ROMANIA

Management of Wildfire Risk

TAFF Technical Assistance Financing Facility for Disaster Prevention and Preparedness

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ACRONYMS

AAR	After-Action Review
ANM	National Meteorological Administration (Administrația Națională de Meteorologie)
APIA	Payments and Intervention Agency for Agriculture (Agenția de Plăți și Intervenție pentru Agricultură)
BBB	Build Back Better
BCP	Business Continuity Plan
CAP	Common Agricultural Policy
Cat DDO	Catastrophe Deferred Drawdown Option
CatNat	Catastrophes Naturelles
CIES	County Inspectorate for Emergency Situations
CSO	Civil Society Organization
DES	Department for Emergency Situations
DLD	Disaster Loss Data
DRF	Disaster Risk Financing
DRM	Disaster Risk Management
DRMKC	Disaster Risk Management Knowledge Centre
DRR	Disaster Risk Reduction
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
EFD	European Fire Database
EFFIS	European Forest Fire Information System
ERDF	European Regional Development Fund
EU	European Union
EUSF	European Union Solidarity Fund
EWS	Early Warning System
FAO	Food and Agriculture Organization of the United Nations
FRMP	Flood Risk Management Plan
GD	Government Decision
GEO	Government Emergency Ordinance
GFDRR	Global Facility for Disaster Reduction and Recovery
GFN	National Forestry Guard
GIES	General Inspectorate for Emergency Situations
GIS	Geographic Information System
GNM	National Environmental Guard (Garda Națională de Mediu)
GO	Government Ordinance
GoR	Government of Romania
GWIS	Global Wildfires Information System
ICAS	Institute of Research and Silvicultural Planning (Institutul de Cercetări și Amenajări Silvice)
IGAv	General Inspectorate for Aviation (Inspectoratul General de Aviație)
IPCC	Intergovernmental Panel on Climate Change
IWFRM	Integrated Wildfire Risk Management
JRC	Joint Research Centre
MApN	Ministry of National Defence (Ministerul Apărării Naționale)
MARD	Ministry of Agriculture and Rural Development
MCID	Ministry of Research, Innovation, and Digitalization (Ministerul Cercetării, Inovării și Digitalizării)
MDPWA	Ministry of Development, Public Works, and Administration

MEWF	Ministry of Environment, Water, and Forests
MoE	Ministry of Education
MoF	Ministry of Finance
MoH	Ministry of Health
MoIA	Ministry of Internal Affairs
MoT	Ministry of Transportation
NBS	Nature-Based Solution(s)
NCCS	National Climate Change Strategy
NCES	National Committee for Emergency Situations
NDC	Nationally Determined Contribution
NDRMP	National Disaster Risk Management Plan
NDRRS	National Disaster Risk Reduction Strategy
NECP	National Energy and Climate Plan
NFR	National Forestry Registry
NFS30	National Forest Strategy 2030
NGO	Nongovernmental organization
NPDRR	National Platform for Disaster Risk Reduction
NRA	National Risk Assessment
NRRP	National Recovery and Resilience Plan
NSCCA	National Strategy for Climate Change Adaptation
NSRRS	National Seismic Risk Reduction Strategy
OPD	Organizations of Persons with Disabilities
PAD	Policy against Natural Disasters (Polița de Asigurare împotriva Dezastrelor Naturale)
PAID	Pool for Natural Disaster Insurance (Pool-ul de Asigurare Împotriva Dezastrelor Naturale)
PPP	Public-Private Partnership
PRAF	Peer Review Assessment Framework
PwDs	Persons with Disabilities
RO-RISK	Government of Romania National Risk Assessment
RRF	Resilience and Recovery Facility
SFDRR	Sendai Framework for Disaster Risk Reduction
SMEs	small and Medium Enterprises
SMURD	Mobile Emergency Service for Resuscitation and Extrication (Serviciul Mobil de Urgență, Reanimare și Descarcerare)
SNMSU	National Emergency Situations Management System (Sistemul Naţional de Management al Situaţiilor de Urgenţă)
SPSU	Private Emergency Services (Serviciul Privat pentru Situații de Urgență)
SVSU	Volunteer Emergency Services (Serviciul Voluntar pentru Situații de Urgență)
TAFF	Technical Assistance Financing Facility
UAT	Territorial Administrative Unit (Unități Administrativ Teritoriale)
UCPM	Union Civil Protection Mechanism
UNDRR	United Nations Office for Disaster Risk Reduction
UNSAR	National Union of Insurance and Reinsurance Companies in Romania (Uniunea Națională a Societăților de Asigurare și Reasigurare din România)
WUI	Wildland-Urban Interface
WWF	World Wide Fund for Nature

KEY TERMS

Wildfire: Any unplanned or uncontrolled fire affecting natural, cultural, industrial, and residential landscapes (UNDRR adapted from FAO). An unusual or extraordinary free-burning vegetation fire that poses significant risk to social, economic, or environmental values. It may be started maliciously, accidentally, or through natural means (UNEP).[1]

Forest fire: An unwanted fire burning forests and wildlands.[2]

Bush fire: The same meaning as wildfire but is the term used in Australia, New Zealand, and Africa. It is an unplanned fire in a vegetated area (as opposed to an urban area).[3]

Other types of fires:[4]

Accidental fire: Fires resulting from unintentional human actions.

Arson fire: Fires set intentionally and maliciously.

Controlled fire: Fires that are managed for specific purposes, usually with precautions.

Uncontrolled fire: Fires that are not managed or controlled, typically wildfires.
Natural fire: Fires caused by natural events, such as lightning.

Prescribed fire/mild fire: Intentionally set and controlled fires for land management.

Integrated wildfire risk management (IWFRM): The approach relies on coordinated use of resources, integrated policy frameworks, collaboration of stakeholders, society-wide engagement, and capacity development. This approach is gaining prominence amid rising temperatures and shifting weather patterns as well as the demand and need to address the wildfire challenge in an integrated and holistic manner.

Wildfire risk: Assessed by considering vulnerable areas where people, ecological, and socioeconomic values are exposed to fire danger.[5]

Exposure: The situation of people, infrastructure, housing, production capacities, and other tangible human assets located in hazard-prone areas.

Vulnerability: The conditions determined by physical, social, economic, and environmental factors or processes which increase the susceptibility of an individual, a community, assets, or systems to the impacts of hazards.

Wildlands/wilderness areas: Areas governed by natural processes. They are composed of native habitats and species and are large enough for the effective ecological functioning of natural processes. They are unmodified or only slightly modified and without intrusive or extractive human activity, settlements, infrastructure, or visual disturbance.[6]

Wildland-urban interface (WUI): Areas where human development meets or intermingles with wildland vegetation. These areas often face heightened wildfire risk.[7]

Firebreak:[8] Man-made areas with a reduced fuel load that act as barriers to stop or slow down fire spread.

Early warning system (EWS): An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication, and preparedness activities that enables individuals, communities, governments, and businesses, and others to take timely action to reduce disaster risks in advance of hazardous events. *Annotation: Multi-hazard EWSs address several hazards and/or impacts of similar or different type in contexts where hazardous events may occur alone, simultaneously, in a cascading manner, or cumulatively over time, taking into account the potential interrelated effects.*

Nature-based solutions:[9] Solutions "inspired by, supported by, or copied from nature" and "simultaneously provide environmental, social, and economic benefits and helps to build resilience" by bringing "more and more diverse nature and natural features and processes into cities, landscapes, and seascapes" (EC).

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[1] As noted in Casartelli, V., and J. Mysiak. 2023. *Union Civil Protection Mechanism - Peer Review Programme for Disaster Risk Management: Wildfire Peer Review Assessment Framework (Wildfire PRAF)*. Link.

[2] Tedim, Fantina, Gavriil Xanthopoulos, and Valerio Leone. 2015. "Forest Fires in Europe: Facts and Challenges." In *Wildfire Hazards, Risks and Disasters*, 77–99. Elsevier.

[3] Price, O. 2019. "Bushfires." In *Encyclopedia of Wildfires and Wildland-Urban Interface (WUI) Fires*, edited by S. Manzello. Springer, Cham. Link.

[4] Huidobro, G., L. Giessen, and S. L. Burns. 2024. "And It Burns, Burns, Burns, the Ring-of-Fire: Reviewing and Harmonizing Terminology on Wildfire Management and Policy." *Environmental Science & Policy* 157: 103776.

[5] Oom, D., D. de Rigo, H. Pfeiffer, A. Branco, D. Ferrari, R. Grecchi, T. Artés-Vivancos, T. Houston Durrant, R. Boca, P. Maianti, G. Libertá, J. San-Miguel-Ayanz, et al. 2022. *Pan-European Wildfire Risk Assessment*. EUR 31160 EN, Publications Office of the European Union, Luxembourg, doi:10.2760/9429, JRC130136.

[6] Wild Europe. 2013. *A Working Definition of European Wilderness and Wild Areas*. Link.

[7] Silva, J. S., ed. 2010. *Towards Integrated Fire Management: Outcomes of the European Project Fire Paradox*. No. 23, pp. ix–229. Joensuu, Finland: European Forest Institute.

[8] Casartelli and Mysiak 2023.

[9] Casartelli and Mysiak 2023.

Building code: A set of ordinances or regulations and associated standards intended to regulate aspects of the design, construction, materials, alteration, and occupancy of structures which are necessary to ensure human safety and welfare, including resistance to collapse and damage.

Coping capacity: The ability of people, organizations, and systems, using available skills and resources, to manage adverse conditions, risks, or disasters.[10]

Resilience: The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including ensuring the preservation, restoration, or improvement of its essential basic structures and functions.[11] '

Build back better' (BBB) principle:[12] The use of the recovery, rehabilitation, and reconstruction phases after a disaster to increase the resilience of nations and communities through integrating disaster risk reduction measures into the restoration of physical infrastructure and societal systems and into the revitalization of livelihoods, economies, and the environment. *Annotation: The term 'societal' is not to be interpreted as a political system of any country.*

Damage: Total or partial destruction of physical assets existing in the affected area. Damage occurs during and after the disasters and is measured in physical units (that is, square meters of housing, kilometres of roads, and so on).[13]

Losses refer to indirectly quantifiable losses (declines in output or revenue, impact on wellbeing, disruptions to flow of goods and services in an economy), or additional operational costs associated with response and initial repairs.[14]

Reconstruction: The medium- and long-term rebuilding and sustainable restoration of resilient critical infrastructures, services, housing, facilities, and livelihoods required for the full functioning of a community, or a society affected by a disaster, aligning with the principles of sustainable development and 'build back better', to avoid or reduce future disaster risk.

Rehabilitation: The restoration of basic services and facilities for the functioning of a community or a society affected by a disaster.

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[10] Casartelli and Mysiak 2023.

[11] World Bank and European Commission. 2021a. *Economics for Disaster Prevention and Preparedness: Investment in Disaster Risk Management in Europe Makes Economic Sense*. Link.

[12] Definition as per the NSDRR 2024–2035, GoR. Link.

[13] World Bank. 2021. Link.

[14] Global Facility for Disaster Reduction and Recovery, website. Link.

EXECUTIVE SUMMARY

Romania faces rising wildfire risk, with both frequency and impact expected to intensify. In 2021, Romania was identified as one of the countries in the European Union (EU) most affected by wildfires.[15] Despite the country's temperate continental climate, which generally reduces wildfire risk, human activities have contributed to increasing incidents.[16] Uncontrolled burning of dry vegetation, pastures, and stubble near forests is the main source of these incidents, driven by a lack of awareness and low-risk perception among farmers. Romania has experienced significant wildfire damage, particularly in protected areas like the Danube Delta Nature Reserve,[17] in 2019 and 2020, and Domogled-Valea Cernei National Park, in 2013, with extensive burned areas threatening biodiversity and critical infrastructure. Rural depopulation[18] and shifts in forest ownership[19] have led to unregulated land management practices requiring reforms and targeted investments across different elements, including understanding wildfire risk, prevention, preparedness, response, and resilience recovery. However, Romania has a timely opportunity to invest in wildfire management capacity, as this emerging risk is intensifying, and ongoing reforms, such as those in the forestry sector, are creating a favorable environment for strategic improvements and alignment.

This report summarizes the results of a rapid review of wildfire risks, risk management capacity, investment needs, and key approaches proposed for Romania to inform policy dialogue and future research. Capacity considers risk governance, understanding of risk, risk reduction and mitigation, preparedness and early warning, response, recovery, reforestation, reconstruction and post-disaster financing, and cross-cutting topics such as social resilience, social protection, inclusion, and the private sector. Each section reviews the current arrangements, including challenges, as well as key opportunities for improvements relevant to Romania. In this way, this report can inform national and EU decision-making and contribute to ongoing policy and investment dialogue as well as future research.

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[15] JRC. 2021. *Forest Fires in Europe, Middle East and North Africa 2020*. Link.

[16] Per the last official European Forest Fire Information System (EFFIS) Annual Report (2023), approximately 30 percent of fires in Romania are of unknown origin. Between 2020 and 2023, the human factor was linked to almost all fires in the Tulcea county.

[17] Popa, L. 2023b. "Romania Burns: How the Danube Delta Got on the Fire Map of Europe." June 1, 2023. Link.

[18] Popa, L. 2023c. "Romania Burns: Rural Depopulation Is Playing a Major Role in Causing Fires in Romania." *PressOne* and the *European Data Journalism Network*, August 28, 2023. Link.

[19] GoR. 2022b. *National Forest Strategy 2030*. Link.

KEY MESSAGES

The following key messages can be highlighted based on the review of wildfire risks and risk management capacity in Romania:

1. Wildfires in Romania are primarily human induced and occur mostly in spring (53 percent) and summer (26 percent), with over 99 percent of forest fires linked to uncontrolled burning of dry vegetation. Wildfires can cause significant economic losses, ecological degradation, and greenhouse gas emissions.[20] High-risk areas include Gorj, Mehedinti, Caraș-Severin, Alba, Suceava, and Hunedoara. While the social impact is low due to sparse populations, over 9,500 structures in Bucharest-Ilfov are at wildfire risk, including critical infrastructure, underscoring the need for better urban planning and risk-informed emergency asset placement amid data gaps on infrastructure exposure.[21]

2. Wildfire risk in Romania is expected to significantly increase, particularly during droughts, further compounding other factors such as human activity, land use changes, and socioeconomic pressures like rural depopulation and reliance on fire for land clearing. The national risk assessment RO-RISK scenarios project substantial ecological and economic losses, especially in Ceahlău, Gorj, and Mehedinți (high-risk areas with protected areas and hard-to-reach regions), where up to 3,000 ha could be affected and over €1.5 million in damage incurred.[22]

3. Romania has EU-aligned strategies and robust national legislation for fire protection and wildfire management. This governance framework promotes good governance, transparency, and sustainable forest management, ultimately working toward adapting to new conditions and uncertainties. Key documents include the National Forest Strategy (NFS 2030), the 2018 National Response Concept for Forest Fires, and the 2024 Forestry Code and a collaboration protocol between state institutions (including the National Environmental Guard, General Inspectorate for Emergency Situations [GIES], and Payments and Intervention Agency for Agriculture [APIA], which supports monitoring of farmers' compliance with rules on burning vegetation). The national wildfire management framework in Romania assigns primary responsibility to the Ministry of Environment, Water, and Forests (MEWF), with secondary roles to other ministries based on vegetation type (with the Ministry of Internal Affairs, MoIA, for forest fires, the Ministry of Agriculture and Rural Development, MARD, and the Ministry of Development, Public Works, and Administration, MDPWA, being responsible for grass and/or shrub vegetation fires and cereal crop fires), while forest governance is led by MEWF, with Romsilva managing state forests through local districts and the National Forestry Guard overseeing both state and private forests.

4. Romania collects extensive forestry and wildfire risk data; however, gaps remain in the use and accessibility of risk information. There is potential for better integration across institutions, standardizing wildfire risk zonation, enhancing collaboration with research institutes, and using risk data for urban planning, disaster management, and community engagement. The 2018 RO-RISK offers a broad overview, but a more dynamic, integrated approach using remote sensing and GIS for (near) real-time mapping, aligned with international practices, is needed to assess risks, including ecological, meteorological, and socioeconomic factors, with a focus on vulnerable groups' health impact.

[20] Lorenț, A. et al. 2024.
[21] Hysa et al. 2021.
[22] GIES 2018b.

5. **Romania is strengthening wildfire prevention, reduction, and mitigation.** This is done through improved forest management, climate strategies (NFS30, NSCCA), road upgrades, and forestry modernization, as well as nature-based solutions (NBS) such as firebreaks and forest belts—although not yet utilizing prescribed burning, mainly due to an overlap with current regulations and longstanding concerns about uncontrolled wildfires. The country's legislation has traditionally been very strict regarding the use of fire in land management, with fines for unauthorized burning, with compliance monitored by multiple stakeholders (including Payment and Intervention Agency for Agriculture, APIA, the National Environmental Guard, GNM, and GIES). Recent key efforts include the SIPOCA 395 project (yet to be operationalized)—streamlining procedures, updating fire databases and geospatial tools—the New Forestry Code, and a 2024 MEWF pilot on forest video surveillance, with plans for national scale-up to boost detection, response, and coordination.

6. **Romania operates a multilayered wildfire early warning system (EWS) under the coordination of MoIA through its Department for Emergency Situations (DES) and GIES.** It integrates the Canadian Fire Weather Index (FWI) available through MeteoAlarm, European Forest Fire Information System (EFFIS) satellite monitoring, and the RO-ALERT public alert system. However, forecasting infrastructure and the electronic siren network require upgrades, expansion, and regular maintenance to improve functionality and accessibility.

7. **Romania has engaged in wildfire awareness and preparedness through Romsilva's training programs for citizens, tourists, and forest workers.** This is complemented by broader initiatives such as national home fire safety campaigns by DES and GIES, the 2024 relaunch of the inclusive 'Be Prepared' platform, mobile training centers offering first aid and emergency response education, and a national risk communication guide under the new DRR strategy. However, wildfire risk remains underprioritized, potentially due to its historically limited impact on populated areas. There is no systematic, hazard-specific school curriculum, and broader public awareness and preparedness need further expansion.

8. **Romania has a robust national wildfire response system with clear command structures, inter-agency coordination, and strong central firefighting capacity supported by EU funding** (for example, VISION 2020). Key stakeholders include forestry units, emergency services, local governments, and the private sector, all governed by fire management laws. Annual national exercises and a solid training network—including the UN-certified RO-USAR—as well as international activities, interventions, and drills enhance preparedness. However, local units face equipment shortages, resource gaps, and weak inventories, while evacuation plans and accessible shelter information remain limited, especially for people with disabilities. Strengthening local capacity while also formalizing CSO and volunteers' engagement is essential. Also, burn care still requires improved data, infrastructure, training, and cross-border coordination.

9. **Romania is enhancing its role in recovery, updating its damage and loss assessment methodology, and advancing reforestation efforts.** This includes regenerating some 72,330 ha of public forests over the past five years.[23] Romania lacks a formal disaster/wildfire recovery framework, a unified damage and loss assessment methodology, and a centralized damage and loss database (DLD), with the MoIA addressing these gaps through a digital platform and unified methodology. Challenges in reforestation, such as fragmented ownership and the need for climate-adaptive management, persist despite progress under clear guidelines from MEWF and Romsilva.

10. **Romania is working to strengthen financial resilience to wildfire risks**, with efforts to understand macrofiscal impacts and boost financial resources, relying on state funds, EU instruments, and contingent finance for disaster and health-related emergencies. However, gaps remain—forest insurance is limited. The existing Pool for Natural Disaster Insurance (PAID) excludes wildfires and optional coverage is minimal—highlighting the need for a comprehensive disaster risk financing (DRF) strategy that integrates wildfire with other hazards, expands public-private partnerships, and leverages EU funding such as the Resilience and Recovery Facility (RRF).

[23] National Forest Administration - Romsilva. 2024.

PRIORITIES GOING FORWARD

Going forward, Romania can benefit by prioritizing investments across prevention, preparedness, and response phases to effectively manage and reduce wildfire risk:

1. **Continue reforming the forestry sector to address ownership fragmentation.** This is key to integrating wildfire risk mitigation through resilient ecosystems, sustainable forest management, and adaptation and mitigation strategies. This requires efforts such as integrating wildfire risk into policies, leveraging existing forestry reforms, updating and enforcing legislation, and promoting sustainable, shock-resilient forestry. Efforts should also focus on improving digitalization, data sharing, mapping, and monitoring, strengthening inter-institutional collaboration, building capacity through training and resources, and increasing the involvement of CSOs, local communities, and the private sector across all wildfire management stages.

2. **Continue digitalizing and updating forestry data flow with standardized protocols, geoportal integration, and centralized mapping while enhancing inter-institutional collaboration.** This includes developing an integrated vegetation fire management system for real-time coordination, ensuring long-term monitoring infrastructure (equipment and staffing), and strengthening legal frameworks while also standardizing data protocols. Capacity building through targeted specialized training and digital platform upgrades is key, along with increasing scientific, community, and stakeholder engagement in wildfire prevention and response planning.

3. **Refine Romania's wildfire hazard mapping.** Key actions could include updating hazard mapping using advanced technologies, models, and dynamic data on ecology, weather, and socioeconomic impacts while also providing detailed future projections. Risk analysis should be done at the right scale, considering exposure, vulnerability (especially of at-risk groups), and future changes like climate and land use. To ensure consistent results nationwide, standardized methods for fire risk zonation should be developed.

4. **Enhance wildfire prevention and mitigation.** This can be done by strengthening building regulations and spatial planning—especially in the wildland-urban interface (WUI)—and updating technical standards, expanding surveillance systems to address personnel shortages, and scaling up NBS like reforestation, natural firebreaks, and potentially considering prescribed burning based on international best practices. Additionally, a Fire Protection Plan should be developed at the administrative-territorial unit (UAT) level to cover all vegetation fire types, supported by a National Response Concept that includes grassy, shrubby, and stubble fires, in line with GD No. 557/2016.

5. **Continue strengthening wildfire preparedness at all levels by focusing on local emergency services and forest units.** This can be done by investing in live monitoring technologies and establishing a national firefighting resource inventory at MEWF/Romsilva. Key actions also include expanding access to specialized training equipment and resources for local firefighting units and for hard-to-reach areas.

6. **Continue investing in public awareness and early warning by upgrading siren infrastructure, digital platforms, and communication systems, while supporting volunteers.** Expand inclusive preparedness through national initiatives promoting responsible behavior, lifesaving tools for schools and communities, and accessible risk education via the 'Be Prepared' platform and formal and systematic school syllabus. Developing a risk communication strategy and scaling up targeted campaigns in high-risk areas—especially in spring and summer—to reduce vegetation burning and improve fire safety awareness, including through multilingual signage for locals and tourists, should be paramount to MEWF.

7. **Continue to enhance Romania's wildfire response**. This can be done by investing in advanced monitoring technologies, expanding firefighting team training, increasing local resources, formalizing volunteer roles in local governance, and improving regional and cross-border coordination. Partnerships with civil society should be supported technically and financially. Health systems must expand burn care capacity as part of the EU burn response (for example, digital solutions such as a National Unique Burn Patients Registry, establishment of a tissue/skin bank), and planning should prioritize large-scale evacuation logistics, shelters, and emergency stockpiles.

8. **Strengthen Romania's wildfire recovery phase.** This requires focusing on long-term resilience and aligning restoration with ecological and community needs, supported by setting up and operationalizing a 2026–2030 National Afforestation Plan with incentives, technical norms, and regulations to promote reforestation for adaptation and mitigation, and ecosystem strengthening. Efforts are also needed for developing a 'build back better' (BBB)-based recovery framework, a DLD while updating the damage and loss methodology to include environmental damages and losses (for example, loss of biodiversity and habitats), alongside socioeconomic impacts and a lessons-learned repository with scope for wildfires, supported by standardized data collection, improved data-sharing platforms, and strengthened local capacity for disaster loss tracking.

9. **Continue advancing the understanding of macrofiscal risks and regularly update financial instruments for emergency response and post-disaster recovery**. Further analysis and regular review of arrangements are required, including international assistance for disaster financing, insurance coverage, and service quality.

10. **Continue strengthening collaboration among public authorities, the private sector, and civil society.** This can be done by promoting inclusive wildfire resilience for vulnerable groups through targeted awareness and accessible education, adaptive social protection, and collaborative training and inclusive tools (for example, apps and alerts) and infrastructure. Private sector engagement should be enhanced via PPPs, sustainable practices, resource mapping, and incentives like insurance subsidies and support for fire-resistant infrastructure and business continuity planning.

INTRODUCTION

This report is part of a series focusing on improving the understanding of the needs and priorities for disaster resilience investments in relation to two disaster risks: wildfires and earthquakes. The broader objective is to provide actionable insights and recommendations that can guide the European Union (EU) and its member states in making informed, strategic investments to enhance resilience against wildfires and earthquakes.

This note focuses on wildfire risk management in Romania and describes current risk trends, risk management capacity, and investment needs and recommended approaches. This note is complemented by two other country-specific case studies for Croatia and Cyprus, as well as an EU-wide policy note on wildfire risk management based on existing information and data gathered across EU Member States.[24]

This report provides a rapid high-level overview based on already existing information and data. In addition, consultations with key national and EU organizations as well as researchers have been conducted to improve understanding of the key areas listed above. The note can serve to inform policy dialogue and future research.

The analysis is structured following the Union Civil Protection Mechanism (UCPM) Wildfire Peer Review Assessment Framework (PRAF).[25] This report also considers the integrated wildfire risk management (IWFRM) principles and includes the following elements:[26]

[24] Overseas Countries and Territories are not considered.
[25] Casartelli and Mysiak 2023.
[26] Ibid.

1. **Governance of wildfire risk management** focuses on the overall governance framework for wildfire risk management, including the strategies, institutional frameworks, coordination mechanisms, financing strategies, and systemic resilience related to wildfire risk at national and sub-national levels.

2. **Understanding wildfire risk management** examines the identification, analysis, evaluation, communication, and capacities associated with assessing the risk of wildfires.

