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**LANDSCAPE FIRE
MANAGEMENT**

IN THE WESTERN BALKANS

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STRATEGY

FOR

ADAPTIVE LANDSCAPE MANAGEMENT

AND

LANDSCAPE FIRE MANAGEMENT MONTENEGRO



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- ❖ Ministry of Spatial Planning, Urbanism and State Property
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Strategy for Adaptive Landscape and Landscape Fire Management in Montenegro, The Landscape Fire Management Report in Montenegro is prepared within the Landscape Fire Management in the Western Balkans (LFMWB) Programme financed by the Swiss Agency for Development and Cooperation (SDC) and coordinated by Farmahem – Skopje with backstopping support of Helvetas Swiss Intercooperation. The process for preparation of this Strategy was coordinated by the Ministry of Agriculture, Forestry and Water Economy in Montenegro with the support of the Regional Fire Monitoring Centre (RFMC) for the Southeast Europe/Caucasus Region as partners of the LFMWB Programme.

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INTRODUCTION

Montenegro ranks among the most forested countries in Europe, with forest cover placing it just behind Finland (86%), Sweden (67%) and Slovenia (62%). Forests cover 59.9% of the area, and a further 9.8% is classified as forest land. About 49% of forests are state-owned and 51% of forests are privately owned. Forest cover is far above the European (46%) and worldwide (30%) levels of forest cover. As such, the high percentage of forest cover represents a major advantage for environmental protection and improvement, while also supporting the adaptation of ecosystems to future changes. In the Western Balkans, the situation can be summarized as follows:

- Serbia: 64% of agricultural land, 30% of forests and forest land, 6% other
- Bosnia and Herzegovina: 63% of forests and forest land, 28% of agricultural land, 9% other
- Kosovo: 53% of agricultural land, 42% of meadow and forest land, 5% other
- Albania: 37% of forests and woodland, 27% of agricultural land, 39% other
- Macedonia: 48% of agricultural land, 42% of forests and forest land, 10% other

From the above, it can be seen that Bosnia and Herzegovina and Montenegro lead in the share of forests, and Serbia, Kosovo, and Albania have a higher share of agricultural land.

In times of increasingly pronounced climate changes, given its geographical location in the Mediterranean, and with such a high percentage of forests and other ecosystems, Montenegro is heavily affected by landscape-level fires, which in turn represent a key threat to all ecosystems and are a global ecological and economic problem.

Forests are one of the most important natural ecosystems and one of the components on which the sustainable development of Montenegro is based. Sectors that draw sources of raw materials in forest resources (wood processing, energy production, food production, tourism, etc.) have great potential for growth, some of which are currently developing, in turn leading to a higher demand for wood, thus increasing the pressure on forests. Reducing pressure on forest ecosystems caused by open-space fires can be achieved through increased use of agricultural land. However, in Montenegro, the current trend of growth in agricultural production is not adequate, which indicates the need to define measures for encouraging sustainable agriculture within the strategy for rural development and environmental protection. In addition, modern trends show an increase in the value of general forest functions that are measurable. These include trading CO₂ emissions and the assessment of recreational functions of all ecosystems. A large proportion of forests is vital for nature and biodiversity conservation, particularly for safeguarding protected species and designated protected areas.

It should be noted that forestry, agriculture, and tourism are of vital economic importance to the population in rural areas, where these sectors constitute an integral part of the rural economy and rural development.

Taking into account the state of forests, forest lands, agriculture, land use, tourism, and the looming threats, the most pressing need is the adoption of an effectively adapted landscape fire management strategy. An **LFM** approach has, indeed, proven to be proactive in dealing with the increased threat of fire, emphasizing environmental resilience and delivering broad benefits to the community. With this **holistic approach**, LFM is changing traditional fire management practices, which has so far been related to **SUPPRESSION**. The LFM concept is a comprehensive approach that integrates the principles of the environment, the dynamics of social development, as well as the principles of climate change.

The essence of the LFM approach is to, through the complex interaction of natural processes, on the one hand, and human activities, on the other hand, reduce the risk of landscape fire, improve the resilience and quality of ecosystems while promoting sustainable land management.

An important aspect of the strategy is the international, regional and cross-border cooperation, and Montenegro is committed to improving regional and international cooperation, which is first reflected in the signing of bilateral agreements in this area, and active participation in the Civil Protection Mechanism of the Union and NATO.

From all of the above, and in order to reduce the risk of landscape fire occurrence, it is necessary to focus on strengthening risk management capacities, as well as on the networking of all institutions, relevant sectors and stakeholders at the appropriate levels for action in the event of a landscape fire. Prevention of new risks and reduction of existing ones, through the implementation of integrated comprehensive economic, social, health, educational, environmental and other measures, prevent and reduce the exposure and vulnerability of society to disaster risks, increase preparedness for response and reconstruction, and thus increase the stability of society itself.

The fire management programme for the Western Balkans aims to increase the resilience of forests and landscapes, so that the population which depends on these areas can have safe livelihoods and uninterrupted socio-economic development. The Western Balkans is one of the most vulnerable regions where climate change, land use changes, extreme droughts, and the migration of people from rural areas increase the vulnerability of ecosystems. This is in line with the main tenets of the programme, which include:

- development founded on a region resilient to climate change
- sustainable resource management

In this sense, the development of the LFM strategy is a logical continuation of the activities that have already been carried out, namely:

- formation of national LFM networks
- preparation of the National Report on Fire Management in Montenegro
- analysis of deficiencies in fire management

The development of this strategic document, with an action plan for its implementation, is being carried out through the active work of the national LFM network, through a series of workshops, individual meetings with all relevant institutions, non-governmental organizations, and individuals.

The GAP analysis identified various deficiencies in the current fire management system, with shortcomings ranging from limited resources and inadequate infrastructure to insufficient community preparedness and inadequate post-fire recovery efforts. Challenges such as the lack of resources, low awareness of fire issues at the regional level, and the impacts of climate change, insufficient communication, and inadequate land management have been identified as areas requiring urgent attention and intervention.

1. OVERVIEW OF THE LANDSCAPE FIRE MANAGEMENT STATE IN MONTENEGRO

The Landscape Fire Management system represents a complete organization of all institutions and civil society organizations at the state level of Montenegro, which, according to the Law on Protection and Rescue, participate directly or indirectly in the adoption and implementation of all strategies, policies and decisions in order to reduce the risk of landscape fire. Montenegro has recognized that protection and rescue activities are **jobs of public interest**, carried out by state authorities, state administration bodies, local self-government units, companies, entrepreneurs and other legal and natural persons, and in this way, the protection and rescue system is set up on the broadest possible basis.

1.1. LEGAL FRAMEWORK

The legal basis for the adoption of this strategy is found in the **Law on Protection and Rescue**, and includes a set of measures and actions aimed at detecting and preventing the occurrence of dangers, as well as mitigating and eliminating the consequences of natural disasters. Consistent application of this law is possible by adopting bylaws, and in this regard, the following are very important:

- Rulebook on the Content and Methodology of Drafting, Harmonization, Updating and Storage of Risk Assessment Studies, as a basis for the development of protection and rescue plans
- Rulebook on Detailed Content and Methodology of Development, Methods of Harmonization, Updating and Storage of Protection and Rescue Plans
- Rulebook on the Manner of Organizing and Engaging Civil Protection Units Ordinance on Uniform Warning Signs and the Manner of Informing and Alerting
- Decision on the Appointment of the Manager, Deputy Manager and Members of the Protection and Rescue Coordination Team
- Decision on the Appointment of the Operational Headquarters for Protection and Rescue

The Law on Protection and Rescue is under the jurisdiction of the Ministry of Interior, and in addition to this law, the Ministry of Interior also administers **the Law on Explosive Substances, the Law on the Transport of Dangerous Goods and the Law on Flammable Liquids and Gases**.

In addition to this legislation, there are also sectoral laws, for which protection and rescue is not the primary area, but indirectly regulate issues in this area, including:

- **Forest Law**
- **Nature Protection Law**
- **Environmental Law**
- **The Law on Game and Hunting**
- **Water law**

- *Law on Spatial Planning and Construction of Facilities*
- *Law on Protection against Ionizing Radiation and Radiation Safety*
- *Law on Foreign Trade in Arms and Military Equipment*
- *Occupational Health and Safety Act*
- *Agricultural Land Law*
- *Law on Local Self-Government*
- *Law on the Red Cross of Montenegro*

Disaster risk reduction includes the implementation of a wide range of activities to analyse the causative factors of disasters, properly manage land and the environment, reduce exposure to hazards as well as the vulnerability of persons and property, and improve overall disaster preparedness. In this sense, other strategic documents are also used to develop this strategy, which include:

- *National Strategy for Sustainable Development by 2030*
- *Forest and Forestry Development Strategy*
- *National Strategy on Climate Change*
- *Agriculture and Rural Development Strategy*
- *Smart Specialization Strategy*

These strategic documents set out long-term goals for each of these areas, which, together with the aforementioned laws, represent the framework that covers all aspects of the landscape fire management.

1.2. INSTITUTIONAL FRAMEWORK

Article 3 of the Law on Protection and Rescue (Official Gazette of Montenegro 13/07, 32/11, 54/16, 146/21 and 3/23) provides that protection and rescue shall be conducted by state bodies, state administration authorities, local self-government units – municipalities, business organisation, entrepreneurs and other legal and natural persons.

