepare annual reports at intergovernmental, national, district, municipal and site levels, as well as periodic review and renewal of forest firefighting plans focusing on risky areas and protection of objects from critical infrastructure.

3. Improvement of preparedness for effective response and recovery in case of forest fires

Activities related to readiness are naturally tied to response and recovery activities. In this sense, they provide a good opportunity to ensure coherence between forest fires management activities by developing risk reduction capacities at intergovernmental, national, district, municipal and site levels

(human resources, technical capabilities, financial resources, etc.). The development of plans and programs for the management of forest fires at all levels provides for the building of long-term capabilities, including for forecasts, in accordance with the available budgetary means. The development and integration of volunteering at all levels is possible only by creating a favorable environment for training and realization, by clarifying its economic and social significance to society, by improving its legal protection and recognition for the volunteers.

An important prerequisite for effective response to forest fires is the dialogue, coordination and exchange of information between the components of the Integrated Rescue System (IRS) and between the responsible authorities of the two countries for which structural upgrading is needed as a force and resource management element. Opportunities to promote cooperation and interaction in the field of forest fires management, as well as the exchange of good practices for assistance in case of forest fires through public-private partnerships, would be of great benefit.

4. Encouraging international co-operation in the management of forest fires

The development of effective national systems for the management of forest fires and their coordination and cooperation with international organizations is one of the main approaches to ensuring national and international security, stability and sustainable development.

Enhancing the national capabilities of the Republic of Bulgaria and the Republic of Serbia to respond to forest fires through the creation of new operational modules will contribute to improving EU and NATO preparedness and response capacity and to strengthening the modular approach capabilities that have with a view to further strengthening European mutual assistance based on improved coordination within the framework of the EU Civil Protection Mechanism.

The Republic of Bulgaria and the Republic of Serbia should intensify their regional neighborhood policy, the cooperation in support of the European and Euro-Atlantic integration of the Southeast European countries and the Black Sea region in the field of forest fires management through the exchange of information and good practices. It would be good to expand operational cooperation through the national contact point with the EU, NATO, UN and Member States operational centers to reduce the risk of forest fires.



MAIN STRATEGIC GOAL

Prevention and/or mitigation of the adverse effects that forest fires in the cross-border area between Bulgaria and Serbia have on the human health, the socio-economic activities, the environment and the cultural heritage by improving: the regulatory framework, the planned actions, the preparedness and the response of the institutions and the population

<p>PRIORITY I.</p> <p>Development of sustainable interstate policy and provision of legal and institutional framework for forest fires management.</p>	<p>PRIORITY II.</p> <p>Identification, assessment and monitoring of the forest fires risks. Establishment and maintenance of effective national forecasting, surveillance and warning systems for major forest fires.</p>	<p>PRIORITY III.</p> <p>Implementation of past experience, training, research and innovation to build a forest fire protection culture at all levels of governance and in society.</p>	<p>PRIORITY IV.</p> <p>Reduce of the significant risk factors and improvement of the preparedness for effective response effectively to forest fires at all levels of management.</p>
<p>Activity 1. Development of sustainable inter-state policy for forest fires management.</p>	<p>Activity 1. Identification, analysis and assessment of the risks of forest fires at national, regional, municipal and lower levels</p>	<p>Activity 1. Development and use of research and innovation</p>	<p>Activity 1. Efficient management of natural resources and development of socio-economic practices</p>
<p>Activity 2. Integration of the existing legal framework for forest fires management</p>	<p>Activity 2. Planning, building and maintaining of monitoring, forecasting and early warning and disclosure systems</p>	<p>Activity 2. Use of education and training to build a forest fires protection culture</p>	<p>Activity 2. Measures to manage the risk of forest fires</p>



MAIN STRATEGIC GOAL

Prevention and/or mitigation of the adverse effects that forest fires in the cross-border area between Bulgaria and Serbia have on the human health, the socio-economic activities, the environment and the cultural heritage by improving: the regulatory framework, the planned actions, the preparedness and the response of the institutions and the population

<p>PRIORITY I. Development of sustainable interstate policy and provision of legal and institutional framework for forest fires management.</p>	<p>PRIORITY II. Identification, assessment and monitoring of the forest fires risks. Establishment and maintenance of effective national forecasting, surveillance and warning systems for major forest fires.</p>	<p>PRIORITY III. Implementation of past experience, training, research and innovation to build a forest fire protection culture at all levels of governance and in society.</p>	<p>PRIORITY IV. Reduce of the significant risk factors and improvement of the preparedness for effective response effectively to forest fires at all levels of management.</p>
<p>Activity 3. Development of institutional capacity for identification and implementation of forest fires management actions in all critical sectors</p>	<p>Activity 3. Creating a database on the occurrence of fires in the cross-border region</p>	<p>Activity 3. Raising the awareness and enhancing population participation in forest fires management activities</p>	<p>Activity 3. Improvement of preparedness for effective response and recovery in case of forest fires</p>