3. **Wildfire risk prevention, risk reduction, and mitigation** analyzes wildfire prevention and explores landscape management practices, innovation and knowledge services, and administrative capacities related to wildfire prevention, structural measures and programs/plans to support these.

4. **Wildfire early warning and public awareness** examines early warning systems (EWSs) and their role in detecting, predicting, and communicating wildfire risks to support timely and effective responses, while public awareness focuses on informing communities about wildfire hazards, preparedness measures, exploring campaigns and educational initiatives.

5. **Wildfire risk preparedness and emergency response** includes pre-wildfire measures to ensure an effective response, including rescue capacity, training, and situational awareness, as well as response activities such as operations, coordination, international cooperation, and monitoring.

6. **Wildfire recovery, reconstruction, and post-disaster financing** covers the processes and actions taken after a wildfire event, including damage assessment, restoration efforts, recovery planning, and climate proofing for future disaster events.

7. **Cross-cutting topics:** social resilience, protection and inclusion explores approaches to address the disproportionate impact on vulnerable populations, with special focus on people with disabilities proposing adapted measures and tailored solutions to increase inclusion. Meanwhile, private sector covers relevant stakeholders' involvement in the context of wildfire risk management, including forests private owners, building owners and property managers, insurance companies, business owners, utility providers, but also civil society organizations, and so on.

WILDFIRE RISK PROFILE AND RISK TRENDS

This chapter provides a short overview of risk trends for wildfires in Romania. It utilizes data and information from both national and international sources, emphasizing the country's profile and vegetation land cover, historical fire statistics and losses, risk drivers and sectoral exposure, climate change impacts and future risk probabilities, and a comparison of risks with other EU countries.

DRM CONTEXT

Romania is highly vulnerable to the impacts of natural hazards, including floods, earthquakes, droughts, landslides, wildfires, and extreme weather events.[27] Over recent decades, disaster events resulted in significant physical, social, and financial impacts, affecting human well-being.[28] Since 1980, Romania has experienced €12 billion in financial losses (some 99 percent of those not insured) from climatological and hydrometeorological events, with estimated annual losses of €585 million from floods.[29] Romania also faces high seismic risk and, in combination with aging (and energy inefficient) infrastructure, faces the third highest loss ratios in the EU. In 2022, Romania suffered over €1 billion in lost revenue for the agricultural sector due to droughts and wildfires in the southeastern region,[30] receiving almost €34 million from the European Union Solidarity Fund (EUSF) to cover part of the needs.[31] Climate change is expected to exacerbate the incidence and severity of weather-related disasters and their impacts, with increased threats of forest fires, landslides, floods, strong winds, and heatwaves.[32]

INTRODUCTION

Wildfires in Romania vary in frequency, intensity, and severity, causing economic losses, ecological degradation, and changes in social behavior. From 2003 to 2023, Romania's burned areas included approximately 45,135 ha of forests, with Teleorman county experiencing the largest single burned area at 361.5 ha, while 2023 recorded the lowest levels, with 133 fires and 1,874 ha burned.[33] Although Romania's temperate continental climate generally lowers the risk of forest fires, the country still faces a notable number of wildfires, with the threat projected to intensify. According to the National Institute for Research and Development in Forestry (INCDS) 'Marin Drăcea', up to 99 percent of Romania's forest fires are human induced, primarily caused by the uncontrolled burning of dry vegetation, pastures, and stubble near forests, which is in line with EU reports suggesting that 9 out of 10 vegetation fires are caused by humans. Most forest fires occur in the spring (53 percent) and summer (26 percent), with additional fires common during dry periods from August to October, influenced by factors such as population density, distance to roads, ecotypes, and seasonal variations, with higher fire incidence in Subcarpathian areas in spring and autumn, summer peaks in the plain and Dobrogea due to agricultural burning, and increased fires in the mountain areas during the summer due to peak human activity.[34] Moreover, in Romania, wildfire risk is closely intertwined with other weather-related hazards such as droughts and floods. Prolonged droughts increase vegetation dryness, heightening the likelihood and intensity of wildfires, while post-fire landscapes often suffer from reduced soil stability, amplifying the risk of flash floods.

HISTORICAL EVENTS AND LOSSES

According to the Global Wildfire Information System (GWIS), from 2002 to 2023, in Romania, the burned areas affected by fires larger than 30 ha occurred over 3,477,500 ha, with croplands and shrublands/grasslands being the main land cover types.[35] In 2008, Romania recorded a high of 3,566 fires, burning a total of 502,323 ha, of which 491,246 ha was croplands (the highest) and 32.2 ha was forests (the lowest). This was followed by 2011 (2,269 fires, 322,138 ha burned) and 2012 (2,173 fires, 308,185 ha burned). In contrast, 2023 saw the lowest recorded numbers, with only 133 fires and 1,874 ha burned.

Incidences of forest fires could become more common. Between 1956, when records began, and 2015, Romania reported 11,619 forest fires, averaging 184 annually, affecting a total of 60,728 ha (964 ha

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[27] The national risk assessment (RO-RISK project) identifies 10 key natural risks (for example, earthquakes, floods, droughts, forest fires, landslides), technological risks (for example, nuclear and radiological risks, major industrial accidents involving hazardous substances [SEVESO], including major transportation accidents with dangerous goods), biological risks (for example, epidemics, epizootic diseases, and zoonoses), and extreme weather events (for example, storms and blizzards, heavy snowfalls, tornadoes, and extreme temperatures).

[28] EM-DAT–The International Disaster Database. Link. Between 1900 and 2023, 103 catastrophic events (including 53 floods, 11 earthquakes, 21 extreme weather events, 13 storms, and two droughts) affected over 2 million people, caused nearly 5,000 deaths, and over US$17.2 billion damage.

[29] Munich Re, NatCatService—data on natural disasters since 1980, cited in World Bank. 2023. *Systematic Country Diagnostic Update: Romania*. Link.

[30] Dumitrescu, R. 2022. "Drought Wipes EUR 1 Bln from Romanian Agricultural Sector." *Romania Insider*, October 11, 2022. Link.

[31] World Bank and European Commission. 2024a. *Financially Prepared: The Case for Pre-positioned Finance*. Link.

[32] See IPCC. *Sixth Assessment Report - Regional Data - Europe of the Intergovernmental Panel on Climate Change*. Link.

[33] EFFIS. 2023. *Annual Reports on Forest Fires in Europe*. Link.

[34] Lorenț, A. et al. 2024.

per year, 5.2 ha per fire).[36] In Romania, 2022 marked the worst year on record with the largest forest area burned, seeing a dramatic increase to 1,021 fires affecting 13,152 ha, largely due to dry conditions, strong winds, and agricultural burning practices, from 278 forest fires affecting 2,101 ha in 2021.[37]

In 2023, Romania recorded around 170 forest fires affecting over 550 ha, primarily due to a rainy spring. The first fire occurred in January 2023 and the last on December 30, 2023, with two forest vegetation fires lasting more than 24 hours. The largest fire affected 37.40 ha, while the smallest was 0.01 ha. The Joint Research Centre (JRC) reports that the estimated damage from these fires was €169,000, with 236,120 seedlings and 751.87 cubic meters of timber lost.[38] However, for a similar amount of forest fires incidents considered by the EEFIS for the same year, it reports an estimated value of the material damage resulting from these fires as nearly €70.000.[39] To account for these differences, it's important to note that damage methodologies differ while stakeholders report varying wildfire statistics, with EFFIS focusing on fires over 30 hectares and JRC covering all forest fires.

HUMAN IMPACT

So far, there have not been far-reaching social impacts due to low population density in affected areas; however, there is no research in Romania on the effects of wildfires on the environment and public health.[40] The impact of wildfires on communities is indirect, mainly caused by the resulting smoke screen rather than direct burning.[41] Most forest fires, for example, occur within forested regions, primarily damaging young forests, with little impact on buildings or assets outside the forest. However, vegetation fires not only damage the environment but also result in loss of life and injuries. In 2022, according to GIES, 15 people died and 42 others were injured due to these fires.[42]

TREE COVER DYNAMICS

Romania has a high percentage of forest cover, with significant growth rates—over 19.3 million m³/year for conifers and for beech—while tree cover is influenced by natural factors like climate change, species migration, soil degradation, and natural fires, as well as anthropic factors such as deforestation and afforestation, while also being impacted by changes in forest management.[43] In the last two decades, Romania experienced a net change of 118 kha (1.5 percent) in tree cover.[44] Moreover, according to the Global Forest Watch data, 88 percent of tree cover gain occurred outside of plantations with a rate of reforestation of 27.9 kha per year between 2015 and 2020, but Romania also lost 433 kha of tree cover, between 2001-2023, representing a 5.5 percent decline since 2000, with 6.63 kha attributed to fires and 426 kha to other causes. Fire-related losses peaked in 2007 at 1.16 kha, making up 3.0 percent of that year's total loss. Less than 0.1 percent of the loss occurred in areas where deforestation was the dominant driver. The top eight regions accounted for 52 percent of total tree cover loss (that is, tree cover loss including change in both natural and planted forest and does not need to be human caused).[45]

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[35] According to the Country Overview section on the GWIS website, Romania's land cover consists of 44.5 percent croplands, 25.7 percent forests, 7.3 percent shrublands/grasslands, 19.6 percent savannas, and 2.9 percent other land types. Link.

[36] Results are estimated based on information from specialized literature and data provided by the central authority responsible for forestry (MEWF) and the National Forest Administration – Romsilva (NRP). NCES 2020.

[37] EFFIS 2023.

[38] JRC. 2023a. *Forest Fires in Europe, Middle East and North Africa*. Link.

[39] The EEFIS numbers for forest fires in Romania for 2023 is set at 149 forest fires affecting an area of 434 hectares. EFFIS. (2023). Annual reports on forest fires in Europe. Link.

[40] Apart from the study by Stan et al. (2014) on the Multicriteria Analysis of the Effects of Field Burning Crop Residues, which examines the impact of agricultural land burning on soil fertility and greenhouse gas emissions. Drăgan, M., and G. Munteanu. 2024. "Vegetation Fires in Romania: An Overview." *Risks and Catastrophes Journal*. Link.

[41] GIES 2018b.

[42] Popa, L. 2023d. "Romania Burns: Vegetation Fires Claim Victims." *PressOne* and the *European Data Journalism Network*, June 6, 2023. Link.

[43] Hysa et. al. 2021.

[44] Potapov, P. et al. 2022.

[45] According to the Global Forest Watch data. Link.

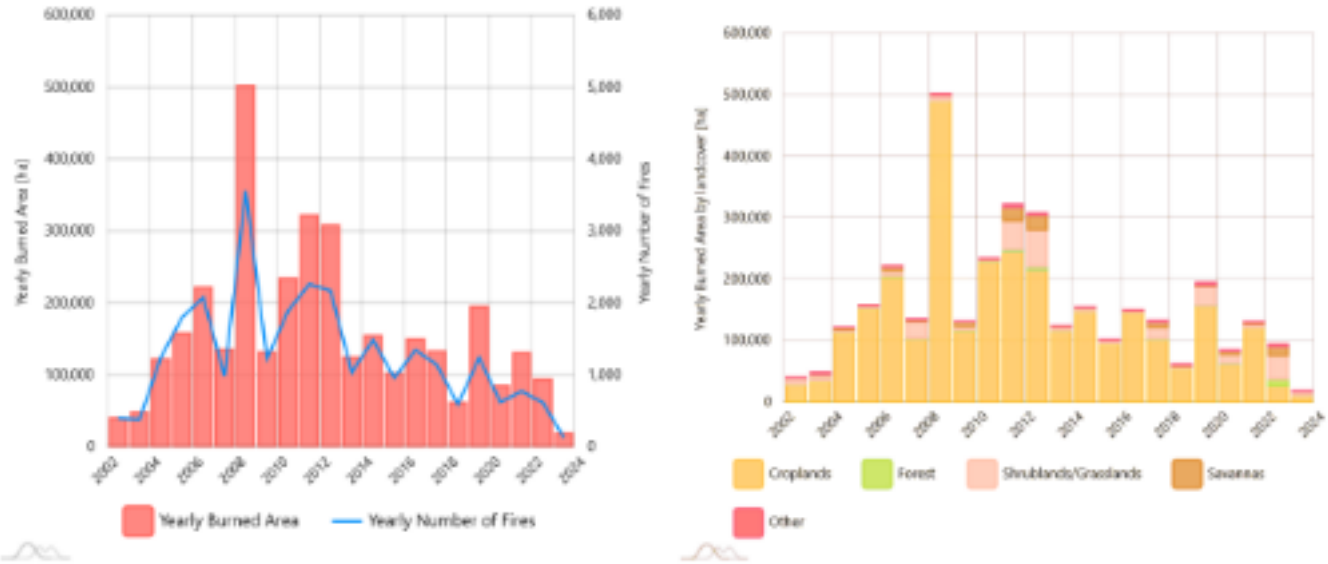


Figure 1. Average burned area (ha) and average number of fires including land cover overview (2002–2023)

Source: GWIS, n.d.

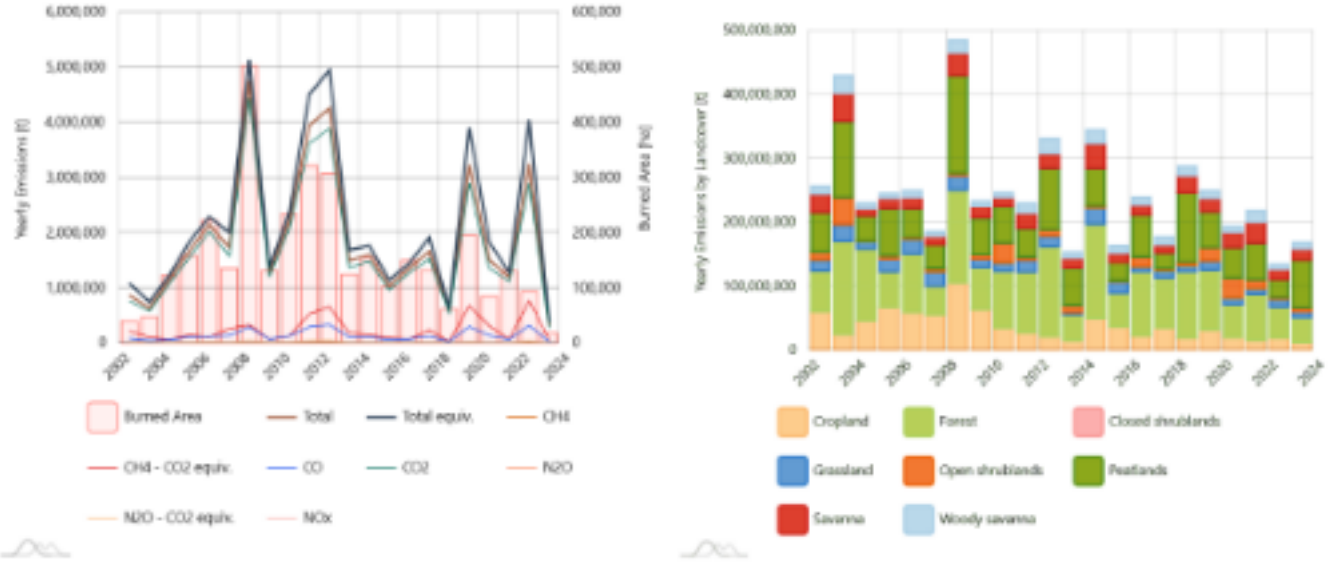


Figure 2. Yearly emissions and burned area, including land cover (FAOSTAT) – (2002–2023)

Source: GWIS, n.d.

EMISSIONS

According to GWIS, in 2022, total emissions in Romania reached over 4 million tons of CO_2 equivalent, with peatlands contributing the most[46], highlighting the role agricultural fires play in greenhouse gas emissions. Burning vegetation, especially from agricultural fires, releases carbon dioxide and other atmospheric pollutants, increasing greenhouse gas emissions, contributing to regional pollution and changes in the climate, and posing health risks, thereby creating conditions more favorable for future wildfires and perpetuating a cycle of environmental degradation.

FUTURE RISK LIKELIHOOD

In Romania, wildfire risk is closely intertwined with other weather-related hazards such as droughts and floods. Prolonged droughts increase vegetation dryness, heightening the likelihood and intensity of wildfires, while post-fire landscapes often suffer from reduced soil stability, amplifying the risk of flash floods.

Romania, as part of Central Europe, will become more susceptible to wildfires during droughts, particularly due to human activities and land use changes; given that warming will significantly increase wildfire risks in Europe, with southern regions facing a tenfold rise in catastrophic fires under moderate scenarios.[47] Additionally, the average annual area of forests destroyed by wildfires is expected to match the average annual areas destroyed during 2010-2019,[48] exacerbating the economic and social impacts in high-risk wildfire regions.

The RO-RISK assessment (2016-2018) highlights two future risks: severe ecological impacts in Ceahlău and a multi-risk scenario of forest fires during drought in Gorj and Mehedinți counties with medium-high probability and significant impact. The results of the first scenario includes 1,608 people potentially affected, 12 injured, 120 evacuated, 1,600 ha of protected area burned, and €350,000 in damages. The second multi-risk scenario involves 630 evacuees, 1,400 ha of protected area, and 3,000 ha total affected, with over €1,550,000 in material losses, requiring intervention forces to manage up to 9–10 simultaneous incidents, leading to significant long-term environmental and social costs.[49]

LOCATIONS WITH HIGH CONCENTRATIONS OF RISK

The Country report on national risk assessment submitted to the European Commission by the GIES in 2016, identified counties Gorj, Caraș-Severin and Alba as the areas with a high occurrence frequency of forest fires[50], while Suceava, and Hunedoara were also consistently recognized as high-risk areas in multiple other risk assessment studies. In RO-RISK, 19 percent of Romania's Territorial Administrative Units *(Unități Administrativ Teritoriale,* UATs) were classified as medium to high fire risk, 73 percent were categorized as low to low-medium risk, and 8 percent had no forest vegetation, posing no fire risk. Forest fires in Romania were classified based on the size of the affected area, with most UATs (45 percent) experiencing fires covering areas between 1 and 5 ha. These were followed by fires affecting areas smaller than 1 ha (31 percent) and those larger than 5 ha (24 percent). At the county level, Constanța, Dolj, Galați, Gorj, Mehedinți, and Olt were classified in the highest hazard class, where the probability level is average (11–100 years). However, the RO-RISK (2016-2018) assessment is not the only fire risk zoning document, and the results for high-risk areas vary depending on the methodology used, the time period analyzed, and the environmental or socioeconomic factors considered in each study. High-risk areas commonly identified across studies include Mehedinți, Caraș-Severin, and Gorj, with additional emphasis on Suceava and Hunedoara in some assessments (see the next sections for more details).

[46] According to GWIS (n.d), in 2022, total emissions in Romania reached 4,055,688.968 tons of CO2 equivalent, with 94,256.623 hectares burned. Croplands contributed 226,442tons of CO2, forests with 858,919 tons, while peatlands 1,595,787 tons.

[47] Lorenț, A. et al. 2024.

[48] GoR. 2023. Romania's Long-Term Greenhouse Gas Emissions Reduction Strategy – Romania Neutral in 2050. Link.

[49] GIES 2018b.

[50] Lorenț, A. et al. 2024.

RISK DRIVERS AND SECTORAL EXPOSURE

Several factors affect the spread and damage of wildfires in Romania, such as dry vegetation, weather conditions, and historical predisposition, all exacerbated by climate change and supported in a vicious loop by emissions. The main factors of forest fire incidents are the following: (i) vegetation type (which helps assess fire risk); (ii) distance from the forest edge, settlements, or roads; (iii) maximum temperature in the days before the fire; (iv) air humidity at midday before the fire; and (v) the frequency of forest fires in the area, calculated by comparing the number of fires in certain forests to the total number in the area.[51] Weather conditions like high temperatures and prolonged droughts are major triggers for uncontrollable fires spreading into forests, with intensifying weather conditions, including droughts and strong winds. This is worsened by the release of carbon dioxide from burning vegetation, a greenhouse gas that drives global warming and, in turn, heightens the risk of wildfires in a vicious circle. Dry vegetation and flammable materials further contribute to fire spread.

RURAL DEPOPULATION AND FRAGMENTED FOREST OWNERSHIP: ANTHROPOGENIC DRIVERS OF WILDFIRES IN ROMANIA

From bush fires in the Delta Dunării to crop burning on farms and forest fires in protected areas such as the largest national park (Domogled-Valea Cernei National Park), Romania's most common causes of wildfires are anthropogenic and could persist, especially given the increased rural depopulation in Romania and the recent shift in forest ownership from state to private landlords. From 2006 to 2018, most forest fires were caused by human activity (65.88 percent), with agricultural residue burning (21 percent) and vegetation management (34 percent) being the main triggers.[52] Thus, despite being prohibited, uncontrolled pasture burning in spring and stubble burning near forests are major drivers of vegetation and forest wildfires. Increased rural depopulation, weak enforcement, low education levels, and economic pressures collectively drive the reliance on fire as a cheap land-clearing method, exacerbating environmental damage and deterring sustainable development in rural areas across Romania. Table 1 provides an overview of a range of causes of fires in Romanian forests in 2023. Moreover, recent changes in forest ownership, from state managed to privately-owned, have led to unregulated practices that increase fire risks in areas near state-owned forests and heighten the danger of fire spreading to forests managed by Romsilva. In 2023, forest fires affected various types of ownership, including state public property (99 fires, 248.15 ha), community and public/private property (11 fires, 55.35 ha), private property (60 fires, 246.19 ha), and two fires occurred on lands with mixed ownership.[53]

[51] Barbu 2008.

[52] The frequency of forest fires from 2006–2018 according to the causes of their occurrence (according to the EFFIS classification). Lorent et al. 2024. The significant share of unidentified causes is attributed to many cases being classified as "under investigation." NCES 2020.

[53] JRC (Joint Research Centre). 2023a. Forest Fires in Europe, Middle East and North Africa. Link.

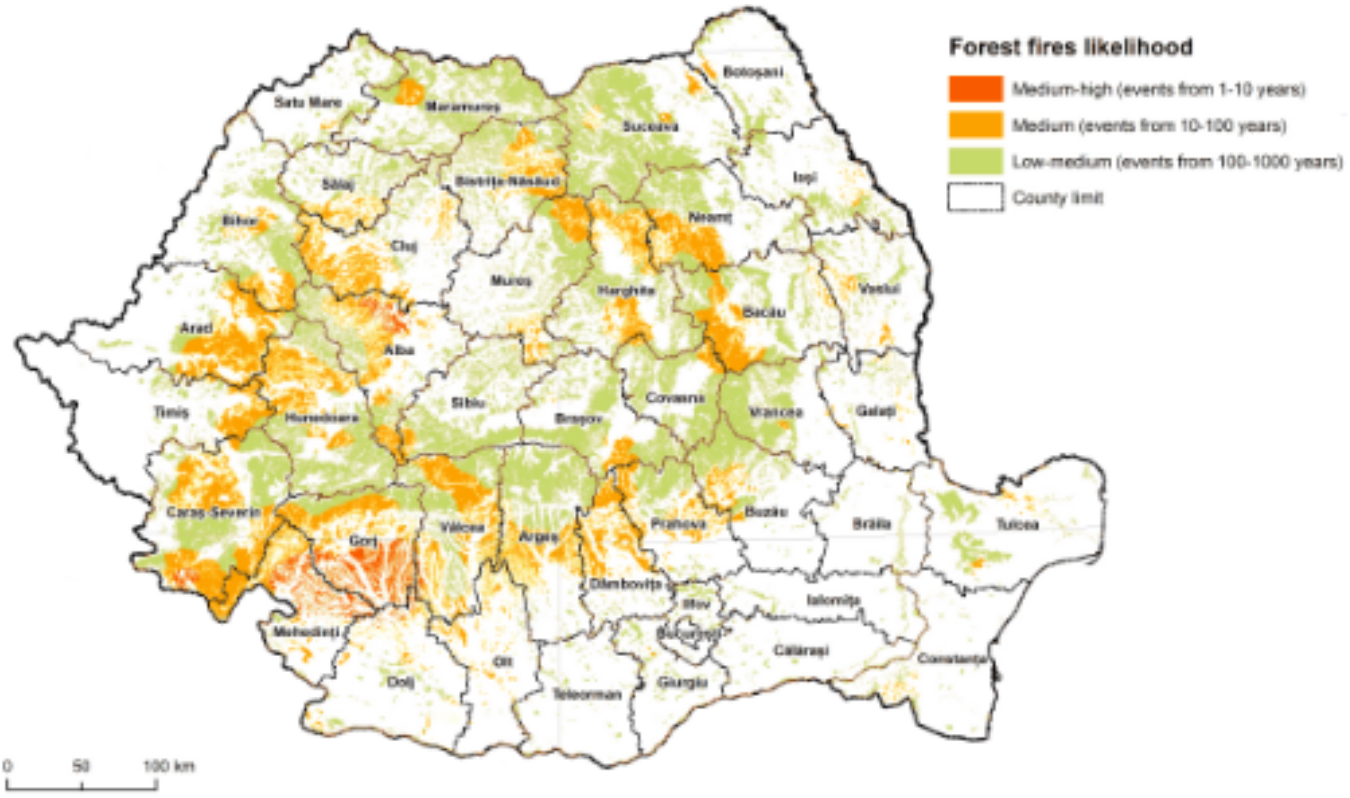


Figure 3. Forest fire likelihood

Source: Lorenț 2024.

Cause of fire	EFFIS code	Number of fires	Burned area (ha)
Unknown	100	61	200.82
Electrical power	301	5	4.82
Vehicles	303	1	0.01
Explosives	305	1	0.01
Other accident	307	3	35.00
Vegetation management	411	48	140.12
Agricultural burnings	412	20	94.16
Recreation	414	2	0.65
Other negligent use of fire	415	17	56.88
Cigarettes	422	9	14.89
Other use of glowing object	424	1	5.00
Vandalism	513	1	1.79
Rekindle	600	1	0.10

Table 1. Causes of fires in Romanian forests in 2023

Source: San-Miguel-Ayanz et al. 2024.
Note: EFFIS = European Forest Fire Information System.