For the purposes of this law, the protection and rescue system consists of:

- list of **state authorities** consisting of all ministries of the Government of Montenegro
- list of **state administration bodies** consisting of all state agencies, institutes, public enterprises, administrations and institutes at the state and local level as well as the State University of Montenegro
- list of **business organisations** consisting of economic operators and other legal entities and entrepreneurs that form protection and rescue action units.

This discourse delves into the complex structure of landscape fire management, exploring legal frameworks, key actors, public awareness and education initiatives, research efforts, and the crucial role of cross-sectoral and international cooperation in landscape fire management.

There are three levels of protection and rescue management, namely:

- **Coordination Team for Protection and Rescue**, headed by the Prime Minister, and all ministers are its members, as well as a representative of the General Secretariat of the Government for Public Relations and the President of the Government's working body for the assessment of damage from natural disasters

- **Operational Headquarters for Protection and Rescue**, which performs operational coordination of the activities of all participants in protection and rescue
- **The Municipal Protection and Rescue Team** headed by the President of the Municipality and consisting of a representative of the organizational unit of the Ministry in charge of protection and rescue affairs, heads of local self-government bodies, responsible persons in companies and other entities whose activities are related to protection and rescue, and a representative of the Red Cross.

Management in the protection and rescue system has been further improved by a legislative framework that enables the establishment of a protection and rescue team in a company, other legal entity and entrepreneurs.

Early announcement is essential for the successful management of this system, so the obligation to provide information by the competent authority for hydrometeorological affairs on the occurrence of extreme meteorological and hydrological situations and the provision of logistical support during extreme situations is legally recognized. Companies and other legal entities that publish meteorological and hydrological measurements are obliged to submit available data on the state of water and atmosphere within the zone at the time of fire-related events, with validation carried out by the competent authority for hydrometeorological affairs. Centralized collection of information and data that may endanger people, the environment, material and cultural assets is carried out in the Operational Communication Centre 112, which has the obligation to further inform state authorities, state administration bodies and municipal bodies, as well as all other participants in the protection and rescue system, in order to undertake preventive and operational activities, and if necessary, alerting them, thereby avoiding or reducing the consequences.

Protection and rescue are carried out based on the protection and rescue plans at three levels:

- National Protection Plans adopted by the Government
- Municipal Protection and Rescue Plans adopted by the Municipal Parliament
- Plans for Protection and Rescue of companies, other legal entities and entrepreneurs, adopted by the aforementioned organizations and persons, with the consent of the Ministry of Interior.

Protection and rescue plans are developed based on a risk assessment study, which is an integral part of the protection and rescue plan and whose preparation is preceded by the formation of a database on all hazards that threaten the territory of Montenegro, as well as a database on all available human and material resources of state bodies, state administration bodies, local self-government units, companies, entrepreneurs and other legal and natural persons, using new software technologies.

Given that numerous institutions are involved in the development of protection and rescue plans, depending on the level of planning, as well as representatives of scientific and professional institutions and experts in certain types of risks, their content should provide management with a good basis for making timely and quality decisions. Therefore, protection and rescue plans at the national and municipal level must include:

- protection and rescue measures;
- human and material resources of the operational units involved;
- human and material resources of state bodies, state administration bodies and municipal bodies, companies, other legal entities and entrepreneurs who can engage in protection and rescue;
- method of mobilization and activation of operational units;
- manner of management and coordination in protection and rescue activities;
- tasks of operational units and other participants in protection and rescue;

- manner of maintaining order and safety during the implementation of protection and rescue activities;
- way of informing the public;
- manner of cooperating with other municipalities or states in receiving and providing protection and rescue assistance;
- method of securing financial resources for the implementation of the plan;
- other measures and activities necessary for the implementation of protection and rescue, while the business plans also include:
 - duties and tasks of employees;
 - method of informing and alerting,
 - method of evacuation, and so on.

With the establishment of the Environmental Protection Agency, conditions were created for the implementation of EU goals and standards regarding environmental protection, as it is tasked with providing reliable and timely information to the public, national, and international bodies and organizations about the state of the environment in Montenegro. Article 66 of the Nature Protection Act defines the content of management plans and prescribes what a management plan for a protected area should contain. In this way, the rights and obligations held by the National Parks of Montenegro within this system are covered.

The Administration for the Management of Forests and Special-Purpose Hunting Grounds develops forest fire protection plans for forests of all ownership types, which include operational maps in the event of a forest fire, as well as passive and active duties for detecting and promptly reporting the occurrence of forest fires.

The Institute of Hydrometeorology and Seismology of Montenegro carries out the establishment, development, and operation of a methodological, hydrological observation and forecasting system throughout the entire territory. The Institute is responsible for establishing, ensuring the proper functioning of, and improving an early warning system for potential natural disasters of meteorological and hydrological origin. By efficiently operating the meteorological and hydrological network across Montenegro, and promptly informing relevant authorities about the potential occurrence of large-scale meteorological disasters, it directly, and in a highly demanding manner, enables the protection system to be put on alert for a swift and adequate response.

The Administration for Cadastre and State Property is a very important institution that has a wide range of responsibilities, significant for the use of spatial data necessary for the implementation of the LFM programme. The most important tasks for implementation include the development of geodetic standards for surveys, assessment of their accuracy, development and maintenance of the Geographic Information System (GIS), and cadastral land classification and evaluation.

The Directorate for Statistics performs tasks related to: the organization and implementation of official statistics, the collection of data from administrative sources, and the production of statistics from combined data sources; the collection, processing, statistical analysis, and publication of official statistics; the establishment, development, maintenance, updating, and use of statistical registers solely for statistical purposes.

Despite the large number of involved institutions and companies, this system is burdened by personnel and material shortages, which are the result of many factors. The greatest threats to the stability of this system are the brain drain and the departure of personnel of all profiles.

Problems in implementing measures to protect these forests also arise due to fragmented areas and a large number of owners, unresolved property-legal relations of forest owners, outdated cadastral data, and the inability to communicate with forest owners, considering that they are themselves legally responsible for protecting their property. Addressing these shortcomings and enhancing intersectoral cooperation among all participants is of vital importance for increasing the effectiveness of landscape fire management, both at the national level and at the regional level.

In the protection and rescue process, cooperation with the non-governmental sector for nature conservation plays a particularly important role. This includes activities promoting protection against landscape fire and raising public awareness, as well as the work of professional nongovernmental organisations aimed at improving the scientific database on fires and their management. No less important is the role of the civil sector at the international level with its participation in events of particular importance for the environment and nature.

1.3. PUBLIC AWARENESS AND EDUCATION

LFM as an approach has proven to be proactive in dealing with the increased threat of landscape fires, with a focus on environmental resilience and overall community benefit, with education and public awareness being very important components. The current situation shows that the current level of education about landscape fires is not satisfactory and that the introduction of cross-curricular education in secondary education is not a sufficient measure to increase the level of education in this area. The intention is to promote fire prevention and preparedness, evacuation planning and the importance of a healthy and resilient environment through dedicated educational programmes adapted for different ages and target groups. This can be achieved in various ways and is aimed at key target groups – from children, through landowners, to decision-makers.

Education is very important, encompassing all social groups, and should ideally start through the application of LFM in educational institutions. The best approach is the introduction of short educational modules or workshops that explain the role of fire in the ecosystem, the impact of climate change, and the dangers of human-caused fires. Various educational materials with simple messages on fire prevention, tailored to different age groups, can also contribute to this goal.

Humans, alongside climate change, have long been recognized as the greatest cause of landscape fires. This is a sufficient reason to pay special attention to landowners and farmers within the scope of education. Thus, it is necessary to organize workshops/training on safe and legally regulated controlled burning techniques, as an alternative to uncontrolled burning, which in most cases results in fire ignition. Additionally, it is important to organize workshops on proper vegetation management within fire-resilient practices, and in line with this, provide information on subsidies for the implementation of fire protection measures on private properties.

When it comes to raising the level of public awareness, it is necessary to involve the entire community in the process of fire protection and rescue at the landscape level, in order to understand the real danger to the environment and society as a whole. In this regard, it is necessary to carry out social media campaigns through videos, infographics, and posts to quickly convey key messages about prevention during dry periods. Additionally, it is essential to intensify cooperation with the media, where the long-term consequences of fires and the importance of LFM could be presented. One of the more modern approaches is setting up an interactive risk map on an online platform, where the current level of fire risk in one's area can be viewed. Raising public awareness can and should be carried out through specialized training and networking of stakeholders, through training sessions, simulations and field exercises, up to regional conferences. Field campaigns, workshops, promotional materials, along with intensive use of all types of media and new

information technologies, promote knowledge about understanding landscape fire, which would contribute to the maximum protection of landscapes and the environment from the harmful effects of fires. All of the activities mentioned together form the foundation for creating a culture of fire prevention and better community resilience.