MAIN STRATEGIC GOAL

Prevention and/or mitigation of the adverse effects that forest fires in the cross-border area between Bulgaria and Serbia have on the human health, the socio-economic activities, the environment and the cultural heritage by improving: the regulatory framework, the planned actions, the preparedness and the response of the institutions and the population

PRIORITY I.

Development of sustainable interstate policy and provision of legal and institutional framework for forest fires management.

Activity 4. Strengthening the interaction between local authorities

PRIORITY II.

Identification, assessment and monitoring of the forest fires risks. Establishment and maintenance of effective national forecasting, surveillance and warning systems for major forest fires.

Activity 4. Determination of indicators for the effectiveness of forest fires management, based on the activities carried out and the results achieved under other projects

PRIORITY III.

Implementation of past experience, training, research and innovation to build a forest fire protection culture at all levels of governance and in society.

Activity 4. Cooperation between the two countries' university institutions for the prevention and management of forest fires.

PRIORITY IV.

Reduce of the significant risk factors and improvement of the preparedness for effective response effectively to forest fires at all levels of management.

Activity 4. Encouraging international co-operation in the management of forest fires

Figure 3: Strategical framework

4. MONITORING AND EVALUATION

The monitoring under this Strategy will help to ensure transparency in its implementation, as well as to evaluate the objectives and priorities set out therein. Monitoring will be carried out periodically on the basis of self-assessment by all responsible institutions in both countries. Self-assessment will be carried out for each priority based on the following indicators:

Priority I. Development of sustainable interstate policy and provision of legal and institutional framework for forest fires management

1. Developed national policies and legal frameworks for forest fire management.
2. Provided adequate resources for the implementation of forest fire management plans and activities at all administrative levels.
3. Participation of local communities and sufficient resources at local level.

Priority II. Identification, assessment and monitoring of the forest fires risks. Establishment and maintenance of effective national forecasting, surveillance and warning systems for major forest fires

1. Conducted risk assessment for major hazards
2. Availability of databases of major hazards
3. Functioning systems for forecasting, monitoring, early warning and disclosure in case of forest fires
4. Level of protection of the critical infrastructure

Priority III. Implementation of past experience, training, research and innovation to build a forest fire protection culture at all levels of governance and in society

1. Availability of accessible and up-to-date information at all levels of government and for society
2. Developed curricula and training materials and training sessions
3. Developed methodologies for research in the field of forest fires.
4. Existing tools for provision of informing to the society and for stimulating forest fires prevention.

Priority IV. Reduce of the significant risk factors and improvement of the preparedness for effective response effectively to forest fires at all levels of management

1. Developed spatial planning policies in connection with forest fires management
2. Implemented measures for forest fires management
3. Developed up-to-date plans for forest fire management plans at all levels and executed regular exercises on their implementation
4. Provided financial reserves and mechanisms to support effective response and recovery as needed.



5. FINANCES

The sources for financing of the activities for the implementation of the Strategy could be provided the States and municipal budgets, the funds of the European Union and other international organizations.

When the financing of the activities under the Strategy is at the expense of the state budget, the financial resources shall be provided within the approved budgets for the respective ministries and institutions.

The resources provided by the Structural Funds of the European Union should be in line with the already established operational program frameworks.

It is necessary to specify in advance the responsibility of the sources of financing – namely the shares of state and municipal financing, financing from European funds and private funding for the different activities.



6. CONCLUSION

This strategy identifies the strategic objectives for improvement of forest fire management in the cross-border area between Bulgaria and Serbia. Presented are the needed actions for their achievement. The Strategy is an important step towards the establishment of a comprehensive and coherent forest fire prevention framework that will contribute to building an integrated approach to the policy of the Republic of Bulgaria and the Republic of Serbia in this field.

The implementation of the Strategy will ensure that forest fires prevention and management is a national priority and will contribute to the prevention and mitigation of forest fires consequences through active action at all levels of governance and through good coordination between the responsible institutions. The sustainability of the management of forest fires will be guaranteed by implementing the Strategy's activities.