WILDFIRE SPREADING RISK EXPOSURE ANALYSIS IN BUCHAREST METROPOLITAN AREA AND ILFOV

A 2021 study[54] using open-source, remotely sensed data reveals that over 9,500 structures in Bucharest-Ilfov are at risk from wildfires, including critical infrastructure, emphasizing the need for improved wildfire risk management and urban planning. The study on wildfire spreading risk exposure in the Bucharest Metropolitan Area and Ilfov region assesses the risk posed by wildfires to buildings and infrastructure. This study stands out for its comprehensive approach, integrating 16 diverse factors, including geophysical, hydrometeorological, and human-related elements, to provide a holistic view of wildfire risks. The research reveals that the urban fringes face high wildfire risk due to uncontrolled urban expansion, with the wildland-urban interface (WUI) areas being especially vulnerable. A total of 9,596 buildings were identified as exposed to wildfire spreading risk, including 1,734 critical structures such as hospitals, schools, and residential buildings, while other buildings like warehouses, greenhouses, and abandoned structures were ignored at this stage. The findings also show that at the national level, the highest wildfire risks are concentrated in the eastern and southern regions of Romania, with secondary risk zones along the western borders, while central and northern areas are relatively safer, often due to higher elevations and lower human activity. Additionally, this exposure poses significant socioeconomic consequences, particularly for critical infrastructure, given the use of heatmaps and spatial analysis techniques which provide actionable insights for urban planning, disaster management, and risk mitigation strategies.

WILDFIRE ASSET EXPOSURE

Considering current risk across the EU (based on JRC's wildfire risk assessment[55]) and the location of various assets (available through open street map) across Romania,[56] while it may make sense to have emergency response assets—such as fire stations—in areas of high hazard, it is important to ensure that these assets are structurally as well as operationally safe. Currently, there is no comprehensive data or analysis that provides information on the state of critical sectors in Europe considering their location, conditions, and current and future hazards.

COMPARISON OF RISK TO OTHER EU COUNTRIES

Compared to other EU countries with a Mediterranean climate, Romania has a relatively low wildfire risk due to its temperate continental climate. However, a European Commission report[57] indicates that in 2020, Romania was the most affected country by fires in the EU, followed by Portugal, Spain, and Italy. One of the main causes of forest fires is the spread of fire from meadows or farmland cleared by burning dry vegetation, with over 90 percent of fires caused by human activities, consistent with EU reports suggesting that 9 out of 10 vegetation fires are human induced. Fires occurred in winter over the Danube Delta and the Pyrenees, with the Balkan region most affected in spring, while summer and autumn saw the Mediterranean countries, particularly Spain and Portugal, experiencing the largest fire events in the EU. Satellite data from EFFIS reveal extensive burned areas in Romania's Danube Delta, which accounts for nearly half of all fires in Europe's protected areas.

[54] Hysa et. al. 2021.

[55] Oom et al. 2022.

[56] World Bank and European Commission. 2024b. *From Data to Decisions: Tools for Making Smart Investments in Prevention and Preparedness.* Link.

[57] JRC 2021.

Figure 4. The vegetated metropolitan area of Ilfov and Bucharest (a) including the wildfire exposure map of existing urban fabric (b) and the box plot of Wildfire Spreading Capacity Index distribution per building type (c)

Source: Hysa et al. 2021.

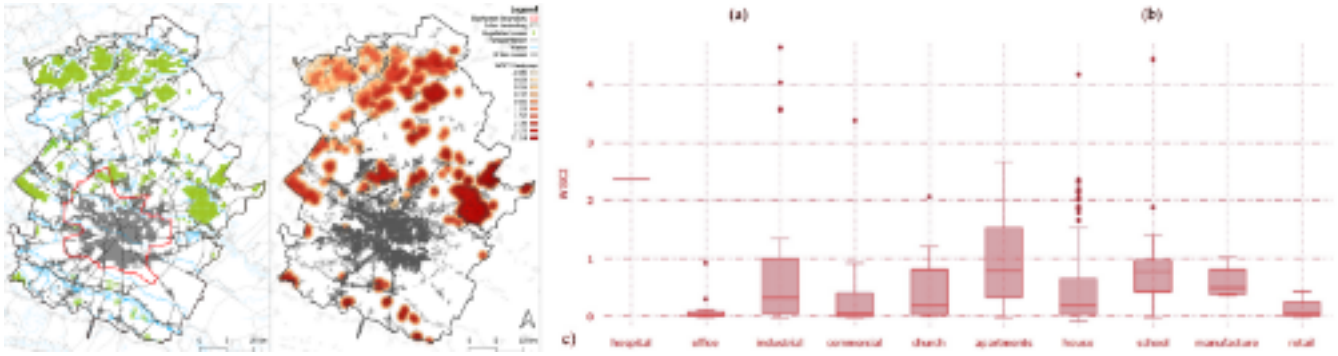
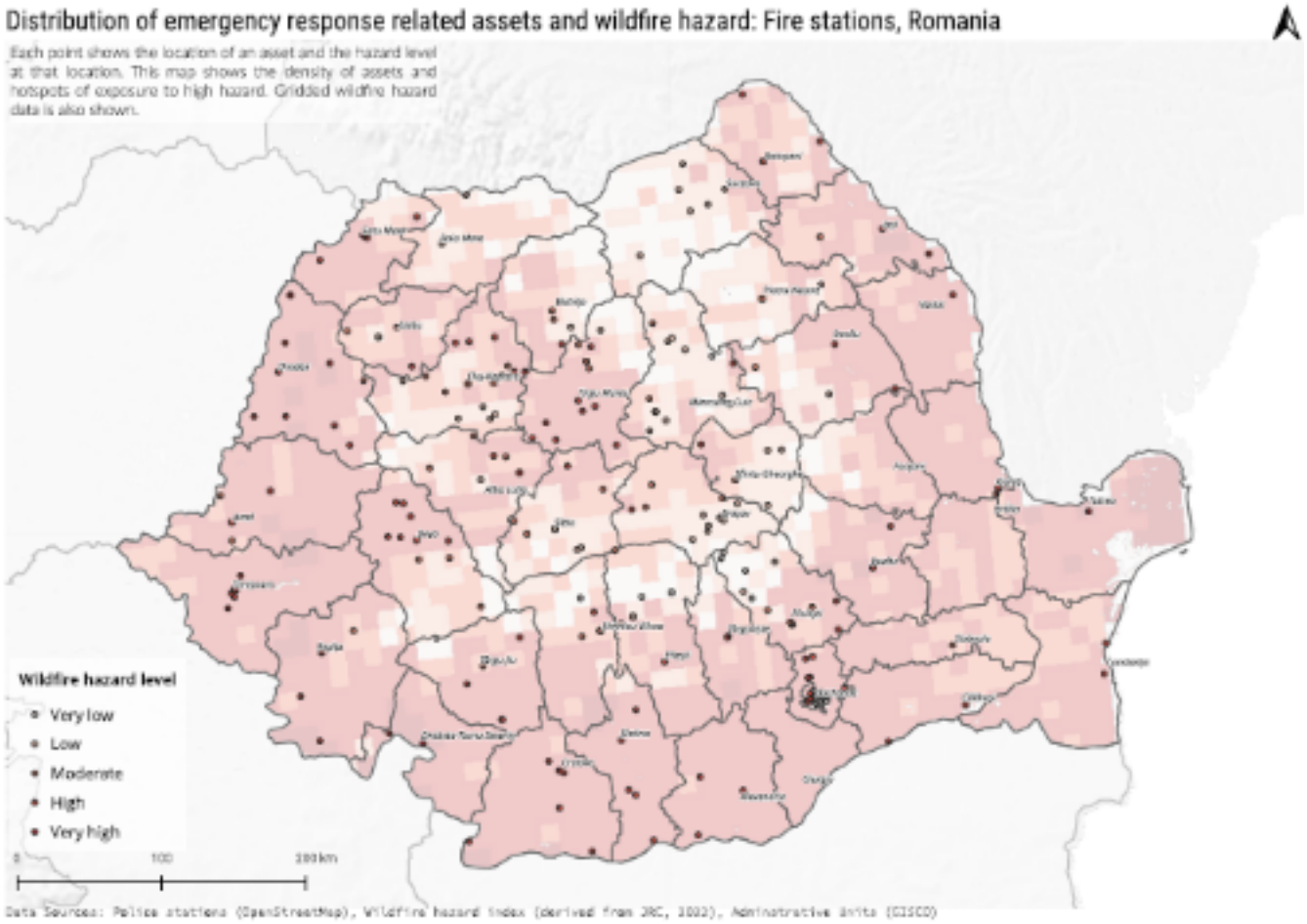


Figure 5. Proportion of fire stations exposed to high levels of each assessed hazard

Source: World Bank and European Commission 2024b.



WILDFIRE RISK MANAGEMENT AND INVESTMENT CAPACITIES

The following chapters provide a short overview of key gaps and vulnerabilities in existing wildfire risk management system in Romania, with a focus on forest fires as prioritized in the national strategic and legal frameworks and emphasizes key reform and investment opportunities for further enhancement. It draws on available public information (such as national risk assessments, disaster risk management/ plans/ strategies, or publicly available studies) and results of consultations.

WILDFIRE GOVERNANCE

This chapter covers the overall governance of wildfire risk management at the national and sub-national levels. The analysis focuses on the wildfire risk management strategy in place, the horizontal and vertical coordination and cooperation among key stakeholders involved in wildfire risk management, wildfire risk financing strategies in place, and systemic resilience.

DRM CONTEXT

Romania's disaster risk management (DRM) framework is aligned with the global Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030. The National Disaster Risk Management Plan (NDRMP) 2020–2027,[58] approved in 2021, focuses on five natural risks—earthquakes, floods, forest fires, epidemics/pandemics, and droughts—and promotes institutional reform and investment in line with international guidelines. The plan facilitates access to various EU funding for disaster and climate resilience. The National Recovery and Resilience Plan (NRRP), approved in 2020, facilitates access to the EU's Resilience and Recovery Facility (RRF), supporting a transition to a sustainable green and digital economy, with reforms and investments, including in resilience, such as integrated flood risk management.

Romania's climate change framework is aligned with global and EU efforts on mitigation and adaptation.[59] The Integrated National Energy and Climate Plan (NECP) 2021–2030 sets targets for a clean energy transition, including a binding national target for reducing greenhouse gas emissions that are not covered by the EU Emissions Trading System. Romania's National Energy Strategy 2020–2030 includes goals, measures, and funding lines linked to the NECP. In addition, Romania's Long-Term Renovation Strategy, approved in 2020, aligned with EU energy efficiency goals, aims to achieve €12.8–18.0 billion in investment, with 39 percent expected from public funds and 61 percent from private and commercial sources. In 2024, the National Strategy for Climate Change Adaptation (NSCCA) will support cross-sectoral strategic planning and coordination and operationalization of policies for adaptation.

DRM in Romania is governed by GD No. 557/2016,[60] comprising areas such as prevention/risk reduction, preparedness, response, evaluation (investigation), and recovery and rehabilitation. National authorities are assigned primary or secondary roles in managing specific risks based on their competencies (such as the Ministry of Development, Public Works, and Administration [MDPWA] for seismic risk or the Ministry of Environment, Waters, and Forests [MEWF] for floods), with primary authorities ensuring integrated coordination of all involved entities. Inter-institutional coordination and consistency of DRM and mitigation/adaptation efforts are also being fostered through the National Platform for Disaster Risk Reduction (NPDRR) set up in 2016 (GD No. 768/2016) consisting of key line ministries and agencies and the Inter-ministerial Committee on Climate Change (GD No. 563/2022), established in 2022. The platform provides a framework for all stakeholders—government, public administration, civil society, research institutes, and academia—to meet, discuss, and make decisions on risk management, community resilience, and unified solutions for risk reduction. At the local level, county and prefecture authorities have responsibilities across the DRM cycle. Externally, Romania has actively participated in the UCPM, including projects such as RO-RISK-SIPOCA 30 for risk evaluation, and has developed certified intervention teams and advanced equipment through EU-funded projects.[61]

[58] NCES 2020.
[59] Including European Green Deal and the EU's joint Nationally Determined Contribution (NDC).
[60] GD No. 557/2016 of August 3, 2016, regarding the management of risk types. Link.
[61] NCES 2020.

CURRENT ARRANGEMENTS

Strategic and legal wildfire risk management frameworks

The strategic framework for wildfires in Romania primarily consists of two key documents: the National Forest Strategy 2030 (NFS30) (approved by GD No. 1227/2022) and the NSCCA for 2022–2030, along with its accompanying action plan. The NFS30, aligned with the EU Forest Strategy, aims to promote good governance, transparency, and sustainable forest management to enhance the productivity, stability, and biodiversity of Romania's forests, ultimately working toward adapting Europe's forests to new conditions, weather extremes, and uncertainties.[62] The NSCCA includes measures aimed at minimizing climate risks to forests, focusing on maintaining and improving monitoring systems for forest pests, forest fires, forest decline, windthrows, and invasive species. Additionally, it emphasizes enhancing knowledge of the impact on forests and developing strategies for prevention, response, and mitigation of natural disasters, including wildfires, proposing as a key implementation measure the strengthening of early warning (EWS) and rapid response systems for forest fires. Other complementary objectives focus on adapting risk and emergency plans, and implementing programs for public education, research, and awareness.

Romania's strategic wildfire risk management framework is complemented by a comprehensive framework of EU and national regulations and legislation with a special focus on the forestry sector. At the EU level, Regulation No. 1305/2013 provides rural development support, including mitigating fire and disaster damage to forests. National laws such as Law No. 307/2006 on fire prevention, Emergency Ordinance No. 195/2005 on environmental protection, and various MEWF and Ministry of Agriculture (MARD) orders outline measures for fire prevention, risk classification, and emergency management, such as the 2000 Norm for the prevention and extinction of forest fires and the 2006 Regulation on the management of emergency situations caused by forest fires. Annual preventive inspections and fire alarm/evacuation/intervention drills are conducted as part of these regulations. In 2018, GIES, with the approval of DES under MoIA, developed a national response plan, National Response Concept for Forest Fires No. 93152/2018, exclusively for forest fires, considered to have a significant impact on communities, the environment, and the population, outlining the organization and planning of response actions at the national, regional, county, and local levels. Additionally, the 2024 New Forestry Code[63] in Romania ensures sustainable forest management, with specific protocols for forest fire response and risk assessment. Finally, a collaboration protocol between state institutions (National Environmental Guard, GIES, and the Payment and Intervention Agency for Agriculture [*Agenția de Plăți și Intervenție pentru Agricultură,* APIA]) ensures the monitoring of farmers' compliance with agricultural and environmental regulations regarding the burning of stubble, plant residues, and permanent grassland.

Institutional wildfire risk management framework

According to GD No. 557/2016, Romania's wildfire management system categorizes fires into forest, herbaceous/shrub, and cereal crop fires, with primary and secondary responsibilities assigned to MEWF, MoIA as well as supporting institutions. The Romanian government ensures national civil protection coordination through the Prime Minister, with MoIA leading the activities as the head of the National Committee for Special Emergency Situations (CNSSU). For all wildfires, the primary responsibility lies with MEWF, while the secondary responsibility varies depending on the type of vegetation: for forest fires, it falls to MoIA which oversees operational response actions through DES and GIES; for herbaceous and/or shrub fires, as well as cereal crop fires, the secondary responsibility lies with the Ministry of Agriculture and Rural Development (MARD) and the MDPWA, respectively. The roles of authorities in wildfire management are divided into prevention, response, and recovery phases. For prevention, the primary responsibility lies with MARD, with secondary roles for MoIA, MDPWA, and the MoE. During response, MoIA and the Ministry of National Defense (*Ministerul Apărării Naționale,* MApN) are the primary actors, supported by local public administrations and other organizations. In recovery, MoIA and MEWF take the lead, with assistance from local authorities, forest landowners, and other relevant bodies.

Since 2018, MEWF has worked to optimize decision-making, simplify legislation, and reduce bureaucracy in forestry and water management; however, there is scope for improving operational procedures and inter-institutional communication. Under the SIPOCA 395 project,[64] with a budget of €603,900 and a duration from 2018 to 2022, 230 MEWF employees in leadership and operational roles were trained using modern management tools to enhance professional competencies and decision-making. The project focuses on implementing

[62] GoR 2022b.
[63] GoR. n.d. *The New Forestry Code*. Link.
[64] INCDS, n.d.

common systems and standards, applying evidence-based policy making, systematizing and simplifying water legislation, and streamlining forestry business procedures to reduce administrative burdens.

Forest fires management framework

MEWF, through the National Forest Administration (Romsilva), which manages state-owned forest districts locally and oversees private forest districts nationally[65], and the National Forestry Guard (GFN), is central to forest fire management. Currently, MEWF initiated significant reforms aimed at addressing challenges within Romsilva, aiming to enhance efficiency, reduce political interference, and improve financial performance. However, it is essential that, during this transition, the core environmental and social mandates of Romsilva, along with its public service commitments, are maintained alongside any new economic objectives.

However, wildfire risk management is a whole-of-society responsibility, with MEWF Order No. 551/1475/2006 mandating that all societal actors—starting with the MEWF—take measures to prevent, limit, or respond to forest fires, each with varying levels of involvement. In this context, MEWF is tasked with developing regulations for risk management, providing forest maps to emergency services, guiding and supervising fire prevention, participating in fire recognition and suppression, coordinating with emergency services, and ensuring sufficient technical resources and personnel. Additionally, MEWF is responsible for supplying firefighting materials, allocating funds for fire defense, monitoring vulnerable areas, collaborating internationally on forest fire prevention, and addressing the impact of fires on wildlife habitats. Intervention structures under various ministries, including MoIA, MEWF, MApN, Ministry of Health (MoH), and Ministry of Transportation (MoT). Finally, although local communities (except persons with disabilities [PwDs], older persons, children, and other disadvantaged categories), nongovernmental organizations (NGOs), and the private sector are required by law (MEWF Order No. 551/1475/2006. The private sector, particularly small and medium enterprises (SMEs) in Romania and other legal entities within the national forest fund, must have specific fire prevention and extinguishing equipment; however, they are especially vulnerable to wildfire risks given their limited preparedness and knowledge about the potential impacts of wildfires and other weather-related disasters.

Similarly, at the local level, forest fire risk governance involves collaboration among various entities. Forest districts, both the state-owned under Romsilva and the private forest districts under the GFN, lead fire response, supported by MoIA (GIES, General Inspectorate for Aviation [*Inspectoratul General de Aviație,* IGAv], General Inspectorate of the Romanian Gendarmerie), MApN, local voluntary emergency services (SVSU), and economic operators in the area. After a fire is extinguished, monitoring is ensured by forest districts, local committees, and, if necessary, additional support forces like GIES, IGAv, and the Ministry of National Defense for at least 24 hours.

Fragmentation of the forestry sector governance

The fragmentation of forest ownership in Romania presents a set of governance challenges to forest fire management, necessitating strategies to engage owners in sustainable practices, unified priorities and decision-making, while also securing equitable funding and resources for all DRM phases. Starting from 1991, Romania's forestry sector transitioned from a centralized state system to a market economy. This has led to fragmented forest ownership, with over 700,000 private owners holding small plots (average 1.1 ha).[66] Due to the ongoing forest restitution process,[67] private forest ownership has increased, with public ownership representing 64.3 percent of the total at the end of 2023, primarily managed by Romsilva, and private ownership accounting for 35.7 percent.[68]

Existing fragmentation makes communication and coordination between the various owners more challenging during a fire, potentially delaying the response and allowing the fire to spread further. Individual owners might have different priorities and resources for forest management. However, in cases where small properties are grouped together (e.g., communal associations, co-ownerships,

[65] Romsilva manages state-owned forest districts (*ocoale silvice de stat*) at the local level, while at the national level oversees private forest districts (*ocoale silvice de regim*).

[66] GoR 2022b.

[67] The forest restitution process is regulated by Laws No. 18/1991, No. 1/2000, and No. 247/2005.

[68] According to a 2024 study on 'The national forest fund at the end of 2023' conducted by the National Institute of Statistics. Roșca, D. 2024. "The Area of the National Forest Fund Has Reached 6.6 million ha, according to the National Institute of Statistics and Economic Studies." *Forest Mania*, September 10, 2024. Link.

Box 1. Forestry sector governance in Romania

Romania's forestry sector is undergoing a comprehensive reform strategy addressing changes in forest ownership, the evolving socioeconomic landscape, environmental challenges, and new EU programmatic guidelines. In Romania, forested land is divided between private and public ownership, with the forestry governance overseen by **MEWF**, which is responsible for policy and law-making. Other key stakeholders include the following:

1. **The Administration of the State Protocol Heritage and the National Forest Administration (Romsilva)**, under the ministry's authority, manages about 50 percent of publicly owned forests and oversees forest administration, conservation, and sustainable management, including timber harvesting, afforestation, and forest protection and can be contracted by private forest owners for management services.

2. **The GFN** enforces forestry laws.

3. **Research institutes** like INCDS 'Marin Drăcea' specialize in research, technological development, and sustainable management of forests.

4. **Academia** such as the Faculty of Silviculture, University of Suceava, and the Faculty of Silviculture and Forest Engineering, University of Brasov.

CSOs and private sector actors such as World Wide Fund for Nature (WWF), Greenpeace Romania, and industry associations like the Romanian Wood Industry Association and the Romanian Forest Owners Association.

border forests, etc.) and the forest land is managed uniformly over compact areas by private forest districts, the risk of fires is not increasing. Still, this can vary depending on the terrain and the productive capacity of the stands, as well as on how they are managed in order to generate revenues that allow for investments in fire prevention and extinguishing.

Governance of protected areas

Effective governance of protected areas plays a critical role in ensuring long-term ecological resilience, particularly in areas exposed to climate-induced risks such as wildfires. The National Agency for Protected Natural Areas (ANANP) was established in 2016, by Law No. 95/2016, and operated under the authority of MEWF, since 2025 being part of newly created ANMAP (National Agency for the Environment and Protected Areas). In Romania, the management of Natura 2000 sites has increasingly come under scrutiny following a series of significant wildfire events in recent years - especially in ecologically sensitive areas like the Danube Delta Biosphere Reserve and other designated Natura 2000 sites. These incidents have not only caused biodiversity loss but have also placed Romania on the European wildfire map. Strengthening multi-level governance, improving cross-sectoral collaboration and integrating adaptive fire management plans into protected area stewardship are now essential to safeguard the natural heritage under the Natura 2000 network.

Culture of burning vegetation

Despite a strong legislative body, including the collaboration protocol between state institutions (National Environmental Guard [*Garda Națională de Mediu,* GNM], GIES, APIA) for monitoring eco-conditionality compliance and a strong legislative framework with sanctions (including Law No. 307/2006 on Fire Protection and Law No. 171/2010 on Forestry Offenses), wildfires caused by human factors, particularly improper agricultural practices, continue to persist.[69] People in Romania continue to burn vegetation despite penal measures due to a combination of factors such as traditional agricultural practices, the quick and cost-effective way to clear land for farming or pasture, lack of awareness about the environmental consequences, and insufficient enforcement of laws. Additionally, while the law explicitly bans burning vegetation, widespread cultural acceptance creates confusion potentially undermining legal enforcement.[70]

[69] EC 2020.

[70] Staff managing the Danube Delta are taught in a manual from the National Research Institute for the Development of the Danube Delta (INCDDD) that burning reeds, particularly to clear land covered with multi-generation reeds, can positively affect land productivity. Popa 2023b.

KEY OPPORTUNITIES

Concerning the wildfire governance framework, the following key opportunities have been identified: (1) ensuring wildfire risk policy integration; (2) leveraging existing strategies to continue the reform of the forestry sector; (3) reforming and updating wildfire risk legislation; (4) enforcing wildfire risk legislation; (5) promoting mitigation strategies for sustainable forestry; (6) enhancing digitalization, data sharing, mapping, and monitoring of the forestry sector; (7) improving inter-institutional data flow and collaboration; (8) strengthening wildfire risk management personnel capacity; and (9) enhancing the engagement of CSOs, local communities, and the private sector in wildfire management at all stages.

Ensuring wildfire risk policy integration

Wildfire risk could be better and more systematically integrated into broader frameworks like DRM, land use planning, forest management, nature restoration, and adaptation, for more unitary and proactive responses, while also addressing interlinked threats. Additionally, given the growing wildfire risks, the Romanian authorities should consider ensuring a comprehensive strategic framework for reducing the risk of wildfires, after the completion of the new specific technical standards mentioned above, through updating the of the National Concept for Response to Forest Fires to also include the two other associated risks—namely, fires in grassy/shrubby vegetation and fires in cereal crop residues (stubble)—in accordance with Government Decision No. 557/2016.

Leveraging existing strategies to continue the reform of the forestry sector

The recent NDRRS and the NFS30, supported by the New Forestry Code and the results of the EU-funded SIPOCA 395 project, set the ground for forest governance reform, clarifying owners' roles, enhancing decision-making, and promoting sustainability for a climate-neutral economy by 2050. There is scope for Romania to build on the efforts already made and to support the full operationalization of the strategic framework with scope for wildfire risk management, particularly the NDRRS and NFS30, which presents an opportunity to redefine the role of the state by enhancing monitoring and control functions and adopting a new approach to guiding forest management for diverse ownership types. Clarifying forest owners' responsibilities and transitioning to a flexible, transparent management system with measurable standards can drive sustainability.