1.4. RESEARCH ON FIRE MANAGEMENT AT THE LANDSCAPE LEVEL

Landscape fires are a global problem and each research serves as a basis to advance the science, technology, knowledge and practice of landscape fire management. Research related to landscape fires and landscape fire management (LFM) in Montenegro is still in its early stages and remains fragmented. Most existing studies focus on forest fires or the use of remote sensing and GIS tools for fire risk assessment, while comprehensive landscape-level analyses that integrate ecological, social, and management aspects are largely absent. In order to strengthen the scientific basis of LFM, Montenegro should promote interdisciplinary and applied research that connects the forestry, agriculture, spatial planning, and civil protection sectors. Several recent studies have attempted to map susceptibility to forest fires and fire severity using satellite data and modelling approaches. For example, studies have been conducted in the municipalities of Budva and Rožaje using GIS-based multi-criteria analysis to assess fire susceptibility (Simić, Milenković & Lukić, 2023), and vegetation recovery on the Luštica Peninsula have also been analysed using Sentinel-2 and.

These studies provide valuable insights into the spatial distribution and consequences after a fire, but they represent only a narrow segment of what a comprehensive fire management research framework should encompass. They primarily address the technical and spatial dimension of fire risk, while overlooking the broader interactions between changes in land use, fuel continuity, traditional land management practices, and community resilience.

Overall, scientific research in Montenegro related to LFM remains insufficient to support the planning and implementation of national and local evidence-based strategies. There is a noticeable lack of long-term ecological studies on fuel dynamics, experimental research on prescribed burning and fuel treatment effectiveness, as well as socio-economic assessments of the impact of fires on the landscape concerning rural households and tourism. Moreover, studies linking fire regimes with landscape planning, rural depopulation, and climate change are still missing.

To strengthen the scientific basis of LFM, Montenegro should promote interdisciplinary and applied research that connects the sectors of forestry, agriculture, spatial planning, and civil protection. Such research should aim to develop integrated landscape fire risk models, identify priority areas for prevention and remediation, and assess the effectiveness of management interventions. Establishing systematic monitoring and supporting collaboration between universities, research institutes, and fire management practitioners will be key for transitioning from limited case studies to a sustainable, knowledge-based LFM system in Montenegro.

Research determines the impact on the environment, socio-economic development, and provides evidence-based approaches to prevention, preparedness and land management. Research should initiate collaboration between scientists, practitioners and policymakers in order to adequately communicate results in order to develop action plans to improve community resilience, ecological restoration and adapted management, with an emphasis on areas vulnerable to landscape fires.

1.5. CROSS-SECTORAL / INSTITUTIONAL COOPERATION

The essence of the Landscape Fire Management (LFM) approach is focused on the complex interaction between natural processes and human activities. This simultaneously reduces fire risk, improves the resilience and quality of ecosystems, and promotes sustainable land management.

In such a system, it is necessary to identify and analyse the impact of participants in landscape fire management. This encompasses all actors in the forestry, environmental protection, rural development, state administration bodies, government bodies for civil protection, the scientific community, the local community, non-governmental organizations and policy makers and constitutes an important steps in the implementation of sustainable strategies and plans in this area. A unified national strategy must exist to implement such complex collaboration, and it should define:

- Roles and responsibilities of each sector/institution
- Communication protocols before, during, and after a fire
- Common objectives for risk reduction at the landscape level

Intersectoral cooperation links different functional areas relevant to the prevention, response, and recovery from fires. Although regulated by law, the key challenge remains its improvement and coordination at the operational level.

Inter-institutional cooperation involves partnerships between governmental, non-governmental, and international organisations and requires the coordination of resources. It operates at the operational level, the planning and prevention level, and the level of international and regional cooperation, such as:

- Regional projects
- EU mechanisms for civil protection

1.6. INTERNATIONAL COOPERATION

Landscape fires are a global problem, demanding the highest possible level of cooperation both regionally and internationally. International cooperation is primarily based on regional cooperation, where the formation of common positions on LFM and long-term commitments creates conditions for connecting with other regions. Within this framework of international cooperation, important collaborations include:

- In cooperation with DPPISSE, the LFM programme promotes the transition from traditional fire-fighting to a holistic, cross-sectoral, and regional approach. Such an approach involves improving the regional network and cooperation, promoting cross-border and multi-sectoral approaches, and strengthening capacities as well as exchanging experiences and expertise.
- LFM enables CPM to shift from reactive response to proactive risk management, which is the essence of modern civil protection. Such cooperation takes place through prevention as the foundation of collaboration, standardization and mutual understanding, a modular approach to resources and burden-sharing, and through multiple levels of coordination.
- LFM fundamentally strengthens regional partnership in Western Balkan by introducing a shared, long-term vision and framework for cross-border cooperation in prevention and response. LFM achieves this by establishing a common platform for action, standardization and joint protocols, and long-term commitment and knowledge exchange.
- The connection between LFM and the FAO Global Fire Monitoring Hub (GFMH) is reflected in the joint promotion of a sustainable and preventive approach at the global level. This is achieved

through the exchange of data and knowledge, capacity building and training, and support for policy development.

In such conditions, international programmes, competitions, trainings and other forms of cooperation provide new knowledge, practices and technologies, which increases the capacities for cooperation at the regional level, and creates good preconditions for expanding cooperation at the international level. This approach provides easy access to information, eliminates repetitive research, and promotes innovation. On the other hand, Montenegro must increase its financial capabilities to remain a permanent member of such a community and to be able to exchange good practices in this field, with the aim of strengthening ecosystem resilience and delivering benefits to the wider community.

Landscape fires in Montenegro, driven by climate change, inappropriate land use, and excessive land-use change, result in large outbreaks that often cannot be controlled and result in ecosystem degradation with subsequent secondary damage such as topsoil loss, floods, erosion and landslides, which in turn leads to a loss of stability, biodiversity and productivity of the natural and cultural landscape.

1.7. LFM GUIDELINES

Currently, fire risk management and institutional arrangements are not sufficient for an adequate response to the rising trend. Existing planning must incorporate elements of uniqueness and comprehensiveness, with an emphasis on prevention, thereby increasing the resilience of the environment, society as a whole, and the economy, which are also the principles of the LFM programme. This implies a cross-sectoral approach in risk management and ownership, dialogue with stakeholders, a socio-economic approach through innovations in rural areas, enhanced local actions, all of which lead to the creation of resilient ecosystems and communities.

Through the work of the national LFM network, national LFM guidelines have been developed with the aim of identifying key measures for defining the national management policy. The guidance established by the work of the national LFM network is fully in line with the following conclusions of the SWOT analysis:

- improvement of legislation, inspection, condition and scope of equipment, management and co-ordination, early warning system, insurance policies and any other improvements should be in line with the LFM principle;
- climate change adaptation measures in key sectors by including LFM;
- enhanced preventive measures in forestry practices using LFM;
- introduction of the LFM concept in afforestation and post-fire management;
- promotion of the idea of independence of the Protection and Rescue Directorate (PRD);
- digitization of data;
- initiation of a higher level of preparation of planning documentation;
- establishment of civil protection units;
- establishment of clear procedures for the exchange of information between institutions;
- establishment of a typology of combustible material;
- creating a single database.
- promoting volunteering;
- raising awareness and training decision-makers;
- introduction of fire safety education into the school curriculum.

2. LANDSCAPE FIRE MANAGEMENT AND THE ENVIRONMENT

2.1. THE PROTECTIVE ROLE OF THE LANDSCAPE

A landscape is the overall character of an area, shaped by the interaction between nature and human activity. Many factors, and above all climate change, determine the most important role of landscapes, and that is the protective role, which is reflected in their ability to ensure stable ecosystems and natural habitats. Landscapes are an integral part of nature and play a key role in the conservation of biodiversity, while different ecosystems provide habitats for flora, fauna and microorganisms and have the function of natural air purifiers and act as climate regulators. The hilly and mountainous landscapes that we have in most of the territory of Montenegro play an important role in water retention and quality, as well as in preventing soil erosion and the consequences that occur. Thus, adaptive landscape management, which ensures the protective role of the landscape, consists of procedures designed—within the framework of sustainable development—to maintain the landscape while directing and harmonising transformations driven by social and economic development and environmental processes.

2.2. CONSERVATION OF BIODIVERSITY

The diversity of species keeps the global ecosystem in balance, thereby ensuring resilience to environmental disturbances and supporting the basic functions of ecosystems. Adaptive land management plays a key role in preserving biodiversity by maintaining habitat diversity, species richness, and genetic variability. By including biodiversity conservation goals in fire management strategies at the landscape level, we aim to reduce the negative impacts of fires on sensitive species and ecosystems. Biodiversity conservation provides a range of benefits for societies, including enhanced ecosystem services, recreational opportunities, and cultural values associated with biodiversity-rich landscapes.