Supported by best practices and economic incentives, this approach strengthens integration with the national economy, advances climate neutrality and energy independence, and enhances wildfire resilience through sustainable forest practices. The NFS30 proposes additional measures to improve forestry sector governance, including legislative reforms with minimum forest management obligations, updates to the Forestry Code, and the development of good practice guidelines. It also aims to enhance the efficiency, professionalism, and transparency of state forest administrators while supporting investments in flexible management systems that incentivize sustainable practices, promote mitigation and adaptation strategies, address wildfire risks, and strengthen ecosystem resilience.[71] The results of the SIPOCA 395 project, led by MEWF, further supports forestry sector reforms by simplifying procedures to reduce bureaucracy, including regulations for forest protection, regeneration, management, fire prevention, timber evaluation, and wood traceability.[72]

Reforming and updating wildfire risk legislation and plans

Romania could prioritize reforming and updating wildfire risk legislation, focusing on approving Simplified Procedure No. 8 for forest fire protection into a specific regulation, followed by updating the Ministerial Order No. 551/1475/2006 as well as updating the National Concept for Forest Fire Response to a Wildfire Response Plan so as to include all three fire types, in line with GD No. 557/2016. Clarifying and defining the roles and responsibilities for wildfire management between MEWF and the MARD, following the split of the former Ministry of Agriculture, Forests, and Rural Development, should represent a first step in this direction, to be amended in relevant legislation. The operationalization of the New Forestry Code will also

[71] GoR 2022b.
[72] INCDS, n.d.

strengthen coordination among various institutions with responsibilities in fire management, intensifies preventive actions, rapid interventions and post-fire recovery, regulating also public access to forests. Increased priority should be given to the Simplified Procedure No. 8, finalized in 2022 and updated in 2024 through the SIPOCA 395 project, which serves as the basis for updating 2000 Fire Prevention and Extinction Norms for the Forest Fund, which now requires approval from the MEWF for integration, as well as the necessary update to the Ministerial Order No. 551/1475 from August 8, 2006. Finally, the National Concept for Forest Fire Response should be updated to a National Wildfire Response Plan to address all three fire types, in line with GD No. 557/2016, as it currently only covers forest fires, despite the fact that many originate from adjacent agricultural lands or stubble burning, necessitating an integrated approach to vegetation fire risk.

Balancing penal and non-penal measures for enforcing wildfire risk legislation

Romania could strengthen the enforcement of existing wildfire risk prevention, reduction, and mitigation legislation by expanding non-penal measures such as incentives, awareness campaigns, increased patrols, inspection capacity, and technical support. Despite having a comprehensive legal framework with penalties ranging from fines to imprisonment, Romania could benefit from enhancing enforcement by boosting inspection and patrol capacity and empowering fire safety personnel to act within their mandates, including voluntary personnel who are usually in the first line of intervention. Improved coordination between state institutions (for example, GNM, GIES, APIA) and local authorities is needed to ensure accurate reporting on wildfire incidents and strict enforcement of penalties to avoid creating a sense of impunity. Furthermore, engagement with the private sector and CSOs is crucial to overcoming resistance to data-sharing measures, which can enhance decision-making processes and improve overall forest fire management. By providing training, clear guidelines, and ensuring data privacy protocols, stakeholders will be more likely to comply with requirements, such as submitting fire origin coordinates, enabling accurate identification of landowners for subsidy allocations by APIA. Additionally, complementing these efforts with targeted awareness campaigns, community-based fire management programs, compliance incentives (for example, tax breaks, public recognition), and encouraging local reporting with whistleblower protections, particularly in rural, depopulated areas, could further improve wildfire management.[73]

Promoting adaptation and mitigation strategies for sustainable forestry

Both adaptation and mitigation strategies, such as promoting afforestation and landscape restoration, could ensure the resilience of ecosystems against wildfires, presenting significant opportunities for the forestry sector. Romania has committed to establishing 56,000 ha of new forests by 2026 under the NRRP and aims for a 5 percent increase in forest area by 2050 through the NFS30 strategy. Enhanced support for forest owners and managers during the transition to biodiversity-friendly practices can promote ecosystem resilience and sustainable forestry. Financial support instruments for restoring degraded forests, compensating restrictions for biodiversity conservation, and incentivizing ecosystem service provision can unlock the potential for large-scale reforestation/afforestation and sustainable management. Aligning these efforts with European forestry policies provides a pathway to strengthen Romania's contribution to climate neutrality and environmental resilience.[74]

Enhancing digitalization, data sharing, mapping and monitoring of the forestry sector

The New Forestry Code,[75] a milestone under the NRRP, includes digitalization measures aimed at improving wildfire risk management, which are further supported by initiatives under the EU-funded SIPOCA 395 project led by MEWF. The New Forestry Code introduces the Integrated Information System for Forests, which will enhance transparency by centralizing data on timber traceability, risk assessments, and control activities, while the National Forest Registry (NFR) aims to stream-

[73] In the case of Carașova, for example, authorities prioritize non-penal measures due to limited enforcement resources, relying on warnings and educational interventions rather than fines or penalties, as seen in the mayor's approach to addressing fire risks, where he emphasizes gentle correction and human-centered solutions rather than punitive actions. Popa 2023c.

[74] GoR 2022b.

[75] GoR, n.d.

line bureaucracy, manage National Forest Fund (FFN) property records, facilitate digital approvals and reporting, monitor forestry services, and support landowners with relevant information and assistance. The future operationalization of the NFR, as outlined in NFS30, offers a transformative opportunity to enhance forest management and governance by providing standardized, adaptable information, creating tailored management plans for small forests, aligning forest ownership with protected area regulations, automating communication between owners and authorities, and ensuring data quality. Another change in the new form of the Forest Code to be capitalized on is toward forest fund surveillance and security systems, using satellite imagery or the possibility of paying for security services from specialized companies. Finally, MEWF could also enhance the digitalization of the forestry sector by operationalizing the National Forest Registry and capitalizing on the results of the SIPOCA 395 project regarding the implementation of a geoinformatics system centralizing forest management data, enabling geospatial analysis and mobile-accessible field navigation for intervention personnel, as well as integrating GIS and remote sensing technologies for map creation and ensuring accessibility for all stakeholders.[76]

Improving inter-institutional data flow and collaboration

There is an opportunity to update and streamline the operational procedures for data flow through new collaboration protocols between relevant institutions, such as forest management districts and MEWF. Such collaboration protocols should clearly stipulate the procedure for data collection and reporting, as well as the structure of the relevant data reported, to ensure clear and uniform data collection and reporting processes. This will avoid delays or omissions of data on the occurrence of fires, thus ensuring the transmission of relevant, up-to-date territorial data. Romania could also enhance coordination, collaboration, and knowledge exchange across sectors and government levels by establishing a central coordinating body, similar to Portugal's Agency for the Integrated Management of Rural Fires, to improve governance and integrated wildfire management.[77] Additionally, fostering better communication and trust between local communities and authorities could greatly enhance wildfire prevention and mitigation efforts.[78]

Strengthening wildfire risk management personnel capacity

With targeted resources and reducing the administrative burden on staff, the capacity for strategic action and coordination in forest fire risk management can be improved. Staff in the field of forest fire risk management do not deal exclusively with this issue but have many other administrative responsibilities, which sometimes leads to insufficient capacity for strategic action and coordination. Potential opportunities include allocating dedicated funds for the recruitment or redesignation of staff focused on forest fire risk management, along with financial incentives to attract and retain skilled personnel. Inter-institutional agreements between different agencies involved in forest fire and emergency situations management could facilitate resource and staff sharing, improving capacity and response times. Additionally, providing targeted training for both existing and new staff would enhance expertise in fire risk management and coordination, ensuring a more effective and focused approach.

[76] MEWF 2021.

[77] OECD 2023.

[78] Romania could benefit from improved communication and trust between local communities and local authorities to ensure effective disaster prevention and mitigation. EC 2024.

Enhancing the engagement of CSOs, local communities, and the private sector

Engagement with the private sector for business continuity plans (BCPs), while also upscaling the collaboration with CSOs and local communities in fire-prone areas, can significantly reduce wildfire risks. Enhancing wildfire risk awareness and preparedness among SMEs in Romania through targeted training, the adoption of disaster resilience plans, and the integration of risk management into business operations is vital. Clarifying roles and responsibilities as part of a robust collaboration framework between CSOs and the local authorities, MEWF, and MoIA could play an important role in contributing to prevention, awareness, monitoring, and policy advocacy as well as in post-fire restoration. CSOs can also work closely with local communities to build resilience, raise awareness, promote local participation in fire prevention strategies and forest restoration, and even assist during fire emergencies, especially in rural and forested areas, ensuring a whole-of-community approach and empowering local communities to manage wildfire risks and act effectively, especially in response phases.

UNDERSTANDING WILDFIRE RISK AND USE OF RISK DATA

This chapter focuses on the current understanding of wildfire risks in Romania, particularly forest fires, which is informed by various sources of data and analysis, research and innovation, national risk assessments, and other risk evaluations. Wildfire risk is understood as the combination of fire hazard (for example, the frequency of wildfires occurrence, dry vegetation, extreme weather events), exposure (for example, the number of people exposed, the value of assets and ecosystems exposed), and vulnerability (for example, the susceptibility of assets to damage, depending on factors like building materials, land use, and preparedness level).

DRM CONTEXT

Disaster risk assessments are supported by central authorities, research institutions, and specialized working groups, and contributions through projects. The national RO-RISK project (2016–2018), coordinated by the General Inspectorate for Emergency Situations (GIES), established a national framework for risk assessment, including a standardized methodology reflecting EU standards and best practices and a WebGIS platform for sharing results (which is currently not operational). The first comprehensive National Risk Assessment (NRA) identified 10 key hazards from the 24 key risk scenarios with destructive potential outlined in the GD No. 557/2016 and resulting in hazard maps at the national level, a risk matrix, and the creation of the inter-institutional Working Group on National Risk Assessment within the NPDRR. From 2019 to 2023, improvements were made, including (i) developing a methodology for assessing disaster-related damage to ensure standardization and comparability of historical data, (ii) updating risk assessment to account for climate change and migration, (iii) creating a national disaster damage database to collect and share relevant data in a standard format accessible to all stakeholders, (iv) refining flood risk mapping, and (v) devising a method for rapid visual assessment of seismic vulnerability in buildings. These efforts aim to enhance decision-making and disaster risk reduction across all administrative levels.

CURRENT ARRANGEMENTS

National risk assessment: RO-RISK (2016-2018)

The 2016-2018 national RO-RISK assessment[79] identified fire as the most frequent risk in Romania in terms of occurrences but having a low impact compared to other types of risks and provided hazard maps across Romania, which are shortly pending the 10-year expected update. Romania has aligned with European regulations on forest fire risk assessment by transposing Council Regulation (EU) No. 2158/1992 into national legislation through Ministerial Order No. 651/2002, which approves the classification of the national territory based on the risk of forest fires. INCDS 'Marin Drăcea' conducted a national forest fire risk assessment using three national scenarios (10-, 100-, and 1,000-year probability) and two local scenarios. The analysis was based on official forest fire records from 2006 to 2015 and carried out within the RO-RISK project and the Nucleus Project 'Development of Methods for Assessing Forest Fire Hazard and Risk Based on Geospatial Technologies' 18040104, focusing on geospatial technologies for forest fire hazard assessment. Data sources included records from the National Forest Administration (Romsilva) for state-owned and privately managed forests (2006–2015) and centralized fire records from MEWF for the entire forest area (2011–2015). These records provided detailed information on fire location, burned area, dates, forest composition, causes, estimated damage, extinguishing resources (for example, forestry personnel, firefighters, police, volunteers), and fire type. The georeferencing process involved assigning descriptive attributes to fire events and mapping them in a GIS environment using georeferenced forest management maps (scale 1:20,000 or 1:10,000). Fire events were geolocated in the national Stereographic 1970 projection system. Two methods were used for hazard assessment: (1) a statistical method, calculating annual fire probability based on fire frequency per forested area (km^2), and (2) an

[79] GIES 2018b. Lorent et al. 2018, present the national forest fire risk assessment conducted under the RO-RISK project in 2018, coordinated by MoIA through GIES and executed by INCDS. Lorent et al., 2018, evaluate disaster risks, including wildfires, for various scenarios to address climate change and disaster prevention requirements.

interpolation method, using kernel density estimation to analyze spatial distribution patterns. The study also analyzed fire causes, spatial and temporal characteristics, and resource allocation for fire suppression. These methods and data contributed to the development of a geospatial database supporting forest fire hazard analysis at the national territorial units level.

The current national risk assessment in Romania (RO-RISK) and other recent wildfire hazard studies (Box 2) exhibit simplified risk models, that could benefit from a more dynamic hazard evaluation, consistent hazard classifications, improved consideration of local factors, as well as integration of socioeconomic and ecological elements. Romania's RO-RISK fire hazard analysis relies on statistical methods and kernel density estimation, providing a broad risk overview relying on static data. However, the international best practices support a more integrated approach which includes socioeconomic impacts, population density, infrastructure vulnerability, and ecological sensitivities as well as the effect of changing climate conditions or the impact of ongoing human activities and land use. Moreover, clear, standardized criteria for determining fire risk zones across different studies or methods are yet to be achieved, currently leading to inconsistent hazard classifications and difficulties in implementing effective and coordinated risk management strategies. Current assessments focus on administrative boundaries (for example, UATs), which may not accurately reflect the risk on the ground. Instead, this could be better addressed considering variables like topography, vegetation types, and local weather conditions. An upcoming RO-RISK national assessment is expected which will adopt a multi-risk approach, enabling a more integrated understanding of overlapping and cascading hazards, including those related to wildfires.

Climate change considerations revealed by the RO-RISK assessment

Currently, Romania could benefit from a deeper understanding about how changing weather patterns (for example, increased temperatures, longer dry periods) might affect fire risk, which would have positive impact on long-term forecasting and adaptive planning. Data from 2006 to 2015 used for the RO-RISK assessment reveal significant annual variability in forest fires, with high numbers and extensive affected areas occurring more frequently in recent years compared to the entire 1956–2005 period. The year 2012 was exceptional, with the high number of fires and extensive burned areas being considered a once-in-a-100-year event. This situation may be linked to climate change, a factor that requires further study.[80] Nevertheless, according to the newest JRC report, 2020 had a similar burned area and 2022 recorded even higher numbers.[81]

Zonation of wildfire risk

The current zonation for fire risk in Romania is based on the RO-RISK (2016-2018) national assessment complemented by MEWF Order No. 651/2002 approving the classification of national land based on the risk of forest fires.[82] Several previous studies employing various methodologies with their particular strengths and limits (for example, statistical analysis, kernel density estimation, regression models) classify areas into various risk zones. Key studies include the RO-RISK (2016-2018) assessment, which used kernel density estimation and statistical methods, and the National Forest Fire Risk Assessment 2006, which employed a simpler statistical approach. These assessments often yield different risk zones based on the specific approach and data used (see Box 2). High-risk areas commonly identified across studies include Mehedinți, Caraș-Severin, and Gorj Counties, with additional emphasis on Suceava and Hunedoara counties in some assessments. Some methods focus on fire frequency, while others consider environmental and socioeconomic variables, highlighting the importance of integrating multiple factors into fire risk assessments. The zoning proposed by the RO-RISK assessment, while generally identifying high-risk areas, shows significant discrepancies due to the simple statistical method overestimating hazard in areas with frequent fires but low forest cover and underestimating risk in regions with extensive forests, highlighting the challenges in consistently assessing forest fire risk across diverse geographical and ecological conditions.

[80] Lorenț et al. 2018.

[81] JRC. 2023a.

[82] The classification considers the criteria established in Council Regulation No. 2.158/92/EEC and the Study for Zoning the Country According to Fire Risk in Forested Areas, classifying Romania's territory in the category of low fire risk.

Additionally, at a broader scale, wildfire risk zonation in Romania, as reflected in various studies, faces challenges such as (1) subjectivity in defining hazard zones due to varying smoothing parameters; (2) limited data availability and accuracy, with short observation periods affecting long-term predictions; (3) lack of consideration for fire behavior, focusing mainly on fire frequency; and (4) difficulty integrating environmental and socioeconomic variables, due to inconsistent data and limited attention to human activity.[83]

Box 2. Wildfire hazard zonation methods in Romania

Various sources on wildfire hazard zonation in Romania, besides the 2016-2018 RO-RISK assessment, differ in methods, scope, and focus, using approaches like statistical methods, kernel density estimation, and logistic regression, with emphasis on factors such as fire frequency, forest type, and socioeconomic variables, as follows:

1. **National Forest Risk Assessment RO-RISK 2018 (Lorenț et al. 2018)**
   - **High-risk areas:** Southwestern counties (Mehedinți, Dolj, Gorj), Alba
   - **Method:** Combination of simple statistical method and kernel density estimation
   - **Data used:** 2006–2015
2. **Geospatial Patterns and Drivers of Forest Fire Occurrence (Mallinis et al. 2019)[84]**
   - **High-risk areas:** Suceava, Caraș-Severin
   - **Method:** Logistic regression model (univariate and multivariate) using environmental, socioeconomic, and demographic variables
   - **Data used:** 2006–2015
3. **National Forest Fire Risk Assessment (Adam 2006,[85] 2007[86])**
   - **High-risk areas:** Central-western Romania (Gorj, Mehedinți, Hunedoara)
   - **Method:** Simple statistical method (fires per 10,000 ha)
   - **Data used:** 1990–2003
4. **Scientific Report on Forest Fire Risk Modeling (Barbu 2008)[87]**
   - **High-risk areas:** Caraș-Severin, Mehedinți, Constanța
   - **Method:** Fire risk model based on fire occurrences, considering fire frequency, burned area, and forest type
   - **Data used:** 1976–2000.

Source: Lorenț et al. 2018.

[83] Based on the kernel density estimation method. Lorenț et al. 2018.

[84] Mallinis et al. 2019. "Geospatial Patterns and Drivers of Forest Fire Occurrence in Romania." Applied Spatial Analysis and Policy 12. Link.

[85] Adam, I. 2006. "Technical Assistance for the Development of Fire Risk for Romania's Forests." Scientific Report (Manuscript). Institute for Research and Forest Management (ICAS).

[86] Adam, I. 2007. "Method for Assessing the Fire Risk in Romania's Forests." *Annals of ICAS* 50: 261–271.

[87] Barbu 2008.

Territorial forest fires risk maps

At the local level, territorial risk analysis maps are developed as part of the broader territorial risk assessment conducted by emergency inspectorates, with wildfire risk maps being specifically designed for fire prevention and suppression efforts. According to the territorial risk scheme and methodology for preparing risk analysis and coverage plans for each administrative unit, as outlined in Order No. 210/2007 for the approval of the *Methodology for Identifying, Evaluating, and Controlling Fire Risks,* wildfire risk identification and analysis are conducted by the emergency inspectorates and county/local emergency committees. This process helps categorize fire risks, including natural risks such as forest and vegetation fires, in the relevant administrative areas. Additionally, forest fires risk maps are specifically designed to assist in fire prevention and suppression efforts, offering detailed geographical data to guide firefighting operations and fire management strategies, ensuring a coordinated and effective approach to wildfire risk mitigation and emergency response at the local level. According to MEWF Order No. 551/1475 of August 8, 2006, for the approval of the *Regulation on Managing Emergency Situations Caused by Forest Fires*, the technical support group within the county committee is responsible for developing the county-level forest fire protection plan for the national forest fund, in collaboration with the county emergency inspectorate, ensuring alignment with the emergency response plans prepared by municipal, urban, and communal emergency committees. This group is composed of representatives from the territorial forestry and hunting inspectorates, the National Forest Administration – Romsilva, the Environmental Protection Agency, and the county office of the National Environmental Guard (GNM).

Access and use of data

In Romania, wildfire data collection is fragmented between numerous institutions which collect and process a significant volume of data on the forestry sector, such as MEWF, the National Forest Administration - Romsilva, County Forest Guards, and the National Environmental Guard, limiting the use of this information in supporting strategic decision-making and wildfire risk management. Fire incidents are tracked continuously until extinguishment, with relevant data transmitted to the center as per the order's provisions.[88] The Operational Center for Emergency Situations, a permanent technical body within the forestry authority, oversees monitoring, evaluation, notification, warning, and coordination of prevention and management measures. Order No. 2579/2012 establishes the informational and decision-making flow for warning and alarm systems in emergencies related to risks under MEWF.

The main challenge for data collection regarding fires is the lack of a centralized data source that contains all forest management maps (GIS or analog) at the national level, regardless of ownership or management. This results in a time-consuming geolocation process with significant inaccuracies—up to 16.5 percent of fire points may be improperly placed, which complicates precise and efficient fire tracking.[89] Additionally, institutional communication gaps have been identified in the NDRMP between forest management units and MEWF, leading to delays or omissions in reporting forest fire data. Finally, staff responsible for forest fire risk management often handle multiple administrative tasks, reducing their capacity for effective strategic coordination and action.[90]

Innovation and scientific services

Romania possesses strong technical capabilities in wildfire risk assessments and disaster risk reduction (DRR) through its research entities and academies, though the utilization of their results is limited. Romania contributes wildfire risk data to international EU databases like the European Fire Database (EFD) managed by EFFIS, although inconsistencies in data collection methods across countries exist given the variation in data collection methods and compliance with reporting standards. Romania also benefits from Copernicus services, through the authorities responsible for managing different risks (for example, MEWF, National Meteorological Administration [ANM], GIES) have made periodic use of tools such as the Copernicus Emergency Management Service for early warning and rapid mapping, particularly for forest fires and floods. Despite increasing use of these tools, Romania has not yet fully exploited the EU Risk Data Hub, implemented by the Disaster Risk Management

[88] Romsilva. Prevention and Extinction of Fires. Link.
[89] Lorenț et al. 2018.
[90] NCES 2020, 112.

Knowledge Centre (DRMKC), which could enhance disaster loss data (DLD) and support decision-making and risk analysis.[91]

KEY OPPORTUNITIES

Opportunities to enhance Romania's wildfire risk understanding include (1) improving hazard mapping with a holistic approach considering climate, socioeconomic factors, fire behavior and detailed future projections, supported by updated legislation; (2) enhancing data collection and exchange; (3) building capacity of wildfire and forestry management personnel across sectors; (4) strengthening scientific community involvement in DRM; and (5) increasing public awareness and stakeholder engagement in risk assessment.

Enhancing hazard mapping and zonation of wildfire risk

Romania's current wildfire hazard mapping and zonation need further refinement and integration of advanced technologies, models and more dynamic data from ecological and meteorological variables to socioeconomic impacts, fire behavior dynamics and detailed future projections to align with international best practices. While currently used methods like kernel density estimation and statistical analysis offer valuable insights into fire-prone areas, integrating environmental, socioeconomic, and fire behavior factors could lead to more comprehensive and accurate risk assessments. To this end, Romania should conduct wildfire risk analysis at an appropriate spatial scale, considering the exposure and vulnerability of people, communities, ecosystems, critical assets, services, businesses, and cultural heritage (with a special focus on the WUI), with particular attention to vulnerable groups such as women, children, older people, PwDs, and migrants (especially those unaware of the risk or not linguistically proficient), while assessing both physical (for example, respiratory problems, increased cancer risk) and mental health impacts (particularly for firefighters and first responders), considering environmental and economic impacts (including monetary value), seasonality, cascading effects (for example, wildfire-induced landslides and floods), and uncertainties, and evaluating the coping capacities of its wildfire risk management system to enhance preparedness, response, and resilience.[92] Moreover, considering future projections incorporating dynamic factors such as climate change (for example, emissions pathways, increased temperatures, longer dry periods), land use changes, and fire behavior (for example, fuel moisture, wind patterns), based on state-of-the-art science and aligned with the latest Intergovernmental Panel on Climate Change (IPCC) report, scientific peer-reviewed publications, and EU regulations, is needed to ensure robust and forward-looking assessments.[93] The outcomes of the risk analyses should be evaluated to ensure the risk is below a tolerable threshold, with criteria defined in official guidelines, considering local disaster management capacities and incorporating multi-risk and cross-sectoral factors in the evaluation process.[94] Additionally, using remote sensing and GIS for near-real-time hazard and risk mapping, Romania can enhance wildfire risk assessment by integrating advanced technologies through projects like the EU Green Deal TREEADS, aligning with EU strategies to improve forest resilience, and focusing on prevention, detection, and restoration.[95] Nonetheless, standardized methods for fire risk zonation at a national level should be developed to help harmonize results across different regions and ensure consistency in the application of wildfire risk assessments.

[91] EC 2023, 68.

[92] Casartelli and Mysiak 2023.

[93] These assessments should be aligned with sources such as the IPCC Assessment Reports on Climate Change: Impacts, Adaptation, and Vulnerability, the Copernicus services managed by the European Commission, and Commission Delegated Regulation EU 2021/2139 of 4 June 2021 according to the Casartelli and Mysiak (2023, 33–34).

[94] Casartelli and Mysiak 2023, 34.

[95] Treeads, A Holistic Fire Management Ecosystem for Prevention, Detection and Restoration of Environmental Disasters. Link.

Enhancing wildfire data collection and exchange

Wildfire data collection and management in Romania would benefit from enhanced operational procedures and the implementation of an integrated information system for vegetation fire management, where real-time operations can be carried out by all responsible entities based on their competencies. The operational procedure for data flow needs updating, developing standardized protocols detailing data collection and reporting procedures, as well as the structure of relevant data, thus ensuring timely and accurate transmission of relevant territorial data.[96] To this end, extending observation periods and collecting more granular data on forest cover, fire behavior, and socioeconomic factors is crucial. A geoportal system could improve wildfire data collection and recording by enabling standardized data entry and precise fire point localization.[97] Additionally, wildfire risk assessment results, including scenarios and maps, should be publicly accessible and clearly communicated to relevant stakeholders (for example, the public and stakeholders in wildfire management, adaptation, sustainable agriculture, forestry, and development) in an understandable and targeted way, incorporating uncertainties and ready for use in operational planning for land use, urban development, and disaster management.[98]

Building wildfire and forest management personnel's capacity across sectors

Wildfire and forestry management teams require greater support to strengthen strategic coordination and actions. A well-financed wildfire risk management system with skilled stakeholders, trained personnel, targeted training programs for specific sectors or public servants, robust information and communication technology (ICT) infrastructure, and effective use of EU and extra-EU funding is essential for implementing and disseminating risk assessments at all territorial levels.[99] Key stakeholders involved in implementing and disseminating the risk assessment process should possess adequate administrative skills. To this end, the load on the wildfire and forestry management staff should be lifted through various means such as the delegation of routine administrative tasks to specialized support personnel, the use of digital tools for task automation, and the establishment of clear workflows that prioritize their core responsibilities in risk assessment, fire prevention, mitigation, and response. Collaboration between national and local authorities, along with international experts, should be prioritized and supported to enhance data sharing, standardized risk assessments, and consistent regional risk mapping.