2.3. CLIMATE CHANGE

The National Strategy for Climate Change by 2030 is a key instrument in the field of public policy for managing climate change in Montenegro, and it prescribes the government's obligation to act against climate change in an integrated and multisectoral manner, while respecting the international commitments undertaken under the UNFCCC. To ensure the continuity and legitimacy of efforts undertaken within the framework of the National Strategy for Climate Change, Montenegro adopted the Law on Protection against the Adverse Effects of Climate Change in December 2019. The aim of the Law is to protect against the negative effects of climate change, reduce greenhouse gas emissions, and protect the ozone layer. Montenegro is particularly vulnerable to climate change and variable conditions, as well as to extreme weather events. The application of **IPCC** scenarios in Montenegro is crucial for national climate change planning, adaptation, and disaster risk reduction strategies. Although **IPCC** scenarios are global, Montenegro uses them to generate regional and local climate projections through a complex process called

dynamic and statistical downscaling. Scientists and institutions in Montenegro take global **IPCC** scenarios and use them to drive regional climate models, which produce projections for Montenegro, focusing on the following key changes:

- **Air temperature** – significant increase, especially during the summer months
- **Precipitation** – a decrease in the amount of rainfall, especially in summer, and the occurrence of more intense but less frequent showers
- **Extreme weather events** – increased frequency and intensity of heatwaves and longer periods of drought

These climate projections directly impact LFM strategy because higher IPCC scenarios (RCP8.5, for example) predict conditions extremely favourable for fire spread, which increases the risk of fires due to longer and more intense heatwaves, which, combined with drought, drastically increase vegetation dryness, extend the fire season, and raise the likelihood of catastrophic fires. For all these reasons, Montenegro uses these projections for proactive planning aimed at identifying hotspots, creating strategic plans, and strengthening capacity.

IPCC scenarios are used to assess the risk of achieving the Nationally Determined Contribution (**NDC**). The Parliament of Montenegro adopted the Law on the Ratification of the Paris Agreement on October 11, 2017. Thus, Montenegro became a contracting party to the Paris Agreement, committing to contribute to the global reduction of greenhouse gas (GHG) emissions. Montenegro has pledged to reduce GHG emissions by at least 1,572 ktCO₂eq, to a level of 3,667 kt CO₂eq or less. Montenegro's contribution to international efforts to address climate change, expressed through its Intended Nationally Determined Contribution (**INDC**) to reducing **GHG** emissions, is set as a reduction of at least 30% by 2030 compared to the 1990 baseline. If the climate follows the indicated scenarios, the risk of wildfires and CO₂ emissions from forest ecosystems will be higher, which makes it more difficult to achieve the GHG emission reduction target that Montenegro has committed to.

National Appropriate Mitigation Action (NAMA) is a concept arising from the United **Nations Framework Convention on Climate Change (UNFCCC)** and refers to voluntary actions taken by Montenegro, as a country in transition, to reduce greenhouse gas (**GHG**) emissions. Although Montenegro has since moved to more ambitious commitments through the Paris Agreement **NDC**, the main goal of **NAMA** was to enable Montenegro's transition to low-carbon development and to build institutional capacity for implementing climate policies.

The National Adaptation Plan (NAP) in Montenegro is a strategic document that provides a framework for medium- and long-term planning of actions aimed at reducing vulnerability to the effects of climate change. The main goal of the NAP is to integrate climate change adaptation into all relevant national and sectoral policies and planning and budgeting programmes. In this regard, the specific objectives are:

- **reducing vulnerability** – identifying the most vulnerable sectors and decreasing their risk from climate impacts
- **capacity building** – strengthening institutional, technical, and financial capacities for planning and implementing adaptation measures
- **adaptation integration** – ensuring that adaptation measures are incorporated into **development plans at all levels**

Montenegro, as a Mediterranean country, faces specific risks, so priority sectors are defined based on climate projections:

- **Water management** – measures include better management of water resources, protection of sources, and improvement of irrigation infrastructure

- **Agriculture** – encouraging the introduction of crops resistant to drought and heat, improving systems for protection against hail and frost
- **Healthcare** – preparing the health system for an increased number of heat strokes, infectious diseases, and allergies
- **Tourism (coast)** – protection of the coast from sea level rise, erosion, and extreme weather events that threaten infrastructure
- **Disaster Risk Reduction (DRR)** – including LFM planning for increased frequency and intensity of forest fires and floods

The **NAP** directly supports the LFM strategy, as wildfires at the landscape level and droughts are among the most pronounced impacts of climate change in Montenegro. The NAP defines funding priorities by allowing wildfires prevention measures to be financed as key adaptive measures. On the other hand, the **NAP** requires wildfire risks to be incorporated into the spatial planning documentation of municipalities.

3. LANDSCAPE FIRE MANAGEMENT AND SOCIO-ECONOMIC ASPECTS

The objectives of this strategy, regarding socio-economic aspects, are:

- improving conditions for the economic development of rural areas;
- increasing the productivity of agricultural land;
- creating conditions for the intensive development of rural tourism;
- increasing the use of other ecosystem functions.

Improving conditions for the economic development of rural areas is reflected through various measures, the most significant of which are creating new jobs in agriculture, rural tourism, and forestry, providing educational opportunities, and maintaining a well-developed healthcare system.

Increasing the productivity of agricultural land is reflected through updating cadastral records, implementing land consolidation, and supporting agriculture and livestock farming, in order to restore traditional landscape management in rural areas.

Improving conditions for the intensive development of rural tourism can be achieved through support for traditional socio-economic practices for rural development, improved road infrastructure, subsidies for branding local products and family businesses characteristic of the rural environment.

Intensifying the use of other ecosystem functions is reflected in the conservation of natural areas and the reduction of landscape fire risk, increasing the sustainable use of other ecosystem functions, and through educating the local population about the importance of preserving natural areas.

In 2008, Montenegro ratified the “**European Landscape Convention**,” joining the countries that have shown readiness to take sustainable development into account in strategic documents and plans and recognize areas as an important factor in establishing a balance between natural and cultural heritage. The implementation of this convention takes place through the Law on Nature Conservation and the Law on Environmental Impact Assessment, which define the areas. The areas are included in physical planning as an integral part of state and local planning documents, as well as a mandatory part of the project documentation. Hence, all prerequisites for the integration of landscape policy (planning, protection and management) across every level of spatial and urban planning, sectoral plans, and environmental protection programmes, cultural programmes, and programmes from any other sector, which may have a direct or indirect impact on the area, have been met. Such a comprehensive approach demonstrates that fire management at the district level is a key element in safeguarding the environment and supporting community wellbeing. The LFM encompasses a wide range of principles whose application makes a significant contribution to the development of rural areas, poverty reduction, improvement of living conditions and community well-being. With the consistent application of measures and activities related to environmental issues and social dynamics, fire management becomes a factor on which the increase in the resilience and sustainability of rural areas depends the most.

4. SWOT ANALYSIS

The analysis of strengths and weaknesses in regional fire risk reduction provides a highly accurate assessment of the situation clearly outlining the vision, mission, and strategic directions for disaster risk reduction, while focusing on the essence and purpose of the planned activities and measures to be implemented. Achieving more efficient regional landscape fire management requires cooperation between government agencies, local communities, and environmental protection organizations. Together, they can design and implement comprehensive fire prevention and preparedness plans, including community engagement, awareness-raising campaigns, and capacity-building initiatives. Through a comprehensive approach to land management, where uncultivated land and forests are perceived on the same level, Montenegro can better protect its natural heritage and its citizens from the harmful effects of landscape wildfires and wildfires in nature.

Montenegro has set the goal of implementing the *Sendai Framework* for disaster risk reduction measures by 2030, with 2015 marking the beginning. This requires changes to the existing legal framework that covers the entire disaster management cycle. Additionally, it is necessary to improve cooperation at international and regional levels, and to expand the technical and technological capacities of the early warning system. The level of scientific research and cooperation with local and international experts needs to be improved, and an equally important option is the appropriate use of experiences and databases on disasters that have occurred naturally or due to human influence, with the aim of defining more successful policies in this area.

In line with the principles of the LFM programme set out in the National Report, a SWOT analysis was conducted across the different phases of LFM.

PREVENTION

ADVANTAGES	WEAKNESSES
Good legal, strategic, and institutional framework	Insufficient implementation of the law
Planned regulations at all three levels in accordance with the Law on Protection and Rescue	There is no law on fires
Institutional and administrative capacity available	Inconsistency of sectoral laws with the Law on Protection of Grazing
Disaster risk reduction coordination bodies have been established	Insufficient professional and technical training
Applied management of selective and regenerative cutting	The existence of large areas under monocultures of conifers
NFIS - early warning system	Discontinuity of political decisions
Interdisciplinary teaching in the area of risk reduction is established in collaboration with the Ministry of Education	Unsatisfactory penal policy
Established inter-sectoral and international cooperation	Large areas of abandoned and uncultivated land
International projects and international financing	Unregulated urban expansion and the creation of unclear boundaries between urban areas and forests
	Irregular methodology of data collection

PREPAREDNESS

ADVANTAGES	WEAKNESSES
Coordination of the work of all institutions, from national to local level and individuals, has been established	Financial constraints for application of new technologies
Relatively favourable structure of personnel in operational protection and rescue units	Lack of fire risk maps with all necessary and available data
Operational protection and rescue have been established	Unfavourable openness of forests and forest complexes
The coordination team for protection and rescue, as well as the municipal teams for protection and rescue, are in the field	Planning deficiencies in the design of fire and safety routes
All operational protection and rescue units are established in accordance with the Law on Protection and Rescue, except for civil protection units	A high percentage of inaccessible forests and forest lands, as well as poor maintenance of road infrastructure.
Cooperation with international organizations and agencies involved in protection and rescue, as well as disaster risk reduction, with the aim of exchanging knowledge and resources	Inadequate radio system for the functioning of professional services
Cooperation with NATO and EU member states	Unplanned procurement and inadequate maintenance of equipment and material-technical resources as well as personal and collective equipment do not comply with the standards prescribed by the EU
	Lack of adequate fuel management methods

SUPPRESSION

ADVANTAGES	WEAKNESSES
Coordination at all levels in accordance with the Law on Protection and Rescue	Lack of computer equipment for people managing firefighting operations
Good knowledge of the terrain by municipal protection and rescue services	Insufficient accessibility of forests and forest complexes
Good cooperation with local communities and the population	Poor maintenance of road infrastructure
There is already a certain level of training for protective and rescue services and other operational units	Lack of fire protection equipment
	Preparation of a new Volunteer Law or amendments to the existing law

MANAGEMENT AFTER THE FIRE

ADVANTAGES	WEAKNESSES
Regulations and management plans after the fire are already in place	Insufficient quality of existing regulations and plans
Staff exists in institutions	Lack of implementation of existing regulations and measures contained in planning documents
	Lack of training of existing human resources

5. LINKING THE NATIONAL LFM STRATEGY WITH THE NATIONAL, REGIONAL, AND INTERNATIONAL CONTEXT

5.1 LINKING LFM STRATEGY WITH NATIONAL STRATEGIC DOCUMENTS

Coordination and cooperation are of great importance for the successful implementation of the LFM strategy, and in order to efficiently manage fires at the landscape level, it is necessary to align various strategic documents related to environmental management, protection and rescue, land management, etc., ensuring that sectoral policies and institutions are aligned in their efforts to manage landscape fires.

LIST OF DOCUMENTS

- National Security Strategy of Montenegro
- National Strategy for Sustainable Development by 2030
- National Water Management Strategy of Montenegro
- Strategy for the Development of Forestry and Forests
- National Strategy on Climate Change
- National Biodiversity Strategy
- Agriculture and Rural Development Strategy
- Energy Efficiency Strategy of Montenegro
- Disaster Risk Reduction Strategy
- Strategy for Protection Against Ionizing Radiation, Radiation Safety and Management of Radioactive Waste
- Tourism Development Strategy of Montenegro
- Smart Specialization Strategy
- National Waste Management Plan
- Spatial Plan of Montenegro
- Hunting Development Programme

5.2. INTERNATIONAL COOPERATION

Landscape fires, with their frequency and intensity, are a global problem that has no borders and negatively affects ecosystems, people and communities around the world. Managing landscape fires is a complex challenge that requires coordinated efforts at different levels of management and geographical regions, given that the frequency and intensity of fires are increasing due to the impact of climate changes, the conclusion of inevitable cooperation at the regional and international level is imposed. Joint work of countries at the regional level improves their own capacities for fire management at the regional level, since only a joint approach at the regional level can create resilient landscapes, enhance firefighting capacities, and finally, promote a sense of shared responsibility.

International cooperation involves joint efforts by countries and organisations from different regions to address the complex challenges posed by landscape fires, to share knowledge and resources, and to implement coordinated prevention, mitigation and response strategies. This subchapter discusses areas of focus, goals, and activities for promoting cooperation among countries and organizations around the world.

6. TRANSFORMATION OF ADAPTED LANDSCAPE FIRE MANAGEMENT STRATEGY INTO ACTIONS

The transformation of the LFM strategy into actions moves in two directions, namely:

- strategic planning
- coordination and collaboration

The quality of the strategy depends on its ability to be integrated into daily practice through coordinated strategic planning on one hand, and its ability to ensure the participation and alignment of various policies and institutions in order to prevent and manage fires, on the other hand. Through this approach, the Government of Montenegro can ensure the development and alignment of the overall legal framework necessary for the implementation of the Property Management Strategy and property management.

6.1. STRATEGIC PLANNING

The future strategy must be based on certain principles to serve as a common area for all concerned public sectors that implement public policies. This means that the strategy must demonstrate:

- maximum alignment at all levels of fire management planning at the national level, climate change adaptation plans, environmental protection policies, and all relevant strategies;
- responsibility, influence, and support for implementation by each member of the LFM network;
- defining actions, responsibilities, and deadlines;
- maximum possibility of monitoring and evaluation;
- relevance of data to real goals, resources, and expected outcomes;
- transparency of the action plan

7. STRATEGY – VISION, GOALS, TASKS

7.1. VISION OF THE STRATEGY

In Montenegro, fire-resistant landscapes, rural communities, and ecosystems are protected through effective preventive measures, integrated policies, strong institutional and community capacities, and sustainable rural development that supports long-term environmental resilience and socio-economic resilience.

7.2. STRATEGIC AND SPECIAL OBJECTIVES OF THE FIRE ADAPTIVE MANAGEMENT STRATEGY AT THE LANDSCAPE LEVEL IN MONTENEGRO

The following strategic goals have been identified by the stakeholders:

1. Improve landscape fire prevention
2. Develop and implement effective policies for integrated fire management
3. Strengthen institutional, technical, and community capacities for landscape fire management
4. Promote sustainable rural development as a foundation for long-term fire resilience

Following the methodology for the development of strategic documents in Montenegro, specific objectives have been defined for each of the strategic goals.

Strategic goal 1: Improve landscape fire prevention

Specific goals:

- 1.1 Develop and operationalize a comprehensive landscape fire risk map that integrates data from forest management programmes, private forest plans, and Natura 2000 sites, in order to identify high-risk areas for prevention strategies, prioritised accordingly.
- 1.2 Conduct a national awareness campaign that combines media engagement and interdisciplinary educational programmes to promote adaptable approaches to land use and fire management practices in the public.

Strategic goal 2: Develop and implement effective policies for integrated landscape fire management

Specific goals:

- 2.1 To conduct a comprehensive assessment of the existing legal and strategic frameworks in order to identify deficiencies related to landscape fire management and to develop new legislation.

2.2 Increase cooperation and engagement of participants in landscape fire management.

Strategic goal 3: Strengthen institutional, technical, and joint capacities for fire management

Specific goals:

- 3.1 Enhance the skills and competencies of LFM participants
- 3.2 Strengthen the technical capacities for efficient LFM

Strategic goal 4: Promote sustainable rural development as a foundation for long-term fire resilience

Specific goals:

- 4.1 Increase of funds for the development of life in rural areas and resilience to fires
- 4.2 Integration of rural communities into broader rural development strategies

This strategy would contribute to integrating fire risk reduction into regional development policies and plans, achieving sustainable development goals, building capacities, and enhancing community resilience to disasters.

8. ACTION PLAN

The intention of this action plan is an approach that combines efforts for prevention, preparation, response, and rehabilitation of burned areas. This action plan emphasizes the importance of cooperation among all stakeholders at all levels, especially considering that there are a large number of participants with different interests in the system. This is also the reason why each component of the action plan has been carefully prepared to identify specific shortcomings in the fire management system, with clearly defined responsibilities and allocation of resources. By means of the defined activities, the dynamics of implementation, institutional responsibility for each measure, indicators for executed measures and activities, as well as the necessary financial resources for implementation, are established.

A very important quality of this strategy is the proposal to align existing legal frameworks with respective legislation in the EU. For this strategy to be successfully implemented, it is necessary to actively participate and cooperate with all stakeholders in fire management at the regional level, as the success of implementing the proposed measures is directly related to the level of joint and synchronized action of participants in the implementation process.

Table 1 Action Plan

Serial number	Aktivitiy	Implementation period	Responsible institutions	Involved partners	Estimated budget (EUR)
Strategic goal 1: IMPROVED/BETTER PREVENTION OF LANDSCAPE FIRES					
1.1	Development of forest management programmes	2026 - 2030	Forest and Game Management Authority (FGMA)	Ministry of Agriculture, Forestry and Water Management (MAFW)	3.000.000
1.2	Preparation of planning documentation for forests in private ownership	2026 – continuously	MAFW FGMA	Private owners	500.000
1.3	Development of a national landscape fire risk map with databases	2026 - 2030	MAFW	Ministry of Interior (MIA), FGMA, Agency for Environmental Protection (EPA), Republic Hydrometeorological and Seismological Institute (RHSI)	200.000
1.4	Development of a strategy for involving the media in raising awareness and support for LFM	2026 - 2030	Ministry of Culture and Media (MCM)	All entities under the Law on Protection and Rescue, Government Secretariat for Public Relations	10.450

1.5	Strengthening and implementing the interdisciplinary educational programme	2026 - 2030	Ministry of Education (ME), MIA	Ministry of Education, Science and Innovation (MESI), MIA, Directorate for Protection and Rescue	50.000
1.6	Implementation of a campaign to raise awareness focused on adaptive approaches to land use and fire management	2026 - 2030	FGMA	MAFW, MIA	10.000 - Annually
Strategic goal 2: DEVELOPING AND IMPLEMENTING AN EFFECTIVE POLICY FOR INTEGRATED LANDSCAPE FIRE MANAGEMENT					
2.1	GAP analysis identifies gaps and weaknesses in the existing legal and strategic framework related to landscape fire management	2026	MAFW	Government with ministries, state authorities, local self-governments, national parks, NGOs, private sector	10.000
2.2	Addressing identified deficiencies to ensure compliance with national legislation and existing LFM systems	2026 – 2028 - continuously	MIA MAFW MESDND	Government with ministries, state authorities, local self-governments, national parks, NGOs, private sector	150.000
2.3	Development and organization of specialized training programmes for the judiciary and prosecution related to LFM	2026 – North 2027 – Centre 2028 - South	MAFW	Ministry of Justice (MJ) MIA, Education Centre for the Judiciary and Prosecution	20.000
2.4	Establishment of a coordinating body for the implementation and monitoring of LFM	It should have been established by the end of 2025, with a deadline of 2030	MAFW	All entities under the Law on Protection and Rescue, EPA, farmers	3.000
2.5	Creating guidelines for the integration of LFM into management plans for protected areas and NATURA 2000	2026 - 2030	(MESDND)	MAFW, EPA, FGMA, National Parks (NP), private forest owners, protected areas	20.000