[96] NCES 2020, 112.
[97] Lorenț et al. 2018.
[98] Casartelli and Mysiak 2023, 34.
[99] Casartelli nd Mysiak 2023, 35.

Box 3. Example of efforts to improve understanding of wildfire risk - Romania

To enhance wildfire monitoring and response, recent research conducted by INCDS 'Marin Drăcea' and Transilvania University of Brașov has highlighted the effectiveness of satellite imagery in detecting and tracking wildfires. The study focused on forested areas in Jiana and Pătulele, Mehedinți County, utilizing satellite data from platforms like Copernicus and EFFIS to monitor fire locations and assess the extent of damage. The study confirmed that high temporal resolution data (MODerate Resolution Imaging Spectroradiometer - MODIS, Visible Infrared Imaging Radiometer Suite - VIIRS) accurately detected fire points in the study area. While estimating burned areas was effective, particularly for large fires in less dense forests, sensor limitations hindered detection in denser areas. Remote sensing is recommended for early detection and comparison with on-ground data.

Source: Lorenț, A., et al. 2023. "Detection and Localization of Forest Fires and Tracking Their Evolution Based on High Temporal Resolution Satellite Images." Journal of Forestry and Hunting XXVIII (52). Link.

Strengthening and formalizing the participation of the scientific community in DRM

The 2023 UCMP peer review report for Romania highlights the potential of stronger collaboration with Romanian research institutes to leverage the country's technical capabilities and enhance risk analysis and scenario development at various scales. Currently, there is no established clear framework for collaboration and cooperation of the Romanian research institutes and universities with the public authorities with roles in DRM. They are only consulted on an occasional basis. The Romanian scientific community is proposing a formal clarification of the type and manner of its involvement in DRR and DRM, a need explicitly emphasized by universities and research centers during the peer review. Romanian institutions have also identified the Italian model of Centres of Competence as a good practice to adopt.[100] One key area for the research institutes is in improving risk assessments and providing higher quality hazard and risk maps. Additionally, the NFS30 sets forth an opportunity for Romania to improve forestry management by establishing Regional Technology Transfer Centers, fostering collaboration between research organizations, forestry administrators, and the private sector for innovation in agroecology and forestry technologies.[101]

Increasing public awareness and stakeholder engagement in risk assessment

Local communities, landowners, and the private sector should be involved alongside public authorities in wildfire risk assessment processes as well as in monitoring and reporting. Key stakeholders in wildfire risk management must actively participate in developing plans at all territorial levels, with clearly defined roles, regular stakeholder mapping to identify key and potentially risk-exacerbating actors, and a participatory approach to ensure effective horizontal and vertical cooperation.[102] Although the legislation in Romania assigns roles in wildfire risk assessment and reporting, with public authorities coordinating the process, local communities reporting and preventing fires, landowners implementing prevention measures, and the private sector contributing expertise, resources, and technology while adhering to safety protocols, progress is yet to be made in ensuring compliance. There is scope for land managers and wildfire suppression personnel to work together to identify threats, assess community risks, educate landowners, boost community involvement, support decision-making in land management, and assist local fire forces in planning preventive actions.[103] Collaboration is particularly vital due to the current reluctance of landowners to share ignition point data, which hampers accurate modeling and comprehensive analysis. To address this, strategies should be developed to encourage data sharing, potentially through incentives or legal frameworks that highlight the benefits of improved risk assessment for all stakeholders.

[100] EC. 2023, 64.
[101] GoR 2022b.
[102] Casartelli and Mysiak 2023, 38.
[103] Lorenț et al. 2018.

WILDFIRE RISK PREVENTION, REDUCTION, AND MITIGATION

This chapter focuses on wildfire risk prevention, risk reduction, and mitigation, exploring policy arrangements, structural and nonstructural measures for fire prevention and reduction, innovation and knowledge services, and administrative capacities related to wildfire prevention. Wildfire prevention includes measures aimed at stopping wildfires from starting (for example, public awareness campaigns, prohibiting activities like open burning, enforcing regulations); reduction focuses on limiting the scale and intensity of fire (for example, vegetation management, establishing firebreaks); and mitigation prepares communities and ecosystems to withstand and recover from wildfires (for example, fire-resistant infrastructure, improved emergency response, and sustainable forest management).

***Note**: In Romania, wildfires mainly occur in remote, sparsely populated forested areas due to uncontrolled burning of vegetation near forests, typically affecting young forests with minimal social consequences, as they rarely harm buildings or private property.*

DRM CONTEXT

In line with the governance framework, planning and prevention activities fall under the scope of the Ministry of Internal Affairs (MoIA) and relevant line ministries (depending on the hazard) as well as the sub-national level. In 2024, the National Disaster Risk Reduction Strategy (NDRRS) 2024—2035[104] was approved, covering all hazards identified by the NRA and providing a comprehensive strategic framework for enhancing Romania's disaster resilience, promoting a whole-of-society approach through multisectoral, multi-hazard, participatory, and inclusive efforts.

Funds for DRM[105] are sourced mainly from the state budget, local budgets, and internal funds from public and private contributions and insurance, complemented by EU or other international funding. So far, Romania has used these funds for DRM in four main areas: developing policies and strategies, increasing public awareness, training operational personnel, and strengthening intervention capacity.[106] A complete overview of existing public and private, national, and international funding opportunities and synergies is not available. However, it is estimated that between 2014 and 2021 Romania invested over RON 73 billion (€15 billion) in DRM through national programs funded by the state budget, alongside approximately RON 7.3 billion (€1.5 billion) from EU investments.[107] Other sources of funds accessed for DRM include the Norwegian Mechanism 2014–2020 and World Bank loans.[108]

CURRENT ARRANGEMENTS

Policy arrangements for wildfire risk prevention, risk reduction, and mitigation

The NFS30, aligned with the EU Forest Strategy for 2030, emphasizes several key principles to strengthen wildfire prevention, reduction, and mitigation in Romania, complemented by the NSCCA. It prioritizes improving forest road accessibility to facilitate quick firefighting responses, while also focusing on enhancing forest resilience to climate risks and frequent disturbances, including wildfires. Vulnerable areas prone to fires are to be identified and protected through strategic planning, including firebreaks and improved monitoring systems such as remote sensing and video surveillance. Sustainable forest management practices, like controlled thinning and vegetation management, are aimed at reducing fuel loads. The strategy also integrates technological solutions like remote sensing and surveillance for early detection, fosters public-private collaboration, and involves local communities in fire prevention efforts, ensuring a holistic approach to forest fire resilience and risk reduction.[109] Additionally, the NSCCA for 2024–2030, with a perspective toward 2050, emphasizes the need for adaptation measures to support sustainable forest management, including improving forest management practices, adapting regenera-

[104] GoR 2024.

[105] The following legislative framework governs disaster risk financing (DRF) in Romania: Law No. 500/2002, Law No. 273/2006, GD No. 932/2007.

[106] NCES 2020.

[107] GoR 2024 €1.5 billion in DRM from various EU funds, including Structural Investment Funds, Next Generation EU, the Recovery and Resilience Facility, UCPM, and AMIF. These funds supported various initiatives, including the development of early warning systems, risk knowledge enhancement (RO-RISK), improved monitoring and forecasting capabilities, and better alert dissemination techniques (RO-ALERT).

[108] NCES 2020, 90. Link.

[109] GoR 2022b.

tion methods, and minimizing associated risks. It includes efforts to reduce wildfire risks, alongside drought, hail, and flood risks, through national disaster risk assessments and risk mapping, as outlined in official documents and regulations.

In Romania, wildfire prevention and reduction are guided by a strategic framework, supported by EU and national legislation, with GIES ensuring unified implementation of measures for life, property, and environmental protection against fires, disasters, and managing emergency situations.[110] EU Regulation No. 1305/2013 supports rural development, including measures for preventing and repairing wildfire damage in forests. Nationally, the Fire Prevention and Protection Law No. 307/2006 and the Environmental Protection Emergency Ordinance No. 195/2005 prohibit harmful burning practices and impose penalties for violations. The Forest Code No. 46/2008, which is under revision, ensures sustainable forest management. Specific ministerial orders (for example, No. 1654/2000, No. 651/2002, and various joint orders) provide detailed norms for fire prevention, classification of fire risk zones, and emergency management during forest fires, focusing on fire risk assessment, safe agricultural burning, and fire suppression procedures. These legislative frameworks work together to manage and mitigate wildfire risks effectively in Romania.[111]

Legal restrictions on vegetation burning

Environmental legislation now imposes fines up to €3,000 for individuals and €20,000 for legal entities for burning vegetation, with burning in protected or restoration areas punishable by up to one year of imprisonment or a fine. Under GEO No. 195/2005 on environmental protection, both individuals and legal entities are prohibited from burning stubble, peat bogs, forest litter, reeds, shrubs, or grassy vegetation without the approval of the competent environmental protection authority and without prior notification to the public emergency services. Non-compliers face fines ranging from €1,500 to €3,000 for individuals and €10,000 to €20,000 for legal entities. Since 2022, burning waste, substances, or objects can result in up to five years in prison or a fine, with GEO No. 38/2022 amending GEO No. 92/2021 to address waste abandonment and open-air burning in Romania, prohibiting the burning of waste and requiring hazardous waste storage and fire safety measures, which contributes to reducing emissions from uncontrolled waste fires and improving public health.

The Law on Compost (No. 181/2020) aims to prevent pollution by banning the burning of plant debris and enforcing environmental standards for subsidies but is hindered by the lack of approved methodological norms. APIA has signed a protocol with GNM and GIES to monitor farmers' compliance with regulations on burning stubble and plant residues. Resistance in rural areas to the current regulations, where burning is seen as part of spring cleaning, has led to fires and subsidy withdrawals, while the law imposing fines is delayed due to the lack of necessary regulations, which are still under development without a clear timeline. Violations can lead to the reduction or exclusion of subsidies under the EU's Common Agricultural Policy (CAP). APIA penalizes farmers by withdrawing funds for burning farmland or meadows registered for aid, affecting 1.94 percent of aid-requested land in 2022.[112]

Fire patrols and public awareness campaigns

Despite regular patrolling, aerial surveillance, and public awareness campaigns led by Romsilva and local authorities, challenges such as limited resources, and the need for better coordination among institutions and adequate management of dry vegetation persist. Order No. 551/1475/2006 on the Regulation for Managing Emergency Situations Resulting from Forest Fires (Articles 38-40) outlines the responsibility of Romsilva, through its forestry departments and authorized private forestry units, to plan, organize, execute, and monitor patrols, especially during drought periods and non-working days, to prevent forest fires through constant surveillance.

Additionally, Romsilva coordinates with the Civil Aviation Department for aerial patrols in high-risk areas during dry spells, while ensuring the clearance of deadwood and maintenance of firebreaks during critical fire-prevention periods (February-

[110] GIES. 2020a. *Disaster Risk Management Summary 2020*. Link.

March and September-October).[113] Following wildfire incidents in recent years, the National Forest Administration - Romsilva implemented several nonstructural measures to prevent fires in managed forest areas, such as increasing patrol activities and running awareness campaigns for citizens, tourists, and employees of companies operating in the forest.[114] Patrol efforts by forestry personnel were increased along forest perimeters, especially in areas with a higher risk of fires due to dry vegetation, with a focus on areas with recurring fire events. To prevent illegal activities, 10,160 patrol actions were carried out in 2023, some with the support of the Gendarmerie, Police, Environmental Guard, Forest Guard, and other institutions.[115] Additionally, forest districts must ensure proper maintenance of forest paths, parking areas, and signage, along with strict control over grazing and forest fruit harvesting to ensure compliance with fire prevention and response measures.[116] However, limited human resources in fire prevention, especially for managing stubble and dry vegetation fires, represent a national issue. Finally, the forestry sector is facing field staff deficits and limited financial resources which could upscale investments in critical areas such as modern technology, infrastructure improvements, and the recruitment of specialized personnel—all necessary for effective monitoring and protection of natural areas.

Fire forest roads accessibility

Preventive fire measures, such as the creation and maintenance of an accessible network of forest roads and water breaks, could be upscaled in Romania. In 2023, Romsilva prioritized forest road construction and rehabilitation, investing €23.3 million (97.09 percent of the annual target) in six new road projects (24.35 km), 35 rehabilitations (222.20 km), and 12 bridge projects. Additionally, 9,419 km of forest roads and 45 km of forest railway were maintained, totaling €15.97 million.[117] Despite these advancements, Romania's forest road networks require further adjustments to optimize firefighting interventions, while considering the trade-off that constructing access roads in protected areas may lead to unintended consequences, such as increased access for all-terrain vehicles and potential legal or illegal logging. Romania has one of the lowest densities of forest roads in Europe, with a network density of 6 meters per hectare, well below the European average of 20 to 30 meters per hectare, and significantly below the optimal required level, with no short- or medium-term prospects for development. For comparison, some EU countries have higher densities: Germany has around 60 meters per hectare, Austria around 36 meters per hectare, and France around 26 meters per hectare, while Mediterranean countries like Spain and Portugal have developed specialized forest road networks for firefighting access, with roads every 500 m, enabling quick vehicle access to fire sites could be used as good practice examples to be adapted locally.[118]

Water breaks

Water breaks, as defined in Order No. 551/1475/2006 and the Regulation of August 8, 2006, on the management of emergency situations resulting from forest fires, are critical elements of the forest fire defense plan, ensuring access to water sources and infrastructure necessary for effective wildfire suppression. According to Annex 2 from the 2006 Regulation, The General Plan of a Forestry District marks water supply sources, including its own networks, other extinguishing substances, rivers, and streams with a relatively constant flow throughout the year. Additionally, external water sources are outlined, such as water supply networks, specifying flow rates, pressures, hydrant locations, and distances from the forestry unit. Other water sources, including artificial or natural dams, rivers, lakes, and ponds, are also included, along with supply platforms and their distances from the forestry unit

[111] GoR 2024.

[112] Popa 2023a.

[113] As per Section 1.1 of MEWF Order No. 551/1475 (August 8, 2006) regarding the Regulation on Emergency Management Due to Forest Fires, which outlines organizational measures and rules for preventing and suppressing forest fires. Link.

[114] National Forest Administration – Romsilva. 2024. "Significant Increase in the Number of Wildfires in the Forested Areas Managed by Romsilva in the First Half of the Year." Press release, August 6, 2024. Link.

[115] National Forest Administration – Romsilva 2023, 10–11.

[116] For further details, please refer to Section 1.1 of MEWF Order No. 551/1475 (August 8, 2006) regarding the Regulation on Emergency Management Due to Forest Fires, which outlines organizational measures and rules for preventing and suppressing forest fires. Link.

[117] National Forest Administration – Romsilva 2023.

[118] Popa 2023a.

area, ensuring a rapid and effective response in case of fire. Forest roads that provide access to water sources for wildfire suppression are maintained. Additionally, forest roads that provide access to water sources for wildfire suppression are maintained by their respective administrators, as outlined in the Forest Fire Defense Plans. However, the National Forest Administration – Romsilva is not responsible for managing water sources outside the National Forest Fund or improving access infrastructure to them. Law No. 56/2010 (republished) regarding the Accessibility of the National Forest Fund mandates the construction and upgrading of forest roads and railways to support sustainable forest management, fire prevention, and ecological exploitation. Finally, Order No. 551/1475/2006 on managing forest fire emergencies (Articles 50-64) outlines measures such as firebreaks, compacted shrub-lined edges, forest road construction for firefighting access, and the establishment of designated water storage areas and topographic maps for fire defense.

Forest video surveillance

The recent 2024 MEWF's pilot project on video surveillance for forests[119] (Box 4), if implemented according to the plan, offers real-time monitoring to supplement limited human resources, though it faces high costs and potential technology limitations. These technologies will monitor illegal activities like timber theft, as well as waste dumping, pollution, and fires in recreational areas. Data will be managed initially by nine regional dispatch centers, with live feeds accessible to law enforcement,[120] extending the protocol between the Ministry of Environment and MoIA to enhance forest security through gendarmes.[121]

Forest fire protection belts

Efforts to enhance fire protection in young forests and establish forest protection belts are under way, but amendments to legislation have disrupted project plans, causing delays in implementation. The National Forest Protection Belt System, declared public utility, includes protection for agricultural land, anti-erosion, transport routes from snowdrifts, dikes and riverbanks from floods, and settlements and economic objectives. Law No. 289/2002 on Protection Forest Belts, amended by Government Ordinance No. 36/2022, regulates the establishment of forest protection belts within the National Forest Protection Belt System, defining technical requirements, local authority and landowner responsibilities, and funding sources. Local authorities must provide parcel plans and cadastral records to identify landowners near forest protection belts, while the MEWF, Romsilva, and Forestry Administrators oversee planning, with Forestry Research Institutes conducting studies, and landowners required to establish the belts based on approved documentation. Landowners can voluntarily establish forest protection belts under certain conditions, in line with Government Emergency Ordinance No. 35/2022. Article 3 of GO No. 36/2022 amends Article 4 of Law No. 289/2002, adjusting the positions of protection belts, permitting 3-4 meter access roads along one edge, and allowing expropriation over a 30-meter width with tree planting occurring within 26-27 meters. Romsilva is working on establishing 42 forest protection belts covering 830.02 ha along communication routes, with efforts including cadastral services, legal consultation, and government decision proposals. However, amendments to Law No. 289/2002 through Government Emergency Ordinance No. 36/2022 have altered the positions for protection belts, causing delays in some investment projects due to shortened or eliminated sections.[122]

[119] MEWF 2024.

[120] According to a Facebook post by the Minister of the Environment, Mircea Fechet, "The Contract for Forest Monitoring with Video Cameras Has Been Signed, a Requirement under the National Recovery and Resilience Plan (PNRR)." Economedia.ro. Link.

[121] Ciprian Muscă, President of the Forest Association of Romania, stated in an interview titled "Forest owners will be required to install video surveillance systems," on July 31, 2023, Radio România Actualități. Link.

[122] National Forest Administration – Romsilva 2023, 10–11.

Box 4. Example of integrated forest fire risk reduction via video surveillance

In June 2024, MEWF signed a €10.06 million contract to implement a national forest monitoring system within 12 months, as part of the NRRP's Digitalization Component. The project aims to modernize timber traceability with automated alerts and real-time data, aligning with EU 'Deforestation-free' standards, in a two-stage process:

Pilot phase: Initial focus will be on pilot zones in Argeș, Bacău, Maramureș, Neamț, and Suceava counties. The system will include 100 license plate recognition cameras and 50 AI-powered cameras for advanced detection and night vision.

National phase: Expand surveillance to all forest roads.

Box 5. Wildfire risk reduction and prevention measures for 2023 by Romsilva in Romanian forests

This box highlights investments in prevention led the Romsilva.

Based on the 2023 annual report of the National Forest Administration - Romsilva, the following measures were implemented to prevent and reduce wildfires, ultimately strengthening forest resilience, improving emergency response capabilities, and preventing the spread of wildfires in Romanian forests:

Firebreaks and barriers:

- Creation of 1,044 ha of parcel lines, forest firebreaks, and cleared vegetation to isolate potential fire outbreaks.
- Construction of 39.5 km of sanitary ditches to limit vehicle access to forests.
- Establishment of 1.5 km of live fences to prevent unauthorized entry and limit fire risks.

Fire control and suppression:

- Managed 149 forest fires, affecting 434.07 ha, with estimated damages of €69,314.74.[123]
- Implemented rapid response measures to reduce wildfire spread and mitigate damage.

Infrastructure investments:

- Constructed and rehabilitated 24.35 km of new forest roads and 222.20 km of rehabilitated roads to ensure quick access for firefighting teams.
- Repaired or built 12 new bridges for better forest road accessibility during emergencies.

Investment approval: Over 95 investment projects, including roadworks and infrastructure updates, were approved to ensure forest accessibility and wildfire risk reduction.

Maintenance and repairs: Intervention on 9,419 km of forest roads and 45 km of forest railway (Vaserului Valley) to maintain accessibility and ensure safe operations during wildfire events.

Source: National Forest Administration – Romsilva 2023.

[123] Figures may vary due to the lack of a unified reporting system and differing data collection methods among various entities. Per the Joint Research Centre (JRC). 2023a. *Forest Fires in Europe, Middle East and North Africa*, the largest forest fire in Romania affected approximately 37.40 ha, while the smallest impacted around 0.01 ha, with 170 fires recorded nationally, affecting 554.25 ha of the national forest fund and causing an estimated damage of €169,000.

Sustainable forestry and biodiversity conservation

Romsilva's 2023 annual report highlights significant strides in sustainable forestry and biodiversity conservation, leveraging European funding from the NRRP to modernize seedling production, nurseries, and forest plantations.[124] In 2023, Romsilva exceeded maintenance targets in state-owned forests, achieving 104 percent of planned activities (104,069 ha), including thinning (76,277 ha), cleanings (16,073 ha), and artificial pruning (1,128 ha). Challenges like contractor shortages and limited resources affected regions such as Hunedoara and Caraș-Severin. In privately managed forests, Romsilva maintained 14,975 ha, focusing on release cuttings (466 ha), cleaning (937 ha), and thinning (11,712 ha). The organization continues to integrate nature-based solutions (NBS) into its forestry practices, prioritizing natural regeneration aligned with the ecological characteristics of key species. Where natural regeneration is unfeasible, diverse forest seedlings are cultivated to meet technical regeneration standards, further supporting sustainable forest management and ecosystem conservation.

Wildfires and building regulations

Key aspects of building codes related to fire prevention in Romania, as per the primary legislation, include fire safety measures in building design, firebreaks and defensible spaces, building material standards, fire safety permits and approvals, regulations for vegetation management, and evacuation routes and emergency access. GD No. 525/1996 for the approval of the General Urban Planning Regulation (republished in 2002) ensures fire safety by requiring minimum firefighting access distances, emergency evacuation routes, and unobstructed access for firefighting vehicles, with roads designed for heavy traffic and emergency interventions. Law No. 307/2006 on Fire Protection establishes the general principles for fire safety, requiring that construction works proceed only after a building permit is issued, ensuring integration of fire safety measures such as evacuation plans and fire-resistant materials. The law states that local councils and mayors must ensure the inclusion of access routes for interventions, notification and alarm systems, and water supply systems for firefighting in urban planning, development, and land arrangement plans.[125] Additionally, GD No. 571/2016 details categories of constructions and arrangements that are subject to approval and/or authorization regarding fire safety; the MO No. 166/2010 approves the General Provisions regarding fire protection in buildings and related installations; and GEO No. 80/2021 amends and supplements existing regulations in the fields of emergency management and fire protection, aiming to streamline fire safety procedures, simplify the process of obtaining fire safety permits, and ensure compliance with essential fire safety standards, including authorization for building use and operational safety. Finally, the General Fire Protection Norm, part of Ordinance No. 163/2007, sets standards for fire prevention, suppression, and protection measures in buildings, outlining requirements for fire safety equipment, emergency protocols, and ongoing maintenance to ensure public safety.

However, improved enforcement, better resource allocation, enhanced public education, and stronger coordination among authorities would ensure the successful application of fire prevention laws in Romania. For example, enforcement needs to be scaled up, especially in rural and remote areas, through increasing resource allocation and personnel capacity, while also supporting the implementation of inspections and monitoring, with increased focus on rapid urban expansion[126] in high-risk wildfire zones which could complicate the effective application of fire safety regulations, as it often leads to construction without adequate measures. Although obtaining a fire safety authorization is mandatory for certain buildings in Romania, with fines of up to RON 50,000 (approximately €10,000) for non-compliance, GIES reported that as of September 2023, many buildings, including 3,678 schools, 511 healthcare facilities, and 1,574 tourist establishments (10 percent of Romania's 10,000 tourist units), are operating without this

[124] National Forest Administration – Romsilva 2023, 9–10.

[125] For further details, please refer to Section 2: Duties of the Local Council and Mayor, Article 13, letter h, Law No. 307 from July 12, 2006 (*republished*) on Fire Defense. Link.

authorization.[127] Additionally, in recent years, emergency inspectorates have conducted an average of 750 annual inspections of forestry entities, identifying deficiencies such as operating without fire safety authorization, inadequate wildfire intervention equipment, missing firebreaks along roads and railways, and insufficient signage and barriers in restricted areas.[128] Increasing public awareness about wildfire risks, upscaling resource allocation for local authorities, and addressing the challenge of retrofitting older buildings to modern fire safety standards presents a key opportunity to strengthen community resilience and improve overall fire prevention efforts.

Wildfire spatial planning

Romania's current framework for wildfire-related territorial planning involves several key regulations, although challenges remain in their integration and implementation. MEWF Order No. 651/2002 classifies Romania's territory as low risk for forest fires based on Council Regulation No. 2158/92/EEC and a national zoning study. Interministerial Order No. 551/1475/2006 (Article 36) outlines the roles of authorities in managing forest fire emergencies, including fire defense plans, equipment, and cross-border cooperation, with a mandate to integrate fire defense plans into land use and zoning regulations, restricting construction activities near national forests. However, current risk maps, such as those from the RO-RISK project (2016-2018), are insufficient for effective spatial planning due to their national scale and lack of resolution. There is an ongoing need for high-resolution, localized risk maps and better coordination with national research institutes to improve risk assessments and better link them to territorial planning, highlight the need for more systematic and comprehensive wildfire risk management in territorial planning.[129]

KEY OPPORTUNITIES

Recommended structural and nonstructural strategies for wildfire mitigation, prevention, and reduction in Romania include (1) enhancing wildfire building regulations and spatial planning; (2) updating technical standards for wildfire mitigation and field access; (3) enhancing fire prevention and mitigation with video surveillance while supplementing personnel shortages; and (4) implementing NBS for wildfire prevention, considering controlled burning.

Enhancing wildfire building regulations and spatial planning

Romania can enhance its wildfire resilience by improving law enforcement, increasing inspection and monitoring capacities, and investing in comprehensive wildfire risk studies, particularly in the WUI, while integrating high-resolution, localized wildfire risk maps into urban planning and zoning regulations. Strengthening enforcement of fire safety laws, particularly in rural and remote zones, and improving coordination between local and national authorities are priorities. Investments should also be made in modernizing firefighting infrastructure, such as water supply systems and equipment, and retrofitting older buildings to meet updated fire safety standards. Streamlining the approval process for fire safety permits and defense plans within territorial planning frameworks will ensure that both new and existing developments are better equipped to mitigate wildfire risks. Improving the enforcement of fire safety permits, increasing funding for inspections, and raising public awareness would ensure greater compliance with fire safety standards. Additionally, better coordination with national research institutions is essential to improve wildfire risk assessments and ensure more accurate, localized data for effective territorial planning.

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[126] While specific data on the rapid expansion of the WUI in Romania are limited, global trends show a 24 percent increase in WUI areas from 2001 to 2020, with Europe experiencing absolute increases of 2.6 percent and 1.5 percent and relative increases of 25 percent and 29 percent, respectively, in fire counts and burned areas from 2005 to 2020. Tang, W., C. He, L. Emmons, and J. Zhang. 2024. "Global Expansion of Wildland-Urban Interface (WUI) and WUI Fires: Insights from a Multiyear Worldwide Unified Database (WUWUI)." *Environmental Research Letters*, March 19, 2024. Link.

[127] According to a response from GIES provided in mid-September during an interview for *Ziarul Financiar* by Roxana Petrescu on December 26, 2023. "Why Is Fire Safety Authorization Still Necessary If Romania Operates Without It? Nearly 1,600 Tourist Units, over 10 percent of the Official Number, Are Hosting Guests without This Document. How Is This Possible?" *Ziarul Financiar*. 2023. Link.

[128] NCES 2020.

[129] EC 2023, 63.

Given that Romania has not faced significant vegetation and/or forest fires in the wildland-urban interface (WUI) area, the term represents a new concept. However, the vegetation risk management in the WUI area is addressed in Simplified Procedure No. 8, developed within the SIPOCA 395 project, while being expected to become increasingly familiar to both authorities and forest managers in Romania through the dissemination of a manual for firefighting under extreme conditions,[130] developed within the FirEUrisk project and translated into Romanian. These actions are essential for creating a more comprehensive, proactive approach to wildfire risk management in Romania's urban and rural landscapes.

Additionally, a Fire Protection Plan against vegetation fires could be developed at the level of the administrative-territorial unit (UAT), considering that the majority of forest fires have originated from lands adjacent to the forest fund, and that forest districts do not have the authority to act outside the forest fund they manage—despite the fact that some major fire risks are found in these surrounding areas. This plan should cover forest fires, fires in grassy/shrubby vegetation, as well as fires in cereal crop fields.

Updating technical standards for wildfire mitigation and field access

The operationalization of the SIPOCA 295 project results, including the updated Simplified Procedure No. 8 and subsequent update to Ministerial Order No. 551/1475, present key opportunities to update technical standards for geospatial data, access routes, and firefighting infrastructure to enhance response efficiency. MEWF recognizes that focusing on wildfire prevention rather than solely on operational intervention offers a more cost-effective approach. Therefore, it would be useful to implement an integrated IT system for vegetation fire management, where, for example, interactive maps can be uploaded, displaying—where applicable—the vegetation fire protection capabilities (access roads, water sources, locations and contact details of intervention forces, etc.), along with the locations where vegetation fires have occurred, accompanied by relevant details. Additionally, optimizing routes for intervention, ensuring they are passable for firefighting vehicles and other necessary intervention equipment, and allowing fire response teams to quickly access critical areas, especially in remote regions or areas with dense vegetation, and updating firefighting infrastructure standards, focusing on the creation and maintenance of effective firefighting access points, will enhance the speed and efficiency of fire response teams.[131] Additionally, to ensure an appropriate strategic framework for reducing the risk of wildfires, after the completion of the upcoming specific technical standards, an update the of the National Concept for Response to Forest Fires to also include the two other associated risks—namely, fires in grassy/shrubby vegetation and fires in cereal crop residues (stubble)—in accordance with Government Decision No. 557/2016 would be recommended.

Enhancing fire prevention and mitigation with video surveillance

The nationwide limited human resources for fire prevention, especially for stubble and dry vegetation fires, could be addressed by scaling MEWF's pilot project on video surveillance for forests, using IT technology to supplement personnel shortages. A hybrid solution combining video surveillance with increased numbers of human personnel could provide real-time monitoring, improve fire detection, and ensure rapid response while addressing personnel shortages and maximizing resource efficiency. In addition to wildfire prevention, it could also support mitigation efforts by helping manage risks and reducing the severity of fires once they are detected, as rapid response can limit fire spread.

[130] Manual with instructions for firefighters to handle extreme wildfires, wildfires in the wildland-urban interface, and wildfires at high latitudes/altitudes. Development of a Holistic, Risk-adapted Strategy for Wildfire Management in Europe, FireEURisk. Link.

[131] See "Simplified Procedure No. 8: Forest Fire Defense" in MEWF 2021.

Implementing NBS for wildfire prevention, considering controlled burning

An opportunity for Romania, given the availability of EU funds for NBS,[132] is to enhance its forest management practices while potentially integrating prescribed burning and upscaling other NBS, such as reforestation and natural firebreaks, into future fire prevention strategies, drawing on lessons learned from Europe in 2022. According to *Lessons to Draw from the Cohesion Policy Response*, climate-smart sustainable forest management mitigates wildfire risk by maintaining microclimates, reducing fuel loads, and promoting forest health and diversity.[133] In Romania, prescribed burning (controlled burning) is prohibited and is strictly regulated by MEWF, environmental and emergency authorities due to concerns over safety, environmental impact, and air quality. While controlled fires can be beneficial for forest management and land preservation in certain contexts, the legal framework has historically focused more on wildfire prevention.

Another opportunity is to conduct an analysis for controlled burning which could consider, in a practical and detailed manner, the conditions under which and how a controlled burn should be carried out so that it does not spread into the forest and the environmental impact is minimized. For example, in Ireland the authorities, together with forestry specialists, developed a Prescribed Burning Code of Practice. Burning is still prohibited during a certain period of the year (specifically from March 1st to August 31st), but it is allowed during the rest of the year, provided that citizens notify the authorities in advance of their intention to carry out a controlled burn and provide all necessary details. A similar approach could be tried in Romania as well, initially tested in a few representative communes and then expanded to the regional and/or national level if the initiative proves successful. Additionally, complementary NBS such as FireSmart initiatives[134] including thinning and planting native species to enhance wildfire resilience, along with payment-for-ecosystem-services schemes to encourage native species planting and reduce landscape flammability[135] could be developed and enhanced in Romania in future years. Finally, to reduce wildfires caused by agricultural activities, the use of woodchippers should be encouraged, alongside raising awareness among farmers.[136]

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[132] Per World Bank. 2025. *Management of Earthquake Risk in the European Union*, EU funding for NBS includes the CAP for environmental practices, the LIFE Programme for forest monitoring and fire prevention, the Cohesion Fund and European Regional Development Fund (ERDF) for climate and environment investments, Interreg Programmes for cross-border cooperation, and the EU Solidarity Fund for land restoration with nature-based approaches. EU. 2020. *Land-Based Wildfire Prevention - EU-wide Risk Overview Report*. Link. *LIFE Programme*. Link. European Parliament. 2023. *Forest Fires of Summer 2022: Lessons to Draw from the Cohesion Policy Response*. Link. European Union. 2017. *Ideas for Interreg post-2020- Cross-border Programmes*. Link.

[133] European Parliament 2023.

[134] EC. 2018. *Forest Fires: Sparking Firesmart Policies in the EU*. Link.

[135] EC. 2021. *Communication from the Commission to European parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: New EU Forest Strategy for 2030*. Link.

[136] EC 2023, 64.

WILDFIRE EARLY WARNING AND PUBLIC AWARENESS

Wildfire early warning and public awareness examines early warning systems (EWSs) and their role in detecting, predicting, and communicating wildfire risks to support timely and effective responses, while public awareness focuses on informing communities about wildfire hazards, preparedness measures, exploring campaigns and educational initiatives.

DRM CONTEXT

Romania's multi-hazard EWSs are operational for specific risks, including extreme weather events and floods, with seismic early warnings currently being provided to relevant authorities but not to the public. There are sector-specific EWSs for monitoring extreme weather and floods, benefiting from real-time data sharing and cross-border collaboration, especially for transboundary events. The RO-ALERT system, compliant with the European Electronic Communications Code, has been operational since 2019 under the management of MoIA through its Department for Emergency Situations (DES) and GIES. RO-ALERT can issue geo-targeted emergency alerts to mobile phones in areas affected by natural or man-made disasters, based on requests from sectoral and local authorities. RO-ALERT relies solely on mobile phones for alerts and has some limitations in device compatibility, network coverage, and full utilization of communication protocols. These are addressed by authorities as part of efforts to expand multi-hazard and impact-based approaches, enhance cross-sectoral coordination, and fine-tune alert mechanisms to better serve the population.[137] A 2021 national survey with 1,690 respondents revealed areas that could benefit from improvement in disaster preparedness, indicating a significant need for authorities to enhance public disaster education, leverage existing communication platforms like RO-ALERT, and capitalize on the public's willingness to engage in preparedness and community support efforts.[138]

DES,[139] under the coordination of MoIA, is responsible for public communication regarding emergencies and disasters and manages the official multi-risk national preparedness platform, Be Prepared (*Fii Pregătit*). GIES, through its County Inspectorates for Emergency Situations (CIESs) and the Bucharest-Ilfov Inspectorate for Emergency Situations (ISU BIF), leads the national risk communication and preventive information efforts through multiple channels, including its website and subordinate units' sites, social media platforms, public information sessions, and preventive exercises, as well as the development of emergency management regulations.[140] Secondary authorities and public institutions may also create their own risk management protocols.[141] Additionally, the Ministry of Education (MoE) and GIES implement risk communication and education in schools, supported by CIES at local levels. Media organizations, under Law No. 481/2004, are required to report on disaster risk reduction and collaborate with civil society for awareness activities. MoIA also oversees public alert systems, with contributions from various ministries and agencies, including MEWF, the Ministry of Culture and Identity, and the Special Telecommunications Service.[142]

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[137] EC. 2023. *Peer Review Report: Romania - Civil Protection and Humanitarian Aid*. Link. It notes that local authorities often lack resources to respond effectively before or during emergencies, and public warning is frequently compromised due to malfunctioning or absent public alert equipment (for example, sirens).

[138] The survey was part of the 'Disaster and Climate Resilience Development Program' project of the MoIA and MDPWA in 2021. Half of the respondents lack disaster preparedness knowledge, and one-third do not believe they will be affected by a disaster. While 75 percent support improved access to information, many feel underinformed about natural disasters. Additionally, 83 percent are willing to assist their community in a disaster, with 96 percent open to volunteering. About 75 percent are interested in first aid training, and over three-quarters are aware of and prefer receiving disaster information through RO-ALERT. GoR 2024.

[139] See GoR. 2004. *Emergency Ordinance No. 21 of April 15, 2004,* regarding *the National Emergency Management System*. Link.

[140] GIES. 2020b. *Summary on Disaster Risk Management, Bucharest*. Link.

[141] GoR. 2022d. *National Seismic Risk Reduction Strategy.* Link.

[142] GoR 2024.

CURRENT ARRANGEMENTS

Wildfire EWS systems

Romania's multi-tiered wildfire early warning system integrates the Canadian Fire Weather Index (FWI), used by the National Meteorological Administration (ANM) and accessible via MeteoAlarm, with satellite monitoring primarily through EFFIS, and is supported by an operational public alert system (RO-Alert) alongside a network of electronic sirens. Several strategic documents and national plans emphasize the importance of enhancing Romania's capabilities in EWSs and population alerting, with the NDRMP recognizing the need for a combined, multidisciplinary approach to disaster management, the National Strategy for Sustainable Development of Romania 2030 focusing on improving rapid response to extreme weather events, and NRRP[143] As per the 2023 UCPM Peer Review, Romania relies on EFFIS for real-time and historical wildfire data, but wildfire-specific EWSs are not integrated and developed compared to those for extreme weather events and other hazards. Romania uses Copernicus EMS for various risks but has not yet fully utilized tools like the EU Risk Data Hub for wildfire analysis;[144] also, the varying temporal and spatial resolutions of Copernicus satellite data challenge real-time monitoring and delay critical early warning actions.[145] Furthermore, the IT infrastructure for monitoring extreme weather, which could also support wildfire forecasting, could benefit from updates and improvements to enhance the accuracy and timeliness of warnings. Additionally, Romania's RO-ALERT system, designed to send geo-targeted emergency alerts to mobile phones during crises like extreme weather, is currently going through updates for enhanced functionality.[146]

Wildfire risk awareness and preparedness

Romsilva has recurrently implemented broader wildfire prevention initiatives, particularly targeting the training of citizens, tourists, and employees of companies operating in the forest fund, in response to the significant increase in wildfire incidents in 2022[147] and 2024.[148] Awareness campaigns targeting the public have been carried out on social media, as well as through interviews conducted by media organizations. MEWF is currently exploring the potential of expanding the awareness campaign to include direct interaction with communities in areas of high wildfire risk; this presents a valuable opportunity to strengthen public engagement, which would imply increasing the specialized personnel in this area to achieving this objective. Despite ongoing national efforts to train children and youth in emergency situations, there is currently no formal, systematic disaster preparedness curriculum in schools, although such training is guided by a 2013 Cooperation Protocol between the Ministry of Internal Affairs and the Ministry of Education. Additionally, Romsilva prioritizes primarily forest education, with wildfire prevention as a secondary focus, and promotes reforestation projects and competitions for young students to share best practices in ecological education, sustainable forest management and wildfire prevention.[149]

Furthermore, DES and GIES, in partnership with local private companies, such as E.ON Romania and Delgaz Grid, have been running nationwide home fire safety campaigns targeting vulnerable groups such as children and the elderly, to raise awareness of fire risks from improper energy use through promotion of detectors, safe electrical practices, and proper maintenance of heating systems and chimneys.[150] Complementarily, two mobile training centers, the 'Be Prepared' caravan

[143] GoR 2024, 23–24.

[144] EC 2023, 68.

[145] OECD 2023.

[146] EC 2023, 68, 74–76.

[147] National Forest Administration – Romsilva. 2022. "Romsilva Warns about the Risk of Wildfires Caused by Stubble Burning." Press release, March 28, 2022. Link.

[148] National Forest Administration – Romsilva 2024.

[149] In 2023, initiatives like the 'Tainele Pădurii' program to engage students in Bucharest, Ilfov, and Giurgiu and reforestation projects in parks like Bucegi and Comana were implemented, along with the 'Young People in European Forests' competition. National Forest Administration – Romsilva. 2023.

[150] Campaigns like 'F.O.C – Flăcările Omoară Copii' (F.O.C – Flames Kill Children), 'R.I.S.C. – Siguranța NU e un joc de noroc!' (R.I.S.C. – Safety Is Not a Game of Chance), and 'Mai bine previi, decât să nu fii!' (Better to Prevent Than to Be Sorry) focused on fire prevention, including the installation of smoke and gas detectors, proper maintenance of heating systems, and safe electrical practices. In 2023, a new campaign targeting the elderly, 'De tine depinde să schimbi povestea. Viața este mai importantă!' (It's Up to You to Change the Story. Life Is More Important!), emphasized fire prevention measures such as inspecting electrical systems, cleaning chimneys, and ensuring heating equipment is properly maintained. GIES. "A New National Awareness Campaign Targeting the Elderly." Press release. Link.

and the 'Mobile Centre for Preparedness', have been successfully implemented to raise awareness and provide first aid and emergency response training, resulting from strong collaboration between GIES, the private sector, and civil society in DRM,[151] while the Be Prepared ('Fii Pregătit') national preparedness platform, relaunched in March 2024, includes inclusive and accessible guides on home fire safety, extreme weather events, first aid, and other relevant topics, with a focus on enhancing fire preparedness in line with international best practices.

Wildfire risk awareness and preparedness in Romania remain relatively limited, a situation that can be partly attributed to the emerging nature of wildfire hazards in the country and their historically limited impact on densely populated areas. According to the European Commission's Eurobarometer [152] wildfires in Romania are mentioned by 24 percent of respondents as a significant disaster risk, less prioritized compared to extreme weather events, which dominate disaster risk discussions at 45 percent. Furthermore, only 57 percent of Romanians trust information about local disaster risks from public authorities and emergency services, which is one of the lowest trust levels in the EU. Additionally, 23 percent of Romanians express no interest in seeking information on disaster risks, the highest proportion among EU countries. Although 11 percent of respondents in Romania have invested in protective measures in their homes, such as installing equipment or making adjustments to mitigate risks, wildfire risk awareness remains limited. Community discussions about protective measures are also relatively infrequent, with only a small portion of people actively engaging in local preparedness. These findings suggest that there is a significant potential to scale up both awareness and proactive measures related to wildfire risks in Romania, through more targeted campaigns and education efforts to improve preparedness in the country.

KEY OPPORTUNITIES

Key measures to improve preparedness, EWSs, and awareness before a wildfire occurs include: (1) enhancing the functionality and fostering innovation in wildfire EWS systems, and (2) developing a comprehensive strategy for wildfire risk communication and preparedness.

Enhancing the functionality and fostering innovation in wildfire EWS systems

Romania has significant opportunities to enhance its wildfire EWSs by advancing technological infrastructure, fostering collaboration, improving forecasting accuracy, and ensuring timely, priority-based, equitable alerts for all communities. Developing a comprehensive, impact-based, and multi-hazard EWS that incorporates wildfire risk would strengthen both institutional and community preparedness, improving response times and coordination.[153] Furthermore, upgrading Romania's IT infrastructure, including the adoption of next-generation sensors and improving satellite data integration, would enhance the timeliness and accuracy of wildfire forecasting (see Box 6). Strengthening collaboration and data sharing between national institutions like the ANM, GIES, and MEWF, as well as with EU partners, would further improve proactive wildfire risk management. These combined efforts, including the improvement of satellite data resolution and better monitoring of fire emissions and air quality,[154] leveraging recent EU funding equipping the National Environmental Guards with 46 airborne systems (drones) for inspection and control activities,[155] would greatly enhance Romania's capacity to manage wildfire risks effectively. Romania's RO-ALERT system, currently used for extreme weather and emergencies, can be improved by refining trigger thresholds and integrating accessible wildfire-specific alerts to ensure timely, inclusive communication.[156] In marginalized areas with limited access, it should be complemented by local alert networks, community radio, trained volunteers, and improved infrastructure to enhance connectivity and strengthen resilience.

[151] EC 2023, 70.
[152] EC 2024.
[153] EC 2023.
[154] Firelogue, Fire-Res, Treeds, and Silvanus. n.d. *Green Deal Wildfire Risk Management Targets*.
[155] MEWF. 2023. "The National Environmental Guard Will Be Equipped, Starting This Year, with 46 Airborne Systems (Drones) Equipped with Sensors and Specific Equipment for Inspection and Control Activities." Press release, March 2023. Link.
[156] EC 2023.

Box 6. Croatian iForestFire Wildfire Monitoring and Surveillance System

Croatia has developed an advanced wildfire monitoring and surveillance system to improve early fire detection and response efficiency. The system, known as iForestFire, was designed at the University of Split in response to severe wildfires. Key features of iForestFire are as follows:

1.Intelligent video-based monitoring:

- Utilizes high-resolution day/night cameras with pan, tilt, and zoom capabilities
- Detects smoke and fire using advanced image processing algorithms
- Automatically generates pre-alarms, which are verified by human operators

2.Geospatial and meteorological data integration:

- Includes GIS for fire location tracking
- Uses real-time meteorological data from specialized weather stations to improve detection accuracy
- Integrates fire risk calculations and fire propagation simulations to assist in decision-making

3.Cloud-based and remote access:

- Operators can access live feeds and system controls remotely via the internet
- Features a user-friendly web-based interface for firefighters and emergency responders

4.Deployment and Impact:

- Successfully implemented in Istria County, with 29 monitoring stations and seven operational centers
- Used in Croatian national and nature parks to improve wildfire response
- Proven effective in reducing false alarms and improving fire response times.

Also, in 2023, Croatia invested nearly €16 million in fire protection, installing 220 cameras across 110 forest locations. Additionally, 320 km of new fire access roads were constructed over the past three years, with maintenance ongoing for existing routes. In April 2023, a pilot exercise tested various technological tools, including drones, ground robots, and sensors, to improve fire management. Such initiatives aim to integrate advanced technologies into standard firefighting practices.

Sources: Stula, Maja, Damir Krstinic, and Ljiljana Seric. 2012. "Intelligent Forest Fire Monitoring System." Information Systems Frontiers 14 (3): 725–739. Springer. https://doi.org/10.1007/s10796-011-9299-8 and Link.

Developing a comprehensive strategy for wildfire risk communication and preparedness

Romania has an opportunity to enhance wildfire public awareness and preparedness by developing an inclusive and targeted risk communication strategy. In line with Chapter 14 of the NDRRS, MEWF is working on creating a risk communication strategy for different target groups to inform and educate the public about climate change and forest fire safety.[157] The NDRRS was recently approved through GD No. 791/2024, with its implementation planned until 2035, while the Action Plan within the Strategy should be put into effect by 2027. Coordination of this strategy will be carried out by the MEWF through the designation of a focal point responsible for coordinating the implementation of the Action Plan, including the section dedicated to creating a communication strategy. Currently, MEWF is in the process of forming a working group and recruiting experts from various fields related to the Strategy's implementation. Additionally, as part of the Action Plan of the NDRRS, under Specific Objective 1, Action Direction 4, the Ministry of Education, together with the MEWF, will develop policies to raise awareness of risks within educational institutions, while in Action Direction 5, the MDPWA, together with MEWF, will develop policies to increase risk awareness among citizens. The future designated working group on the communication strategy could consider developing targeted campaigns aimed at farmers, industry stakeholders, forest and land managers, tourists, and local communities to help ensure fire prevention and emergency measures are customized for each group, promoting responsible behavior, reducing human-caused ignitions,[158] and ultimately building community wildfire resilience.

Expanding and intensifying awareness campaigns through direct interaction with communities in high wildfire risk areas presents a strong opportunity to enhance public engagement, particularly during peak forest fire seasons in spring (53 percent) and summer (26 percent), as well as during dry periods from August to October.[159] Targeted awareness campaigns in early spring in villages are necessary to reduce the occurrence of uncontrolled vegetation burning by local farmers. Improved multilingual signage and awareness initiatives are needed to inform both locals and tourists on ignition prevention, while campsites and caravans should receive guidance on safe camping practices to reduce wildfire risk. Romania could benefit from the lessons learned and monitor future opportunities for participation in the FIREPRIME program, an EU-wide initiative under the Union Civil Protection Knowledge Network, designed to enhance wildfire resilience with toolkits, a smartphone app, guidelines, and educational materials for households, communities, and infrastructure.[160]

[157] GoR 2024, 23.

[158] European Parliament (2023) highlights that public awareness and community engagement are vital for wildfire risk reduction, emphasizing the need for educational campaigns to promote responsible behavior and prevent human-caused ignitions.

[159] Lorenț, A. et al. 2024.

[160] European Union 2024.

WILDFIRE RISK PREPAREDNESS AND EMERGENCY RESPONSE

This chapter focuses on measures taken before a wildfire occurs to ensure an effective response, including establishing necessary response capacities such as rescue capability, training, and situational awareness. It also covers response activities during a wildfire event, including operations, coordination among key actors, international cooperation, and monitoring, but does not address early warning systems.

DRM CONTEXT

Romania has made significant efforts to strengthen its multi-hazard emergency preparedness planning. This includes the development of response concepts for major risks (earthquakes, floods, nuclear accidents, and wildfires). Other initiatives have included public awareness campaigns, training programs, and practical disaster simulations. GIES, responsible for emergency preparedness, has continuously improved tools and raised awareness, establishing the National Training Center for Emergency Management and three regional centers in 2004 to provide regular training for public administration representatives. This training and exercise system is centered on the National Centre for Improving Training in Emergency Situations Management (NCITESM) and three Zonal Training Centres in Cluj, Craiova, and Bacău. These centers offer comprehensive training for both operational personnel and public administration staff (for example, mayors), including specialized courses for disaster assessment, response coordination, and incident management, with curricula updated by GIES after major disasters.

Romania's emergency response system has a clear command structure, integrated decision-making process, and strong interagency cooperation, following a gradual, bottom-up response model, with the possibility of directly mobilizing national-level resources for effective intervention when needed. MoIA is at the core of the system with DES providing strategic oversight and policy direction, coordinating all functions, including specialized first aid (through the Mobile Emergency Service for Resuscitation and Extrication [*Serviciul Mobil de Urgență, Reanimare și Descarcerare,* SMURD]) and emergency medical care in emergency care units and centers.[161] In addition to DES, GIES at the national level, through CIESs at the local level, ensures a streamlined approach to emergency management with 284 intervention units and 27,000 professionals, 8 percent of whom are women.[162] Key activities performed by GIES and CIESs include training emergency personnel, authorities,[163] and the public, enforcing relevant plans and regulations, providing emergency medical care, firefighting, disaster response, resource deployment, and recovery efforts.