2.6	Drafting the Law on Fire	2026	MIA	All entities under the Law on Protection and Rescue, EPA, farmers	5.000
2.7	Drafting the Law on Recovery and the procedure for granting assistance to establish normal life in areas affected by disasters, as well as the protection of human life and health, property, animals, the environment, and natural and cultural heritage	2026	MIA	All entities under the Law on Protection and Rescue, EPA, farmers	5.000
2.8	Drafting the Law on Protection and Rescue with included LFM principles	2027 - 2028	MIA	All entities under the Law on Protection and Rescue, EPA, farmers	5.000
2.9	Participation in activities within the framework of DPPISEE	2026 - continuously	MIA	All entities under the Law on Protection and Rescue, EPA, farmers	150.000 - Annually
2.10	Improving cooperation with international institutions	2026 - continuously	MIA	All entities under the Law on Protection and Rescue, EPA, farmers	150.000 - Annually
2.11	Organizing international study visits with a focus on thematic areas relevant to LFM	2 times per year - continuously	MI, MAFW, MESDDN, MSPUSP, MRIDCNGO	Local governments, NGOs, Farmers association, RHSI, NTO	100,000 - Annually
2.12	Implementation of regular monitoring and reporting mechanisms to track progress and impact on adaptive landscape management at all levels, with cross-sectoral collaboration	2026 - continuously	MAFW MIA FGMA	All entities under the Law on Protection and Rescue, EPA, farmers	30.000 - Annually

2.13	Design and implementation of a grant programme for agricultural producers aimed at strengthening agricultural production and better land use	Annually	MAFW	EU, local self-government, Association of agricultural producers (AAP)	100.000
2.14	Design and implementation of a funding allocation programme for non-governmental organizations involvement of the community and key stakeholders in the development processes	Annually	MAFW	EU, local self-government, NGO	80.000
Strategic goal 3: STRENGTHENING INSTITUTIONAL, TECHNICAL AND JOINT CAPACITIES FOR LFM					
3.1	Assessment of current institutional and operational capacities and the initiation of database development to support informed decision-making	6 months	MAFW	MIA, public administration bodies, local self-government, private sector, AAP	30.000
3.2	Legal operationalization of the National Training Centre for Protection and Rescue	2026 - 2028	MIA	All entities under the Law on Protection and Rescue, EPA, farmers	300.000
3.3	Improvement of skills and competencies of staff within institutions responsible for LFM	5 years in continuity	MAFW	MIA, public administration bodies, local self-government, private sector	8.000.000
3.4	Increase the capacity of all entities according to the Law on Protection and Rescue in order to efficiently implement the LFM	It should have been established by the end of 2025, with a deadline of 2030	MAFW MIA	All entities under the Law on Protection and Rescue, EPA, farmers Human Resources Department (HRD)	45.000 - Annually

3.5	Organization and implementation of training programmes for key stakeholders involved in landscape fire management, including: • trainers • instructors • members of Fire Services • members of voluntary fire services • members of specialist units for protection and rescue • entrepreneurial units for protection and rescue	2026- 2030	MIA	MAFW, FGMA, local governments, public enterprises, national parks, protected areas	1.600.000
3.6	Training of local communities and institutions on the connection between LFM and NATURA 2000	2026 – continuously	MESDND	MAFW, MIA, EPA, local governments, NGO	20.000
3.7	Improving the competencies of decision-makers in LFM and related fields	5 years in continuity	Government MIA State bodies	MAFW, FGMA, NPCG, MEORRS, NTO	1.000.000
3.8	Preparation of entrepreneurial plans in the field of protection and rescue and landscape fire management	2026 - 2030	MIA	FGMA, protected areas, entrepreneurial companies	100.000
3.9	Strengthening technical capacities through the procurement of • fire vehicles and command vehicles • equipment for the command centre • drones, thermal cameras, detectors, and screens	2026- 2030	Government MIA Local governments	All entities under the Law on Protection and Rescue	70.000.000

3.10	Procurement of firefighting equipment for protection and rescue services	2026 - 2030	Local governments	MF, MPA	500.000
3.11	Procurement of a multifunctional helicopter	2026- 2030	MIA	MF	34.000.000
3.12	Procurement of firefighting aircraft	2026- 2030	MIA	MF	6.000.000
3.13	Preparation of an acoustic study within public alerting includes the analysis of sound parameters, selection of optimal locations for installing warning systems, as well as procurement and installation of necessary equipment	2026- 2030	Local governments	MIA	1.250.000
3.14	Procurement and installation of landscape fire early detection system	2026- 2030	Ministry of Finance Local Government	MIA, MAFW, FGMA, RHSI, NP EU projects and all entities under the Law on Protection and Rescue	7.500.000
3.15	Construction of fire protection infrastructure in forests	2026 - 2030	MAFW	FGMA, local governments, private companies	5.000.000
3.16	Preparation and execution of exercises to test the level of coordination, communication, and readiness of subjects from the LFM network according to landscape fire risk scenarios	2026 - 2030	MIA	Local governments and all entities under the Law on Protection and Rescue	120.000
3.17	Organization of field training for the practical application of LFM strategies	2026 - 2030	MIA	Local governments	100.000

Strategic goal 4: PROMOTION OF SUSTAINABLE RURAL DEVELOPMENT AS THE BASIS FOR LONG-TERM RESILIENCE TO FIRES

4.1	Support for the implementation of the strategy for agriculture and rural development	2026 - 2030	MIA	Ministry of Finance, local governments, agricultural producers, Association of Olive Growers	3.000.000
4.2	Increase in subsidies for farmers in rural areas	2026 - 2030	Government	MF, MAFW	5% budget
4.3	Creating conditions to increase the number of farms	2026 - 2030	Ministry of Spatial Planning, Urbanism and State Property (MSPUSP)	MAFW, local governments	160,000 - Annually
4.4	Facilitating the procurement of small livestock for farmers	2026 - 2030	MAFW	Local governments, AAP	120,000 - Annually
4.5	Support for the development of rural tourism	2026 - 2030	Ministry of Tourism (MT) MAFW Local Governments	MT, local governments	8.000.000
4.6	Promotion of small businesses in rural areas	2026 - 2030	MT, MAFW	Agricultural clusters, NGO, Network of Rural Development	100,000 - Annually

9. MONITORING

Table 2. Monitoring indicators of strategic and specific goals

No.	Strategic and specific objectives, indicators and actions	Basic value	Temporary goal [2028]	Goal for the final year (2031)	Result
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Strategic objective 1: IMPROVE LANDSCAPE FIRE PREVENTION

	Indicator	Basic value	Temporary objective [2028]	Objective for the final year [2031]	Result
1	Annual number of open fires per 100,000 hectares	8 fires per 100,000 ha	Maintain the status quo	Maintain the status quo	Measurement of reductions in the frequency of outdoor fires, indicating improved effectiveness of prevention strategies and increased landscape resilience

Specific objective 1.1 Development and operational implementation of a comprehensive fire risk map in the area that integrates data from forest management programmes, planning in private forests and Natura 2000 areas in order to identify and prioritize high risk areas for targeted prevention strategies

	Indicator	Basic value	Temporary objective [2028]	Objective for the final year [2031]	Result
1.11	Reducing the number of landscape fires in high-risk areas: Measure the percentage reduction in the annual occurrence of fire in the area within the area identified as high risk according to the fire risk map, which indicates the effectiveness of the targeted prevention strategy	There is no map	Obtain the necessary data and a clear methodology for creating the necessary map	Creating a map	Reduction of the number of landscape fires in high-risk areas

1.12	Reduction of the total area affected by fires in the area: It tracks annual reductions in acres of land burned by landscape fires, particularly within high-risk zones defined by the fire risk map, reflecting improved fire management and prevention efforts	The average area affected by fires per year is 500 ha	Staying on an area of 500 ha	Reduction of fire areas up to 300 ha through capacity building	Improved ability to identify and prioritize high-risk areas, facilitating the targeting of prevention strategies and efficient resource allocation, thereby reducing the frequency and impact of wildfires
1.13	Improving response time to wildfire incidents	Far from the one that meets the needs	Effective implementation of action plans	Improve the early fire detection system, the level of equipment, infrastructure and required human resources	

Specific objective 1.2. Implement a national awareness campaign that combines media engagement and interdisciplinary education programmes to promote adaptive landscape approaches and fire management practices to the public