During national emergencies, DES and GIES operate under the National Emergency Management System (*Sistemul Naţional de Management al Situaţiilor de Urgenţă,* SNMSU) or the National System as per GEO No. 21/2024), alongside various central, county, and local public administration authorities and a network of specialized bodies, organs, and structures, coordinating resources and efforts to prevent, manage, and recover from emergency situations. The National System includes emergency committees, DES, GIES, professional and volunteer emergency services, operational and coordination and intervention-leading centers, and operational centers for emergencies. The decision-making emergency committees, whose decisions are mandatory, consist of the National Committee for Emergency Situations (under the direct leadership of the Prime Minister, as the president), ministerial committees, the Bucharest Municipal Emergency Committee, county emergency committees, and

[161] In addition, the national DES ecosystem of emergency management comprises the General Inspectorate of Aviation regarding medical missions, the public Salvamont and Salvaspeo mountain and cave rescue services, and the canine search-and-rescue activities in emergency situations. See NCES 2020.

[162] Currently, there are about 642 GIES and CIES staff members per county (including Bucharest) serving a population of 19 million, which falls short of the government's benchmark of 800 staff per county. In 2022, the average emergency response time nationwide was 12 minutes and 22 seconds, projected to improve slightly to 12 minutes and 3 seconds by 2027.

[163] GIES is improving tools and raised awareness for emergency preparedness, establishing the National Center for Emergency Management Training and three regional centers in 2004 to provide regular training for both operational personnel and public administration representatives. Link.

local emergency committees. At lower levels, county committees, led by the prefect and including local officials and business representatives, coordinate emergency responses by assessing risks, implementing measures, and ensuring resources through county plans, while local committees, headed by the mayor, manage emergencies within their jurisdiction by evaluating risks, notifying county committees, implementing responses, and securing resources through local plans.

Regarding the volunteer emergency services, the Romanian legal framework defines two types of volunteers: those involved in the volunteer emergency services (*Serviciul Voluntar pentru Situații de Urgență,* SVSU) for prevention and crisis situations (under GD No. 1579/2005) and those in other public or private organizations (Private Emergency Services [*Serviciul Privat pentru Situații de Urgență,* SPSU]) (under GEO No. 26/2000), with spontaneous volunteers such as digital volunteers and community members not having a formal legal status.[164] Current legislation is yet to include specific provisions for the involvement of volunteers from civil society organizations (CSOs) and spontaneous volunteers in emergency response protocols, disaster reconstruction, humanitarian aid management, gender equality, and addressing gender-based violence, vulnerability, and discrimination; updates are needed for prevention activities and the legal framework requires improvements regarding equipment provision and volunteer emergency services training.[165]

CURRENT ARRANGEMENTS

Established necessary wildfire response capacities

In Romania, wildfire intervention resources are managed by multiple stakeholders to ensure an effective response. According to MEWF Order No. 1475/2006, which establishes the *Regulation on the Necessary Equipment, Devices, and Chemical Substances for Equipping Forestry Estates to Extinguish Forest Fires*, forestry estates are required to have specific resources and tools for wildfire response, since they are to handle the initial response efforts at the local level, responding promptly and mitigating risks to forests and surrounding communities (Law No. 307/2006 and Order No. 551/2006).[166] This regulation mandates the availability of essential firefighting equipment, such as portable water tanks, motor pumps, fire suppression tools, and chemical extinguishing agents. Their efforts are complemented, when needed, by local volunteer emergency services (GD No. 1579/2005), providing support with trained personnel, equipment, and defined operational rules. Professional fire brigades, including GIES at the national level and local CIESs, offer specialized firefighting capabilities. Local governments (city halls and councils), private sector partners, military units, and community members also play vital roles by contributing resources such as detection systems, firefighting equipment, vehicles, and trained personnel. All stakeholders are encouraged to maintain updated resource inventories, strengthen interagency communication, and focus on prevention to ensure a coordinated and effective response system. If national resources are insufficient, Romania can request support through the UCPM, which provides coordinated assistance for managing natural and human-made disasters across Europe.

Wildfire response capacities in Romania vary significantly, with central firefighting forces like GIES benefiting from modern resources, while local forestry and volunteer units face equipment gaps and a lack of comprehensive resource inventories[167], underscoring the need for improved preparedness and adequate equipment. According to the NPDRM, investments in wildfire management prioritize intervention resources over prevention,[168] as highlighted by the VISION 2020 project's enhancement of GIES's response capacity with fire trucks, specialized vehicles, logistics containers, and BlackHawk helicopters, boosting GIES's wildfire response capacity. Funded by the EU Cohesion Fund, the VISION 2020 project allocated approximately €580 million to enhance disaster response capabilities in Romania, including the acquisition of firefighting trucks, emergency and search-and-rescue equipment, helicopters, and multi-role vessels

[164] Spontaneous volunteers, though not legally defined, include digital volunteers, weather observers, community volunteers, teachers as trainers, and citizens responding to crises. Definition as per the NSDRR 2024–2035, GoR. Link.

[165] EC. 2023. *Peer Review Report: Romania - Civil Protection and Humanitarian Aid*. Link.

[166] Forestry personnel in local units prevent and extinguish forest fires based on Law No. 307/2006, Ministerial Order No. 551/2006 approving the Regulation on managing emergency situations resulting from forest fires, and other regulations, with annual updates to fire defense plans at the forestry district level.

and riverboats.[169] Its main goal was to reduce response time from 13 minutes and 50 seconds in 2018 to 12 minutes and 6 seconds by 2022, cutting material damage and mortality rates.[170] Rapid and effective interventions are crucial to minimize affected areas, but challenges such as rugged terrain, inadequate equipment, and insufficient personnel often hinder these efforts,[171] as was seen during the severe 2013 fire in Domogled National Park, where flammable Mediterranean vegetation and rocky terrain lacking natural water sources required water to be transported from distant locations.[172]

HEALTH EMERGENCY CAPACITY FOR BURN CASUALTIES AND BURN UNITS

Romania is making significant progress through a project financed by the World Bank[173] and is set to enhance its burn care capacity with €70.5 million (GO No. 16/2022)[174] for three advanced centers in Bucharest,[175] Timișoara,[176] and Târgu Mureș,[177] offering specialized care and operating rooms, while a €6 billion EU fund project in pipeline will further strengthen emergency response capabilities for burn care and other critical conditions by 2025.[178] This comes a decade after the 2015 Colectiv nightclub fire which sparked an initiative to strengthen the existing EU mechanisms. [179] Moreover, a recent MoH draft ordinance amending and supplementing Ordinance No. 476/2017 proposes allowing existing units to be evaluated for potential transformation into burn centers, [180] although the suitability of these units is yet to be assessed. Additionally, the current situation underscores a need for substantial improvements in infrastructure, upscaling of training and the creation of academic programs to provide appropriate care for burn victims in Romania. However, the surge in wildfire casualties could still overwhelm burn centers in Romania and across Europe, highlighting the need for comprehensive planning and international support. Romania, along with other EU member states, faces challenges in developing a burn mass casualty response framework, including burn center verification, integrating electronic assessment and tracking systems, and establishing regulations for cross-border patient transfer.[181]

National forest fire response plan

The National Forest Fire Response Concept (2018) outlines the organization and planning of forest fire response actions at the national, regional, county, and local levels, but does not include the other two associated risks, namely fires in grassy/shrubby vegetation and fires in cereal crop residues (stubble), as stipulated in GD no. 557/2016. The National Forest Fire Response Concept aims to integrate knowledge, capabilities, and resources

[167] Popa 2023a.

[168] NCES 2020.

[169] EC 2023.

[170] GoR. 2020a. *Decision No. 451 of June 4, 2020, Approving the Justification Note for the "VIZIUNE 2020" Investment Project* . Link.

[171] NCES 2020.

[172] Popa 2023a.

[173] Health Sector Reform Project - Improving the Quality and Efficiency of the Health System. Loan Agreement of June 17, 2014, between Romania and the International Bank for Reconstruction and Development. Link.

[174] GoR. 2022c. Emergency Ordinance No. 16 of March 22, 2022 for the financing of activities under the Loan Agreement (Health Sector Reform Project - Improving the Quality and Efficiency of the Health System) between Romania and the International Bank for Reconstruction and Development, signed in Bucharest on June 17, 2014, and the Loan Agreement (Additional Financing for the Health Sector Reform Project - Improving the Quality and Efficiency of the Health System) between Romania and the International Bank for Reconstruction and Development, signed in Bucharest on June 11, 2021. Link.

[175] MoH. 2023a. "Construction of the Major Burns Center at the Grigore Alexandrescu Emergency Children's Hospital in Bucharest Begins." Press release, August 22, 2023. Link.

[176] Ibid.

[177] MoH. 2023d. "The Major Burns Center in Târgu Mureș Has Been Put in Motion by the Ministry of Health." Press release, November 9, 2023 Link.

[178] MoH. 2023c. "Six Billion Euros from the European Commission for Easier Access to Diagnostic and Treatment Services for Cancer, Stroke, Polytrauma, and Severe Burns Patients." Press release, October 17, 2023. Link.

[179] Almeland, S. K., E. Depoortere, S. Jennes, F. Sjöberg, J. A. Lozano Basanta, S. Zanatta, C. Alexandru, et al. 2022. "Burn Mass Casualty Incidents in Europe: A European Response Plan within the European Union Civil Protection Mechanism." *Burns* 48 (8): 1794–1804. Link.

[180] MoH. 2023e. *Ordinance regarding the modification and completion of the Minister of Health's Ordinance no. 476/2017 on the organization and operation of structures providing medical assistance and care for burn patients.* Link.

[181] Leclerc et al. 2023.

from various authorities and organizations within the National Emergency Management System (*Sistemul Naţional de Management al Situaţiilor de Urgenţă,* SNMSU). Key objectives include enhancing resilience through coordinated and efficient responses, protecting life, property, and the environment, and limiting the impacts of forest fires. The concept also emphasizes identifying risks, implementing preventive measures, monitoring high-risk areas, ensuring clear communication, and utilizing resources effectively. It sets the roles and responsibilities of authorities in planning and responding to forest fire emergencies, focusing on unified command and shared responsibilities among all stakeholders.[182]

According to GD No. 557/2016, the response system to wildfires, among which are forest fires, in Romania involves decision-making elements and authorities with primary and secondary roles in risk management, as well as supporting institutions. The Romanian government ensures national civil protection coordination through the Prime Minister, with MoIA leading the activities as the head of the CNSSU. MEWF plays the primary role in managing forest fire risks, while MoIA has a secondary role, overseeing operational response actions through DES and GIES. Intervention structures under various ministries, including MoIA, MEWF, MApN, MoH, and MoT, contribute to the management and response efforts.[183] The response system in Romania is coordinated through integrated command centers, such as the National Integrated Command Center (CNCI) and the National Coordination and Intervention Command Center (CNCCI), which manage response efforts, ensure collaboration among relevant authorities, and adapt to the severity of the emergency, with additional personnel and local command centers (CJCCI) activated as needed for large-scale incidents.[184]

Local level fire situation management

In Romania, the response to forest fires involves coordination between local public administration authorities (such as local councils and prefectures) and specialized forestry units (such as the National Forest Administration - Romsilva and other local forest authorities), with annually updated fire defense plans at the forestry district level. According to MEWF Order No. 1475/2006 the management of emergency situations from forest fires in Romania is divided at the local level, with territorial forest and hunting inspectorates handling privately owned forests, and the National Forest Administration - Romsilva through local structures managing state-owned public forests.[185] Under Law No. 307/2006 on Fire Protection, public authorities must develop the annual Risk Analysis and Coverage Plan (PAAR) and manage emergency responses, while local forestry directorates are responsible for creating and updating fire defense plans at the forestry district level, organizing wildfire prevention and intervention, maintaining access, providing resources, and coordinating with emergency services. During wildfire incidents, additional measures are implemented such as a permanent service at each forestry district for rapid communication, with Emergency Situations Inspectorate and Forest Guards updating fire alarm systems and mobilization plans for intervention forces, and intensifying patrols and monitoring of high-risk forest areas and popular tourist trails, with these efforts continuing until the wildfire risk is reduced or eliminated.[186]

Despite the annual county-level exercises simulating various scenarios, the effectiveness of local forestry personnel remains limited due to insufficient training and the lack of specialized educational resources, underscoring the need for targeted instruction and practical guidance. Given the high risk involved, especially in forest fire intervention, there is a strong need for specialized training and the development of theoretical and practical guides, including video materials. However, currently, forestry personnel in Romania currently lack adequate training in vegetation fire prevention

[182] MoIA. 2018. *National Forest Fire Response Concept*. Link.

[183] Government Decision No. 557 of August 3, 2016, on risk management. Link.

[184] MoIA 2018.

[185] According to MEWF Regulation on Managing Emergency Situations Resulting from Forest Fires, dated 08.08.2006, an integral part of Order No. 1475/2006. Link.

[186] National Forest Administration - Romsilva. 2021. "Permanent Service for Emergency Situations." Press release, August 12, 2021. Link.

and response due to the absence of specialized training centers and educational materials.

Romania's national and international wildfire response capacity

Additionally, Romania is enhancing its cross-border emergency response and adaptation capacities through Interreg projects with Serbia, Hungary, and Bulgaria, while also participating in EU MODEX LOT 2 exercises under the Union Civil Protection Mechanism (UCPM) to train and assess multinational intervention teams in disaster scenarios. Romania is strengthening cross-border emergency response and adaptation with Serbia, Hungary, and Bulgaria through Interreg projects focused on joint training, capacity building, shared intervention centers, and the acquisition of specialized equipment to enhance disaster risk prevention, emergency preparedness, and community resilience. Also, Romania is participating in the EU MODEX (Module Exercises) LOT 2 projects which are an essential part of the UCPM, designed to train and evaluate intervention modules from various European countries in emergency situations. Currently, Modex Cycle 12 (2024–2026) provides for six field exercises (three water related, two forest firefighting, one CBRN), each lasting 4 days, with continuous operations of a minimum of 42 hours, testing the ability of modules to respond to a situation.[187] Table 7 in Annex 1 includes a list of key measures, programs, and plans related to wildfire risk management in Romania.

Romania's wildfire response system, while supported by a solid emergency personnel training framework and strengthened through cross-border cooperation via Interreg projects and EU MODEX LOT 2 exercises under the UCPM, could benefit from enhancement in areas such as resource allocation, technological development, and coordination between central and local authorities. Romania has built a strong training framework for emergency personnel, led by the National Centre for Improving Training in Emergency Situations Management and supported by Zonal Training Centres. These centers offer specialized courses for operational staff and public officials, with curricula updated after major disasters. While this has strengthened disaster response, challenges remain in expanding training facilities. There is a need for an e-learning platform to improve accessibility and cost-effectiveness, along with more specialized programs and resources to better equip local authorities and emergency personnel, particularly for wildfire management.[188] The training system in Romania is further supported by regular international interventions with neighboring countries through the UCPM, offering hands-on experience and improved skills. Romanian personnel deployed on wildfire response missions gain valuable experience, returning with enhanced capabilities to improve national readiness and response. Between 2022 and 2024, Romania actively participated in international wildfire suppression efforts, providing assistance to neighboring countries dealing with severe fire incidents in response to requests for aid via the UCPM (Box 7).

[187] APELL-RO. EU MODEX - Exercises on civil protection modules, other response capacities, Technical Assistance and Support Teams, and European Union Civil Protection Teams - Cycle 12 LOT 2 - Field exercises for water related, forest firefighting, CBRN related capacities, EUCPT and TAST" .Link.

[188] EC 2023.

Box 7. Romania's international firefighting support (2022–2024)[189]

1. **Greece (2023–2024):** Between July and October 2023, Romania sent over 300 firefighters to Greece, deploying trucks, tankers, and personnel vehicles in response to requests via the UCPM. Missions lasted 10–15 days, with teams traveling by land or aircraft. The latest intervention in October 2024 involved a 50-member module.

2. **Albania (2024):** In August, Romania deployed an aircraft with large water-carrying capacity to assist Albania in combating wildfires, following a request for international aid via the UCPM.

3. **North Macedonia (2024):** Romania deployed a C-27J Spartan firefighting aircraft and a C-130 Hercules for logistical support to assist North Macedonia with forest fires, including around 15 Romanian military personnel.

4. **France (2022):** Romania sent 77 firefighters and 17 pieces of equipment, supported by two aircraft, to assist France in combating wildfires.

5. **Slovenia (2022):** Romania deployed three aircraft, including firefighting planes and a Hercules for logistics, to help Slovenia tackle forest fires.

Sources: GoR and the EU DG-ECHO websites. Link, Link.

[189] As revealed by desk review, the list of Romania's firefighting interventions may not be exhaustive. Additional assistance may have been provided, but specific details were not available at the time of review.

Volunteers, CSOs, and private sector - critical for wildfire readiness and response

In Romania, wildfire intervention is a collaborative effort involving stakeholders at the national, county, and local levels, including forest rangers, military and civilian firefighters, policemen, gendarmes, and community volunteers. Fire protection is considered under Law No. 307/2006 "a public, national, and permanent activity, in which central and local public administration authorities, as well as all individuals and legal entities within Romania, are required to participate."[190] In 2023, firefighting actions in the Romanian forest involved 3,687 people, including 827 forest rangers, 1,618 military and civilian firefighters, 277 policemen and gendarmes, and 965 volunteers from the community.[191] Professional fire brigades, including GIES at the national level and local CIESs, alongside local governments, private sector partners, military units, and community members, contribute resources such as detection systems, firefighting equipment, vehicles, and trained personnel, while maintaining updated inventories, strengthening interagency communication, and focusing on prevention. Romania can request additional support through the UCPM if national resources are insufficient.

Despite national efforts to strengthen collaboration with CSOs in DRM, Romanian authorities responsible for wildfires, such as MEWF and Romsilva, face challenges in partnering with CSOs due to the lack of a formal framework and limited resources. Romania's Civil Society Relations Department under DES, managing collaborations with CSOs in DRM, has signed 50 protocols since 2016, but the lack of a clear legislative framework for CSO engagement hinders effective collaboration, calling for strengthened partnerships through defined roles and targeted training programs.[192] At present, MEWF has collaborated with civil society organizations (CSOs) in various areas but not in wildfire risk management, with no formal partnership or established framework between MEWF, Romsilva, local forestry units, and CSOs for wildfire response. This includes the absence of mechanisms for early detection and reporting, involvement in community-based awareness campaigns, integration into fire management and prevention efforts, or participation in coordinated response plans. Furthermore, CSOs do not receive formal training, resources, or opportunities for joint exercises to support firefighting operations or improve coordination.

Romania's wildfire response capacity, supported by voluntary and private emergency services, faces challenges due to disparities in resources across levels, especially at local levels and in rural areas where they are essential, the lack of a long-term training plans, an ageing volunteer base, and limited financial support, affecting the effectiveness and sustainability of response efforts. Romania's volunteer system, divided into voluntary and private emergency services and governed by Order No. 160 of 23/02/2007, encompasses nearly 60,000 volunteers in emergency situations and approximately 6,600 "rescuers for passion," all organized and trained at the local level according to GD No. 1579/2005, with a focus on emergency prevention, medical first aid, and raising awareness in communities. Private emergency services, mandated by law in high-risk industries and large public buildings, primarily address fire-related incidents, ensuring safety and response readiness in these critical sectors. Sustainability is a concern due to an ageing volunteer base and low turnover, underscoring the need for greater incentives to attract younger volunteers, while financial support remains limited and the integration of volunteer services within local public administration could be improved.[193]

Wildfire live monitoring during response phases

Wildfire monitoring in Romania currently relies on satellite-based tools like Copernicus and EFFIS, providing near real-time data, but challenges remain at ground-level live monitoring due to insufficient coverage in remote areas, complicated terrain, and limited infrastructure.[194] These tools support decision-making and resource allocation during wildfire responses. However, challenges persist in effective monitoring at the ground level, especially in rugged terrain and remote areas, with varying types of forest fires—ranging from litter to canopy fires—requiring diverse monitoring strategies and tailored response approaches. Real-time data integration from sources like drones, weather stations, and ground reports is often lacking, which

[190] Law No. 307 of July 12 (2006), (republished) on fire protection. Link.
[191] JRC (Joint Research Centre). 2023a. Forest Fires in Europe, Middle East and North Africa. Link
[192] EC 2023.
[193] GoR 2024.
[194] EC. n.d. *European Forest Fire Information System*. Link.

hinders accurate assessments. The fragmented coordination between central and local authorities sometimes leads to delays in decision-making and communication, especially in crisis situations. Additionally, insufficient personnel, especially at local level, and gaps in expertise affect the effectiveness of wildfire response, causing delays in mobilizing emergency services.

WILDFIRE EVACUATION

Current wildfire evacuation arrangements rely on a structured reporting and coordination system, but some challenges remain such as limited resources, difficult terrain and the need for inclusive plans for vulnerable populations. The evacuation of people, animals, or valuable property in forest fire-affected areas should be conducted, when necessary, particularly if the fire spreads to nearby settlements, farms, or areas adjacent to the forest. MoIA, in collaboration with local public authorities, is responsible for coordinating the evacuation efforts. The required resources for evacuation, fire control, and assistance, such as water and food supplies for the evacuated and affected, will be provided through coordinated efforts between the MARD, MoIA, and local authorities. A reporting system for forest fires is established by law to ensure rapid evacuation and response. Fires must be reported by phone and recorded in the fire log. Forest units must notify the county Forest Guard within 6 hours of the event. The system is managed by local forestry inspectorates and regional forest directorates to ensure coordination.[195] However, ensuring an effective wildfire evacuation, especially for large-scale evacuations, is challenged by insufficient resources, especially in rural or hard-to-reach areas, like transportation, shelters, and medical services, as well as potentially obstructed routes due to difficult terrain, blocked roads, or infrastructure damage. Special needs populations, such as people with disabilities and older people, require additional planning that is often overlooked,[196] while a lack of public awareness and inaccurate real-time data can delay evacuations.

KEY OPPORTUNITIES

To improve Romania's readiness, response coordination, and resource allocation for wildfires, six high-priority opportunities should be implemented: (1) strengthening essential wildfire response capabilities; (2) expanding health emergency resources for burn casualties and burn units; (3) expanding training and exercises for emergency personnel through enhanced facilities and advanced tools; (4) strengthening partnerships with civil society and volunteers by offering technical and financial support, while formalizing volunteer roles in local governance; (5) enhancing live wildfire technologies and local monitoring capabilities and processes to enhance response efforts; and (6) enhancing large-scale evacuation, shelters and stockpiles.

Strengthening essential wildfire response capabilities

Romania could leverage EU-funded projects to enhance response capacity, focusing on local forestry units and volunteer services, while promoting innovation and developing an inventory of local forestry firefighting resources under MEWF/Romsilva. The first step should be creating a comprehensive firefighting resource inventory at Romsilva. A recent initiative under the measure "Investments in forestry technologies that enhance forest ecosystem resilience and environmental value" (Intervention DR-24 of the 2023–2027 CAP Strategic Plan) supports local-level fire suppression resources in the forestry sector, with an Applicant's Guide now available. However, the measure excludes Romsilva and offers limited funding, making its impact modest. However, these gaps could be addressed by operationalizing relevant actions proposed in the SNRRD implementation plan. This should be complemented by ensuring the availability of adequate equipment, enhancing water access infrastructure in fire-prone areas (for example, by developing water reservoirs, firefighting ponds, and reliable water supply networks), and investing in advanced firefighting technologies (such as drones, thermal imaging, and AI-based systems) to enhance detection, monitoring, and response times. To this end, Romania could leverage the EU-funded DIREKTION initiative to strengthen its response capacity

[195] MEWF Order No. 551/1475 of August 8, 2006, regarding the Regulation on Emergency Management Due to Forest Fires. Link.

[196] For more information on the accessibility challenges and other issues faced by persons with disabilities (PwDs) during disaster situations, including evacuation difficulties, refer to Section 1.4 of ANPDPD 2022.

by promoting innovation and implementing advanced solutions to address recognized operational needs and reduce wildfire risks across Europe.[197] Finally, strengthening local firefighting units, including forestry services and volunteer teams, with specialized training, equipment, and financial support, while facilitating regional and cross-border cooperation for coordinated wildfire management and resource sharing, is essential. This could be achieved through the next funding interval, as Romania has been allocated €31.5 billion for the 2021–2027 programming period under the Cohesion Policy, with over €415 million dedicated to adaptation and risk prevention, alongside the €74 million Interreg VI-A IPA Romania-Serbia Programme focusing on energy efficiency, natural area restoration, and DRM and multiple other programs until 2027.[198] Table 7 in Annex 1 includes a list of key measures, programs, and plans related to wildfire risk management in Romania.

Expanding health emergency resources for burn casualties and burn units

Romania has opportunities to enhance its burn care infrastructure, contribute to research and digital innovations for patient tracking, improve scientific and academic programs for better understanding and specialized burn care, and strengthen its role in the European burn mass casualty response plan, especially as wildfires are expected to become more severe. Romania could enhance its role in the European burn mass casualty response plan, particularly by participating in its development, implementing burn center verification schemes, fostering cross-border cooperation through the UCPM, bolstering its national burn care infrastructure, and contributing to specialized training as well as to research and innovation, particularly in advancing digital tools for patient tracking and enhancing the response to mass casualty burn incidents. Romania has made some progress in improving burn care and infrastructure, but additional funding and institutional support are needed to secure resources for scaling and operationalizing these efforts, including the establishment of the National Unique Burn Patients Registry, managed by the Plastic Surgery, Reconstructive Micro Surgery, and Burns Clinic at 'Grigore Alexandrescu' Emergency Children's Hospital, which will store data on burn victims and allow doctors to access patient histories, pending approval from the MoH.[199] Plans for a national or regional tissue bank, aimed at providing tissue and skin for burn treatments, are under way, requiring the identification of necessary resources for implementation (for example, infrastructure, personnel, equipment).