	Indicator	Basic value	Temporary objective [2028]	Objective for the final year [2031]	Result
1.21	Public Awareness of Fire Prevention Practices (Percentage Increase) Measured by change in the proportion of the population demonstrating knowledge of adaptive range and fire management practices through a pre- and post-campaign survey	Low level of public awareness	Adopting a joint communication plan with the aim of significantly improving the number and quality of campaigns	Implementation of communication plans	Percentage increase in public awareness of fire prevention practices
1.22	Number of educational institutions that have included LFM topics in their teaching materials as a result of the campaign	It doesn't exist	Provide institutions with included LFM teaching material	Implementation of educational programmes	Number of educational institutions that, due to the campaign, have included Landscape Fire Management (LFM) topics in their teaching materials

1.23	Reduction of human causes of fire incidents in nature A reduction in the number of wildfires attributed to human activities, which indicates the effectiveness of the campaign in changing public behaviour	It doesn't exist	Introducing the public to penal policies	Maximum implementation of the penal policy	Increased public awareness and adoption of adaptive landscape and fire management practices, leading to a measurable reduction in human-caused landscape fires
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Strategic objective 2: DEVELOP AND IMPLEMENT EFFECTIVE POLICIES FOR INTEGRATED FIRE MANAGEMENT IN THE REGION

	Indicator	Basic value	Temporary objective [2028]	Objective for the final year [2031]	Result
2	Reduction of the annual number and area of fires in the area	95 fires per year with an area of 500 ha	Maintaining the status quo	Reduction of the number of fires and burnt area through better management	The increased effectiveness of LFM policies leads to a significant reduction in the occurrence of fires in the region and affected areas, thereby improving ecosystem resilience and community protection

Specific objective 2.1 Conduct a comprehensive assessment of existing legal and strategic frameworks to identify gaps in fire management in the area and develop new legislation

2.11	Number of laws and regulations revised or enacted related to fire management	15 laws and 20 regulations	Application of the law and amendments as necessary	Effective implementation of the law	
2.12	Degree of compliance of national policies with international fire management standards	High degree of compliance	Full compliance	Full implementation	Improved legal and strategic frameworks for rangeland fire management, leading to improved management, coordination and efficiency in rangeland fire prevention and mitigation
2.13	Increasing resources, training and institutional capacity dedicated to the implementation of laws and policies related to LFM, indicating a commitment to effective implementation	There is already an established national LFM network	• Training plan development • Adopt a training plan • Establish a long-term system of hiring, motivating and retaining staff	Application of training plans and established system	

Specific objective 2.2 Increase cooperation and engagement of participants in fire management in the area

	Indicator	Basic value	Temporary objective [2028]	Objective for the final year [2030]	Result
2.21	Increasing the number of collaborative projects or programmes involving different actors (e.g., state agencies, local communities, non-governmental organizations) actively participating in the landscape fire management activities	Low level of vertical and horizontal cooperation among all basic and relevant entities aimed at more efficient integration and implementation of preventive and operational activities, with an emphasis on landscape fire management	Organizing and conducting consultations of all relevant entities for fire protection, on the topic of fully understanding responsibilities and possible forms of cooperation, with the aim of implementing joint projects and utilizing all available funds	Implementation of a project on training teams for protection and rescue for more efficient landscape fire management, equipping them with basic IT equipment for successful response and improving decision-making efficiency	Improved cooperation of all legally responsible entities for fire protection and rescue, with an emphasis on coordination and landscape fire management, more effective prevention, and more efficient operational response
2.22	Improved integration of participant input into LFM policies	Low level of awareness of the importance and effects of cooperation, the potential contributions of constant and active communication, and the more successful implementation of activities in the field of landscape fire prevention and management	Creating a detailed database for all landscape fire protection and rescue entities, with an emphasis on assessing human intangible resources	Implementation of planned activities with the aim of better mutual acquaintance of key actors in fire protection, increasing the level of knowledge and awareness about the landscape and forests, and considering essential activities to reduce the number of landscape fires and improve fire management	Increased level of cooperation, trust, communication, and awareness among all stakeholders in the landscape fire management

Strategic objective 3: STRENGTHEN INSTITUTIONAL, TECHNICAL AND JOINT CAPACITIES FOR LFM

Indicator	Basic value	Temporary objective [2028]	Objective for the final year [2031]	Result
3 The reduction in the annual number and area of fires in the area is measured by the percentage of reduction in both the number of fire incidents in the area and the total area affected by fires annually, reflecting the effectiveness of strengthened capacities in mitigating the occurrence and spread of fires	95 fires per year and 500 ha of burnt area	Maintain the current level	Maintain the current level with a tendency to decrease	Improved institutional, technical and joint capacities lead to efficient and coordinated management of fires in the region, resulting in better prevention, preparedness and response to fires in the region

Specific objective 3.1 Increase the skills and competencies of LFM participants

Indicator	Basic value	Temporary objective [2028]	Objective for the final year [2030]	Result
3.11 Percentage increase in participants demonstrating proficiency in LFM practices, as measured by the participation of trained participants achieving proficiency in key LFM competencies, as assessed through standardized evaluations	Low level of training of participants in LFM competencies	Form the necessary staff and develop quality systematization of jobs based on LFM training	Increase in the number of trained personnel and acquisition of modern equipment and technology	Implementation of planned activities aimed at improving skills and competencies among LFM actors, leading to more efficient and coordinated landscape fire management practices
3.12 Retention rate of trained LFM personnel – the percentage of trained individuals who remain actively engaged in LFM roles over a certain period, indicating the sustained application of acquired skills	Low retention rate	Make a review of the situation after the training	Check percentage after establishing the organization of work and the number of trained staff	Implementation of planned activities aimed at increasing the number of individuals trained with LFM knowledge

Specific objective 3.2. Strengthening technical capacities for effective LFM

	Indicator	Basic value	Temporary objective [2028]	Objective for the final year [2031]	Result
3.21	Reduction of the average fire response time at the area level due to the strengthening of technical capacities	Lack of adequate technical capacities	Improvement according to the list of equipment needs	Equipping services and institutions	Implementation of activities aimed at reducing the average landscape fire response time
3.22	Increasing coverage of areas monitored by early detection systems	Insufficient number of areas	Improvement of the situation	Capacity improvement	Implementation of activities aimed at increasing the number of areas with an early detection system
3.23	Improving the accuracy of fire risk assessment	Insufficient accuracy	Situation analysis	Capacity improvement	Implementation of the aforementioned activities aimed at increasing the accuracy of risk assessment

Strategic objective 4: PROMOTE SUSTAINABLE RURAL DEVELOPMENT AS A BASIS FOR LONG-TERM FIRE RESISTANCE

	Indicator	Basic value	Temporary objective [2028]	Objective for the final year [2031]	Result
4	Reduction in the number and area of wildfires in rural regions, measured by the percentage reduction of both the number of wildfire incidents and the total area affected annually in rural regions	95 fires per year	Maintain the current status	Maintain the current state with a tendency to decrease	Improved sustainable rural development leads to improved land management practices, livelihood diversification and community capacity building, thereby reducing fire vulnerability at the area level and contributing to long-term fire resilience

Specific objective 4.1 Improving livelihoods and resilience to fires

	Indicator	Basic value	Temporary objective [2028]	Objective for the final year [2031]	Result
4.11	Increasing the number of households involved in diverse and sustainable livelihood activities	Valid data from MONSTAT	Maintaining the status quo	Maintaining the status quo	Improved rural living standards and increased community resilience to wildfires in the region through diversified income sources, sustainable land management practices and improved adaptive capacity
4.12	Percentage of agricultural land under sustainable land management practices	Current situation based on the census of agricultural holdings - MONSTAT	Maintaining the status quo	Retention of the existing situation with a tendency to increase	

Specific objective 4.2 Integrate rural communities into broader rural development strategies

	Indicator	Basic value	Temporary objective [2028]	Objective for the final year [2031]	Result
4.21	Increasing the participation of rural communities in LFM planning processes, measured by the percentage of rural communities that are actively involved in the development and implementation of LFM plans	Condition assessment	Involvement of rural communities in workshops, trainings and spatial planning	Active participation	Improved integration of rural communities into national and regional development strategies, leading to improved access to services, increased participation in decision-making processes and strengthening community resilience
4.2	Growth of economic opportunities for rural communities associated with LFM	Condition assessment	Planning the development of private forest management	Active use of privately owned forest management funds	

Table 3. Monitoring indicators and activity results

No.	Activity	Basic data	Output	Monitoring indicators
Strategic goal 1: INCREASE THE PREVENTION OF WILDFIRES				
1.1	Development of forest management programmes	There is no exact number (of forests in state and private ownership)	Comprehensive forest management programmes developed and approved	The number of forest management programmes that have been developed and officially approved
1.2	Development of planning documentation for forests in private ownership	Insufficiently developed planning documentation in private forests	Documents on planning for private forest lands developed and distributed	The number of plans for private forests that have been completed and distributed to landowners
1.3	Development of a fire risk map in the area	There is no adequate map	A comprehensive fire risk map at the area level has been created and is available to participants	Availability of the updated fire risk map in nature, which is available to relevant participants
1.4	Development of a strategy for involving the media in raising awareness and support for LFM	It does not exist	A media engagement strategy for LFM has been developed and distributed	The number of media houses involved and the frequency of publishing content related to LFM
1.5	Strengthening and implementation of the interdisciplinary educational programme	Underdeveloped	The interdisciplinary education programme on LFM has been strengthened and implemented in educational institutions	The number of schools that integrate the interdisciplinary LFM programme into their curriculum
1.6	Implementation of a campaign to raise awareness focused on adaptive approaches to land use and fire management	There is a sufficient number of projects and programmes	Public campaign on adaptive approaches to landscape and fire management implemented	Number of events held to raise awareness and estimated audience size of the campaign
Strategic goal 2: DEVELOP AND IMPLEMENT EFFECTIVE LFM POLICIES				
2.1	Assessment of deficiencies within the current legal and strategic framework related to LFM	Defined deficiencies	A comprehensive report that identifies gaps in the existing legal and strategic frameworks for fire management in the area (LFM)	The number of legal and strategic shortcomings identified and documented in the assessment report

2.2	Resolving and closing identified deficiencies to ensure compliance	Defining existing legal and strategic deficiencies	Revised legal and strategic documents that include solutions for previously identified deficiencies	The number of updated legal and strategic documents to address identified shortcomings
2.3	Organizing specialized training programmes for judges and prosecutors related to LFM	Does not exist	Specialized training programmes for judges and prosecutors on legal issues related to LFM	Number of judges and prosecutors trained in implementing LFM legal frameworks
2.4	Establishing a coordinating body for the implementation of LFM	Does not exist	Coordination body established and operationalized for monitoring the implementation of LFM	The existence and functionality of the coordinating body has been confirmed by official records and executed activities
2.5	Preparation of the legal act for the establishment of NATURA 2000	Does not exist	Draft legal act for the establishment and management of NATURA 2000 areas prepared	Completion and submission of the draft legal act to the competent legislative body
2.6	Drafting the Fire Protection Law	Currently there isn't one	A comprehensive fire protection law for the regulation of all aspects of fire management has been created	Completion and submission of a draft Fire Protection Law to the appropriate legislative body
2.7	Drafting the Law on Reconstruction	Currently in the adoption phase	Draft law on reconstruction created to implement recovery measures after the fire	Completion and submission of the draft Law on Reconstruction to the relevant legislative body
2.8	Drafting the Law on Protection and Rescue	The drafting of a new law by 2027	A Law on Protection and Rescue has been enacted to improve emergency response capabilities	Completion and submission of the draft Law on Protection and Rescue to the appropriate legislative body
2.9	Participation in activities within the framework of DPPISEE	Intensive participation	Active participation in the activities of the Initiative for Disaster Preparedness and Prevention for Southeast Europe (DPPISEE)	Number of DPPISEE activities in which participation and contributions were made

2.10	Strengthening cooperation with international institutions	Intensify cooperation	Formal agreements and collaborative initiatives established with international institutions for LFM	The number of formal agreements signed and joint initiatives implemented with international partners
2.11	Organizing international study visits with a focus on thematic areas relevant to LFM	Insufficient	International study visits on fire management in the area (LFM) are organized and carried out	The number of international study visits that have been successfully organized and completed
2.12	Implementation of regular monitoring and reporting mechanisms to track progress and impact	Insufficient	Monitoring and reporting mechanisms for the progress and impact of the LFM have been established and are operational	Number of monitoring reports that are conducted and distributed during the reporting period
2.13	Development and implementation of a grant allocation programme for agricultural producers	Insufficient	Grant programmes for agricultural producers have been designed and implemented to support LFM initiatives	The number of agricultural producers receiving support under the LFM support programme
2.14	Development and implementation of a grant allocation programme for NGOs	Two programmes	Grant programmes for non-governmental organizations developed and implemented to support activities related to LFM	The number of non-governmental organizations that have received funding for projects related to LFM

Strategic goal 3: STRENGTHEN INSTITUTIONAL, TECHNICAL, AND JOINT CAPACITIES FOR LFM

3.1	Assessment of current institutional and operational capacities and the initiation of the creation of a database to support informed decision-making	It does not exist	A comprehensive assessment report that details institutional and operational capacities, along with an operational database for informed decision-making	Completion and distribution of the capacity assessment report and the establishment of an operational database
3.2	Operationalization of the National Training Centre for protection and rescue	It does not exist	Fully operational National Training Centre for protection and rescue	The number of training sessions held and participants trained at the National Training Centre
3.3	Improvement of skills and competencies of staff within institutions responsible for LFM	It does not exist	Training programmes conducted to improve the skills and competencies of LFM staff	Number of staff trained and certified in LFM competencies

3.4	Increase the capacity of all entities according to the Law on Protection and Rescue in order to efficiently implement the LFM	In accordance with the Strategy for Protection and Rescue	Implemented capacity-building initiatives for entities under the Law on Protection and Rescue for the implementation of LFM practices	The number of protection and rescue entities trained and equipped for effective implementation of LFM practices
3.5	Making training programmes for key participants involved in landscape fire management, including: • trainers • instructors • members of firefighting units • members of volunteer firefighting units • members of specialized units • hikers, hunters, and scouts	Insufficient	Targeted training conducted for key participants, including trainers, instructors, members of fire units, volunteer fire units, specialized units, hikers, hunters, and scouts	Number of participants trained in the specified categories
3.6	Training of local communities and institutions on the connection between LFM and NATURA	It does not exist	Conducted educational sessions for local communities and institutions on the integration of LFM and the goals of NATURA 2000	Number of community members and institutional representatives trained on the integration of LFM and NATURA 2000
3.7	Improving the competencies of decision-makers in LFM and related fields	It does not exist	Organized workshops and seminars for the improvement of decision-makers' competencies in LFM and related fields	The number of decision-makers participating in competency improvement programmes
3.8	Preparation of entrepreneurial plans for protection and rescue	Exists	Entrepreneurial plans developed to support economic activities related to LFM	Number of completed and approved entrepreneurial plans
3.9	Formation of entrepreneurial units for protection and rescue	Exists	Entrepreneurial entities established for the implementation of business initiatives related to LFM	Number of formed and operational entrepreneurial units

3.10	Strengthening technical capacities through procurement of: • fire trucks and command vehicles • equipment for the 112 Emergency Call Centre and the National Information System • drones, thermal cameras, detectors, and monitors	Insufficient strengthening	Fire vehicles and command vehicles procured and deployed to enhance LFM's response capabilities National information system for various types of risks equipped with the necessary tools and technologies to support LFM Advanced monitoring equipment purchased to enhance fire detection and monitoring capabilities	Number of acquired and operational fire and command vehicles Number of acquired and installed equipment units acquired and installed in the information centre Number of acquired and operational drones, thermal cameras, detectors, and screens
3.11	Procurement of firefighting equipment for protection and rescue services	Insufficient	Firefighting equipment delivered to improve fire extinguishing efficiency	The quantity of firefighting equipment units distributed to relevant services
3.12	Procurement of a multifunctional helicopter	Not planned	Multifunctional helicopter acquired to support aerial firefighting and emergency operations	Operational status of the multipurpose helicopter in LFM activities
3.13	Acquisition of firefighting aircraft	It does not exist	Firefighting planes have been purchased to enhance aerial firefighting capabilities	Operational status of the firefighting aircraft in LFM missions
3.14	Establishment of acoustic studios, including the procurement and installation of necessary equipment	It does not exist	Acoustic studios established and equipped to support LFM communication	Number of operational acoustic studios with installed equipment
3.15	Procurement and installation of a fire early detection system	Partially exists	Early warning systems set up to enable the quick identification of wildfires	Number of early detection systems that are installed and functioning
3.16	Establishment of forest fire protection infrastructure	Insufficient	Travel infrastructure for fire protection (firebreaks, strips, and access roads), built within forest areas	Total length or area of built infrastructure for fire protection

3.17	Organization of practical simulation exercises for testing coordination and readiness in landscape fire scenarios	Exists	Simulation exercises conducted to train coordination and readiness for landscape fires	Number of conducted and evaluated simulation exercises
3.18	Organization of field training for the practical application of LFM strategies	It does not exist	Organizing field training to provide practical experience in LFM strategies	The number of field training sessions held and the number of trained participants

Strategic goal 4: PROMOTE SUSTAINABLE RURAL DEVELOPMENT AS THE BASIS FOR LONG-TERM RESILIENCE TO FIRES

4.1	Support for the implementation of the Agricultural and Rural Development Strategy	Insufficiently expressed	The key measures of the National Strategy for Agriculture and Rural Development are implemented through targeted areas and initiatives	The number of strategic measures from the National Strategy operationalized through programmes and initiatives
4.2	Increase in subsidies for farmers in rural areas	Exists	Increased financial support for farmers in rural areas through increased subsidies	The percentage increase in the amount of subsidies allocated to farmers in rural areas compared to the previous fiscal year
4.3	Creating conditions for increasing the number of farms	Exists	Promotion of small businesses in rural areas	Number of new farms registered after the implementation of incentive programmes
4.4	Facilitating the procurement of small livestock for farmers	It does not exist	Implemented assistance programmes for the procurement of small livestock	The number of farmers who received small livestock through the procurement assistance programme
4.5	Support for the construction of eco-villages	Exists	Available infrastructure and resources to support the construction of eco-villages	Degree of execution of planned infrastructure projects within the development plan of the eco-village
4.6	Promotion of small businesses in rural areas	It does not exist	Support programmes have been launched to promote the establishment of new business and the growth of small ones in rural areas	The number of newly established or expanded small enterprises in rural areas as a result of support programmes