Expanding training and enhancing resource allocation for local emergency personnel

Enhancing wildfire response capacity in Romania requires a multifaceted approach, including mandatory seasonal measures, expanded training programs and facilities, investment in advanced technologies, collaboration with civil society, and leveraging EU initiatives like DIREKTION[200] to adopt innovative solutions and strengthen disaster resilience. The NDRMP outlines key priorities to enhance Romania's disaster response by 2027, including conducting annual wildfire simulation exercises to train intervention forces and authorities, constructing specialized training centers under the Multirisk Module II project, and supporting the EU's RescEU.[201] In 2024, GIES launched a special training program for military firefighters focused on forest fire response, and proposals will be made to include forestry personnel in these sessions to enhance coordination. Complementary, expanding training facilities and introducing an e-learning platform would improve accessibility,[202] allowing local authorities and emergency personnel to receive specialized training in wildfire management. Additionally, Romania should continue participating in UCPM interventions and other international wildfire-based exercises, facilitating the exchange of expertise (e.g., through regional workshops or webinars), ensuring access to additional resources, and collaboration with other member states to enhance wildfire management and overall disaster response efforts, with large-scale exercises like ForFirEx 2019, organized by GIES, to be repeated to improve joint preparedness. Moreover, engaging in initiatives like the EU-funded DIREKTION project presents a significant opportunity for Romania to

[197] DIREKTION, Disaster Resilience Knowledge Network. Link.
[198] EC 2023.
[199] Digi24. 2024. *A Hospital in Bucharest Has Established the National Unique Burn Patients Registry*. Link.
[200] DIREKTION, Disaster Resilience Knowledge Network. Link.
[201] See Annex 2. NCES 2020.
[202] EC 2023.

adopt innovative solutions and cutting-edge technologies to strengthen fire and rescue services, reduce wildfire risks, and enhance operational efficiency across all levels of disaster response. Finally, given the anticipated rise in wildfire incidents, it is proposed that Romsilva's permanent service for rapid communication, high-risk area monitoring, and intervention coordination receive dedicated local resources—including staffing, equipment, and funding—to ensure effective implementation during peak wildfire seasons through enhanced surveillance, timely alerts, and coordinated mobilization efforts.

Strengthening and formalizing partnerships with civil society and volunteers

Clarifying roles and responsibilities within a robust collaboration framework between CSOs, local authorities, MEWF, Romsilva, and MoIA could significantly strengthen wildfire response efforts. Currently, MEWF intends to establish partnerships with civil society organizations (CSOs) to conduct public awareness campaigns, and the Action Plan for Forest Fires, as part of the National Disaster Risk Reduction Strategy (NDRRS), will allocate actions and budgets to support these collaborations in educating and raising awareness about forest fire risks. By formalizing these partnerships, CSOs can play a crucial role in monitoring high-risk areas and assisting during fire emergencies, particularly in rural regions. Their involvement can extend beyond response to include prevention, awareness campaigns, and logistical support, ensuring a more coordinated and efficient approach to wildfire management. Strengthening these partnerships through clear guidelines, training, and resource allocation would enhance the overall capacity of both local communities and emergency services to effectively manage wildfire risks.

Enhancing live wildfire technologies and local monitoring capabilities

Opportunities to enhance wildfire monitoring in Romania would require integrating cutting-edge technologies, improving communication infrastructure, and expanding public access to real-time information. This can contribute to enhancing situational awareness, resource allocation, and response effectiveness. Improved drone coverage and investing in real time monitoring through surveillance cameras (see Box 6) especially in high-risk and remote areas should represent a priority for Romania. This could improve real-time situational awareness, optimize resource allocation, and enhance the understanding and prediction of wildfire behavior. Investing in the development of seamless communication infrastructure for emergency response teams and local authorities can bridge coordination gaps and improve response times, supported by allocating funding and resources to improve on-the-ground monitoring by local staff. Additionally, based on the SIPOCA 395 project, there is an opportunity to further enhance the wildfire management system by developing an integrated platform that combines geospatial data, real-time monitoring, and decision support tools, improving coordination and response times across all levels of intervention. Finally, expanding public access to real-time fire risk information through applications and platforms (such as the Be Prepared website and the DES application) could also empower citizens to take timely actions, improving overall safety and resilience.

Enhancing large-scale evacuation, shelters and stockpiles

Romania could strengthen emergency preparedness by revising evacuation plans, shelters, and stockpiles to ensure inclusivity, flexibility, and public awareness. To improve wildfire evacuation in rural and hard-to-reach areas, Romania could invest in modular, well-maintained shelters, map and maintain alternative routes, deploy mobile medical units and collaborate with private partners and civil society for local-level response, and pre-arranged access to private stockpiles. Additionally, evacuation protocols could be updated to address vulnerable groups, using hazard maps, and aligning with international standards.

WILDFIRE RECOVERY, RECONSTRUCTION, AND POST-DISASTER FINANCING

This chapter focuses on post-fire recovery encompasses all the rehabilitation, restoration, and reconstruction interventions that take place after a wildfire, including short-term efforts to stabilize emergencies and long-term interventions aimed at the recovery of ecosystems and socioeconomic assets and systems.

DRM CONTEXT

GIES is planning a unified methodology for damage assessment in emergency situations/disasters, while a distinction between damage and losses is still to be officially clarified. According to GD No. 1492/2004, the management of emergency situations data is overseen by GIES, with local support from (CIESs). After a disaster, local committees or special commissions collect disaster loss data in analog or digital format, and this information is then transmitted through the Information Management System for Emergency Situations to aid decision-making and facilitate external funding from entities such as the EU and UN. Evaluating the economic impact of disasters is the responsibility of all authorities involved in DRM, a key tool for strategic resource planning. However, due to the lack of dedicated tools, fragmented or inaccessible information, and absence of collaboration protocols, these evaluations often focus only on physical impact without assigning an economic value. Damage evaluation commissions, formed by specialists designated by the prefect, assess losses during emergencies but lack a specific methodology, which can lead to inaccurate values and reluctance to include economic data in post-event reports crucial for local recovery fund allocations. GIES is aiming to develop an IT system based on a unified methodology for damage assessment in emergency situations/disasters, improving the economic impact assessment methodology already developed in the RO-RISK project. This updated methodology will be applicable not only for evaluating future risk scenarios but also for assessing post-disaster damage to gather historical data, aiding in the identification of major impact scenarios. The IT system will be based on this methodology and consists of (1) a customized software for calculating economic impact and (2) a database with physical, statistical, and financial data, interconnected with other national [203]

Romania covers disaster costs through the Government Reserve Fund and the Intervention Fund, allowing flexible resource allocation for initial disaster expenses (per Law No. 500/2002). Different ministries manage disaster-related budgets, and the Ministry of Finance (MoF) can reallocate funds. Romania has mandatory household insurance (through the Pool for Natural Disaster Insurance [PAID]) which covers three catastrophic risks—earthquakes, floods, and landslides—up to €10,000 or €20,000. [204] Despite an ascending trend in recent years, insurance penetration in Romania remains below the European averages of 7.4 percent and €2,100 per capita. Between 2013 and 2023, insurance companies affiliated with the National Union of Insurance and Reinsurance Companies in Romania (*Uniunea Națională a Societăților de Asigurare și Reasigurare din România,* UNSAR) provided nearly €20 million in financial support for restoring homes impacted by floods, earthquakes, and landslides, with payouts in the previous year being five times greater than in 2022.[205] Romania has no public asset insurance. Romania also uses international financial sources such as contingency funding (including from the World Bank),[206] donor assistance, and the EUSF.[207] Given potential govern-

[203] GIES. Terms of Reference for consulting services to create a "Unified Methodology for Damage Assessment in Emergency Situations/Disasters." Link.

[204] Law No. 260/2008 on the compulsory insurance of buildings against earthquakes, landslides, and floods. Link. Depending on the construction type, regardless of the property's actual value, with fixed premium rates differing for urban and rural areas.

[205] UNSAR. 2024. "EUR 20 Million in Compensation Paid for Restoring Homes after Natural Disasters." Press release, September 20, 2024. Link.

[206] Second Disaster Risk Management Development Policy Loan (DPL) with Catastrophe-Deferred Drawdown Option (Cat DDO2).

[207] Since 2002, Romania has received over €127.2 million from the EUSF to address such crises. Link. EC. 2023. *Peer Review Report: Romania - Civil Protection and Humanitarian Aid.* Link.

ment liabilities, the current arrangements may not be sufficient in case of major disasters.[208]

CURRENT ARRANGEMENTS

Wildfire damage and loss assessment

In the context of post-fire damage assessment, the National Response Concept for Forest Fires includes this step as part of the final phase of a three-stage response process aimed at gradually restoring normal conditions, while MEWF Order No. 551/1475/2006 underlines roles for evaluating and determining damage caused by forest fires in the national forest fund. The national response plan emphasizes the importance of monitoring the affected area for a minimum of 24 hours following the fire, involving various stakeholders such as forestry units, local emergency committees, and, when required, supporting entities like GIES, IGAv, and MApN.[209] Affected forest areas and plantations are monitored to accurately assess losses and ensure reforestation of cleared areas within the legal deadlines. Whereas MEWF Order No. 551/1475 of August 8, 2006, regarding the Regulation on Emergency Management Due to Forest Fires, in the post-fire phase, stipulates prefects and mayors are responsible for centralizing data on the impacts of forest fires. Technical support groups, formed within each county emergency committee, play a key role in evaluating and determining the damages caused by forest fires in the national forest fund. These groups consist of specialists from various agencies, including forestry inspectorates, Romsilva, the Environmental Protection Agency, and the National Environmental Guard. [210]

However, Romania, through GIES, is currently working on developing a unified methodology for disaster data collection which could support a unified and reliable understanding of wildfire impacts with futures effects in implementing effective recovery plans. The methodology will be accompanied by an IT system which will integrate damage and economic impact data. The system will be piloted using multiple evaluation methods and it will support on-site teams through a digital platform that enables local data input and automated calculations via mobile-accessible algorithms.

Wildfire recovery framework

Romania is yet to develop a comprehensive post-wildfire recovery framework, with this phase only partially addressed in national and local emergency plans, leading to uncertainty around roles, responsibilities, and standards. Although GD No. 557 outlines several stakeholders in the recovery process (including MoIA, MEWF, MoF, local authorities, and MARD for specific vegetation fires), it does not clarify recovery-phase roles. However, the National Response Concept for Forest Fires provides more detailed guidance on post-fire recovery through the final stage of a three-stage response process, the 'Extinction' stage (from T+5 days onward). This stage focuses on ensuring the continuation of actions from the previous phase (that is, limiting fire spread and protecting vulnerable individuals) while progressively restoring normalcy. Key operational priorities during the 'Extinction' stage, which focuses on recovery and restoring normalcy, include immediate relief and housing, safety and coordination, resource management and logistics, international collaboration, medical and psychological support, and damage assessment and legal actions (Box 8).[211] However, the subjects outlined under the recovery stage in the National Response Concept are only enumerated, with insufficient detail provided regarding the roles and responsibilities of key stakeholders, standards, procedures, and methodologies.

[208] World Bank 2023In the event of a major disaster, government liability in Romania could exceed 0.4 percent of gross domestic product (GDP) due to the high vulnerability of residential buildings and public assets, with over 50 percent of potential losses tied to residential buildings. World Bank and European Commission. 2024a.

[209] GIES 2018a.

[210] MEWF Order No. 551/1475 of August 8, 2006, regarding the Regulation on Emergency Management Due to Forest Fires. Link; Government Decision No. 1492 of September 9, 2004 (*updated*) regarding the principles of organization, operation, and responsibilities of professional emergency services (updated until September 1, 2016). Link; Popa 2023a; JRC 2023; 2023.

[211] GIES. 2018a. *National Response Concept for Forest Fires*. Link.

Box 8. Key operational priorities during the extinction/recovery stage of fires in Romania

Key operational priorities during the extinction/recovery stage, aiming to restore normalcy post-forest fires, as mentioned in a measures and actions matrix under the National Response Concept for Forest Fires, can be grouped into the following categories:

1.Immediate relief and housing:
- Providing priority assistance to affected areas
- Ensuring basic housing conditions for displaced individuals
- Distributing humanitarian aid and emergency supplies

2.Safety, order, and coordination:
- Safeguarding public order and protecting individuals and property at risk
- Coordinating traffic and appointing commanders for actions/interventions
- Ensuring protection of key facilities and affected areas
- Executing service agreements.

3.Resource management and logistical support:
- Deploying forces and resources from unaffected counties
- Providing logistical support (water, food, equipment, accommodation, fuel)
- Ensuring telecommunications services for intervention actions

4.International collaboration and assistance:
- Contacting neighboring countries' specialized structures for cross-border wildfire response
- Requesting international assistance when necessary

5.Medical and psychological support:
- Offering emergency medical and psychological assistance

6.Damage assessment and legal actions:
- Assessing damages caused by the forest fire
- Implementing measures following emergency declarations.

Source: GIES 2018a.

Box 9. Romsilva's reforestation of Romanian forests

Over the past five years, Romania has made significant strides in reforestation. Romania has regenerated 72,330 ha of public state-owned forests, with 48,604 ha through natural regeneration and 23,726 ha through planting. In 2024, Romania planned to plant 26 million seedlings and regenerate 12,087 ha of forest, including 341.1 ha affected by calamities, with a total allocated budget for these efforts of approximately €60 million (RON 296 million).

Source: National Forest Administration - Romsilva. 2024.

Wildfire restoration efforts

Romania faces several challenges in wildfire reforestation, primarily due to the fragmentation of forest ownership and high management costs. The National Forest Administration - Romsilva - plays a key role in reforestation efforts in case of calamities, managing almost half of Romania's forests (see Box 9).[212] According to MEWF Order No. 551/1475 of August 8, 2006, regarding the Regulation on Emergency Management Due to Forest Fires, the rehabilitation of forest areas affected by fires is the responsibility of the forestry units, whether state-owned or private, that managed the affected lands. This rehabilitation primarily involves reforestation using species that belong to the natural fundamental forest type (considered an NBS), and it can only occur after the removal of burned trunks and the application of soil amendments for recovery. The NFS30 and the NRRP set ambitious targets, such as increasing forested areas by 5 percent by 2050, but these goals are hindered by a reliance on command-and-control governance rather than incentivizing tools for afforestation and biodiversity conservation. As of March 11, 2025, a total of 3,720 hectares (14 percent) have been afforested and reforested out of a total of 26,760 hectares, and funds amounting to €40.265 million (9 percent) have been spent out of a total of €430.8825 million. However, the current forest management framework does not fully address the adaptability of forest species to future climate conditions, creating a need for more comprehensive risk assessment and management plans for areas impacted.[213]

Wildfire insurance coverage for asset recovery and reconstruction

Insurance penetration for agricultural sites and forests in Romania is low, in line with the broader EU situation.[214] With regard to household insurances, in Romania, there are two types of coverage: the mandatory Policy against Natural Disasters (*Polița de Asigurare împotriva Dezastrelor Naturale,* PAD) insurance offered by PAID, the largest private insurer, which covers natural disasters such as earthquakes, floods, and landslides, but not wildfires, and optional insurances that can include protection against fires and other risks.[215] While mandatory household insurance policies do not cover wildfire damage, it is only included under traditional fire insurance, placing a financial burden on governments and affected communities. The low uptake of insurance coverage for wildfire risk in Romania is also linked to the low levels of insurance availability. Under the National Strategic Plan of the CAP, the state subsidizes part of the eligible insurance premium paid by farmers for crop insurance. Through Submeasure 17.1, the Agency for Rural Investment Financing (*Agenția pentru Finanţarea Investiţiilor Rurale,* also known as AFIR), under the Ministry of Agriculture (MARD), provides a 70 percent non-reimbursable subsidy for insurance premiums, covering risks like drought, floods, hail, frost, storms, and heavy rainfall, but wildfires are not covered. Farmers must ensure full coverage for crops or livestock but pay for the insurance themselves. Private insurers offer a modular facultative product with additional risks (for example, fire and landslides) that are not eligible for subsidies.[216] Regarding forests, whether private or state-owned, the desk review did not reveal any established risk transfer instruments for wildfires, nor any state subsidies from MEWF for such instruments. Currently, there is no reliable wildfires forest insurance option in Romania.[217]

Post-wildfire financing

The MoF incorporates wildfire risk into strategic documents, with estimates for a multi-risk scenario involving severe environmental and social costs affecting 3,000 ha, of which 1,400 ha of protected area, adding up to €1.55 million in losses, using data from the RO-RISK platform.[218] The NDRMP outlines measures, funding sources, and implementation timelines regarding identified wildfire risks, most of them by 2027 through a

[212] In case of calamities such as fires, landslides, abnormal drying, windthrows, and snow breaks, management measures will comply with MEWF OM No. 766/2018, which regulates technical forestry standards and procedures for amending forest management plans. Link.

[213] GoR 2022b.

[214] World Bank and European Commission 2024a.

[215] PAID. n.d. *What Is PAD?* Link.

[216] Groupama. Agricultural crop insurance with subsidized premium. Link.

[217] Key stakeholders under the MEWF indicated no knowledge of existing forest insurance options, while the desk review identified two private providers offering wildfire coverage—though their identity and credibility could not be independently verified through official sources.

[218] GIES 2018b.

combination of state budget and EU funds.[219] MEWF has launched the noncompetitive project call under Investment I.1 for the 'National Campaign for Afforestation and Reforestation, including Urban Forests', providing funding by 2026 to restore forest potential affected by wildfires, adverse weather events, pest infestations, and catastrophic events, with a total financial allocation of €100,000,000 (equivalent to RON 491,890,000) through the NRRP.

Romania's post-wildfire financing mechanisms currently rely on a combination of budgetary instruments, disaster relief programs through EU funding, a second CAT DDO as contingent financing, and limited private insurance coverage. The Romanian government can utilize two instruments: the Reserve Fund and the Intervention Fund (as per Law No. 500/2002) as flexible resource allocation for disaster expenditures through the MoF, while different ministries manage disaster-related budgets, such as MEWF for forest fires-related expenditures and MARD for agricultural fires. [220] Furthermore, in the fall of 2024, Romania secured a €466.9 million contingent finance from the World Bank, in the form of a second Cat DDO supporting national efforts to enhance multi-hazard preparedness, DRR, and adaptation, that could be triggered for wildfire-related emergencies among other natural disasters.[221]

However, these arrangements are insufficient for wildfires, particularly with the expected exacerbation, facing challenges such as inadequate funding for large-scale recovery, limited wildfire insurance coverage, and reliance on government interventions. The lack of probabilistic wildfire risk models further complicates accurate loss assessments and long-term financial planning, while bureaucratic inefficiencies and limited public awareness about risk mitigation measures exacerbate the financial strain. Addressing these issues requires improved risk modeling, increased investment in wildfire preparedness, and policies encouraging private sector participation in disaster financing.

KEY OPPORTUNITIES

Key opportunities for wildfire recovery, restoration, and post-financing in Romania include (1) establishing a national framework for post-wildfire damage assessment and standardized procedures; (2) developing after-action reviews (AARs) to inform a lessons-learned repository; (3) combining international and national tools for comprehensive damage assessment; (4) developing a wildfire recovery framework integrating 'building back better' for reconstruction and reforestation; (5) scaling up wildfire insurance coverage; and (6) leveraging PPPs and international cooperation in wildfire (post-)disaster financing.

Establishing a national post-wildfire damage assessment and unified procedures

Romania is already taking the necessary steps toward standardized damage assessment databases and processes, with scope for wildfires. According to the NDRMP, MoIA aims to adapt and implement the United Nations Office for Disaster Risk Reduction (UNDRR) - DesInventar platform and the Sendai Monitor while improving the software tool for national and regional capability assessments developed in the RO-RISK project, creating an integrated IT system that will serve as a national database, incorporating damage assessment results and economic impact data from relevant authorities.[222] This decision will affect relevant ministries handling various hazards, including wildfires, requiring amendments to legislation to streamline methodologies and procedures for data collection and estimates while officially distinguishing between damages and losses, creating the basis for efficient recovery planning and reconstruction. Therefore, Romania should ensure that an interoperable, digitized DLD repository for wildfire events is ultimately linked to the broader all-hazard system, with standardized criteria for data collection and sharing aligned with Sendai indicators, disaggregated by factors such as gender and age, and implemented through a regularly updated GIS platform for burned areas (with open access and data interoperability following the INSPIRE Directive), while ensuring the data are reusable for other

[219] See Annex 2. NCES 2020. Link.
[220] Law No. 500/2002 on Public Finances. Link.
[221] World Bank. 2024. *Romania Second Disaster Risk Management Development Policy Loan with a Cat DDO (P502111)*. Link.
[222] NCES 2020, 91.

sectoral policies (for example, land use planning) and supporting the development of 'fire-smart' territories.[223] Romania should also consider assessing and quantifying environmental damages and losses (e.g., loss of biodiversity and habitats), alongside socio-economic impacts, in the updated methodology for future damage and loss assessments.

Developing AARs to inform lessons-learned repository

Romania has the opportunity to implement wildfire AARs to systematically analyze past incidents and develop a lessons-learned repository. Currently, there is no comprehensive analysis of large wildfire events or standardized post-incident evaluations to identify key lessons. By introducing AARs, Romania can assess what was supposed to happen, what actually occurred, what went well, what failed, and what should change for future response efforts. This process would support the continuous improvement of recovery guidelines, ensuring they evolve based on real-world experience and enhance wildfire management strategies.

Combining international and national tools for effective post-wildfire damage assessment

In addition to Romania's national mechanisms and procedures for assessing wildfire damage, which are under improvement as noted above, EU tools can be utilized to ensure precise and efficient evaluation of the economic, environmental, and social impacts of wildfires. International tools like Copernicus Emergency Management Service and the associated EFFIS could play a crucial role in post-wildfire damage assessment and recovery efforts in Romania, leveraging both real-time assessments and detailed post-fire analyses to safeguard its environment and communities. Through the EU Copernicus program, Romania benefits from near real-time satellite imagery and geospatial data that enable authorities to monitor the extent of damage, including burned forest areas, agricultural lands, and critical infrastructure. EFFIS, through continuous satellite monitoring, provides detailed evaluations of wildfire impacts, including the extent of forest damage and loss of biodiversity.[224] Integrating these EU data into a unified system linked with national assessments would enable Romania to accurately evaluate wildfire impacts, prioritize restoration, plan ecological recovery, and implement long-term strategies, ensuring informed and coordinated recovery efforts.

Developing a wildfire recovery framework integrating 'building back better' for reconstruction and reforestation

There is scope for the development of a national resilient multi-hazard framework, grounded in build back 'smarter' and 'build back better' (BBB) principles for reconstruction and reforestation in the context of wildfires and supported by an efficient communication system for managing disaster recovery. It is critical for Romania to strengthen this stage in DRM by creating a comprehensive multi-hazard recovery framework, which includes wildfires, while amending current legislation (GD No. 557/2016) to clearly define the roles and responsibilities of entities in the recovery phase for both private and state-owned forests and agricultural lands.[225] To support recovery efforts, enhancing the institutional framework and establishing a functional, up-to-date communication system are essential, alongside improving damage assessment processes and creating protocols and agreements with key stakeholders, including the private sector, for seamless collaboration. Romania's efforts to address wildfire reforestation challenges under the NFS30 and NRRP present significant opportunities for advancing environmental sustainability and resilience, with recovery efforts prioritizing long-term resilience by incorporating species ecology, forest dynamics, climate change, and community needs into restoration strategies.[226] By the end of 2025, Romania plans to develop a National Afforestation Plan for 2026–2030, identify suitable lands for afforestation by 2024, create incentives for landowners, and establish technical norms and best practices, with a regulatory framework aligned with agricultural regulations, positioning

[223] Casartelli and Mysiak 2023, 33.

[224] EC JRC. 2023. *The EU 2022 Wildfire Season Was the Second Worst on Record*. Link.

[225] GoR 2024.

[226] According to European Parliament (2023), post-fire recovery efforts should focus on long-term resilience and adaptation to future wildfire risks by incorporating species ecology, forest dynamics, climate change, and local community needs, rather than merely restoring areas to their pre-fire state.

reforestation as a key strategy for mitigation, carbon sequestration, biodiversity restoration, and forest ecosystem strengthening.[227] Additionally, key opportunities to overcome barriers such as fragmented ownership, high costs, and legislative hurdles for afforesting land outside the National Forest Fund include encouraging land consolidation and resource pooling for more efficient afforestation, promoting public-private collaboration for funding and managing projects, and offering training on forest management best practices. Leveraging zoning tools and upscaling investment in targeted restoration projects across wildfire-prone regions in Romania could significantly improve the efficiency of restoration efforts and enhance community resilience.

Scaling up wildfire insurance coverage

Romania could increase wildfire insurance coverage by expanding agricultural and forest insurance schemes, integrating wildfire coverage into existing mandatory policies, incentivizing prevention measures for homeowners, adopting public-private models, and linking post-disaster assistance to risk reduction strategies to enhance resilience and financial protection. Expanding insurance products under the National Strategic Plan of the CAP to include wildfire coverage could reduce the financial burden on farmers and the state, thus encouraging greater uptake of coverage by farmers. Given the absence of established wildfire-specific insurance for forests, there is a clear opportunity for MEWF to introduce subsidies or incentives for forest insurance programs to upscale uptake in insurance policies, while private insurers could be incentivized to offer more comprehensive, subsidized wildfire insurance products. This approach could help develop risk transfer instruments for both private and state-owned forests, mitigating the financial impact of wildfires on these critical areas. Developing new, affordable wildfire-specific policies for households could provide greater protection to homeowners and alleviate the financial burden on communities affected by wildfires,[228] MEWF currently considering discussions with insurance companies to include wildfire risk in their insurance portfolios.

Furthermore, homeowners' insurance uptake could be improved by offering premium discounts or incentives for those who implement wildfire prevention measures, such as defensible space around properties, fire-resistant materials, and fireproof landscaping. Integrating preventive measures tied to insurance coverage, promoting fire-resistant development in high-risk zones, and adopting mechanisms like France's CatNat system (a state-backed natural disaster insurance scheme with fixed levies on mandatory policies)[229] or U.S.-style FAIR plans (Fair Access to Insurance Requirements—state-supported programs providing coverage in high-risk areas)[230] can ensure stable, inclusive coverage while discouraging risky construction. Additionally, fostering partnerships with financial institutions, similar to the latter is particularly relevant to Romania, where disaster insurance coverage for households is low, presenting an opportunity to link post-disaster [231] to households adopting risk reduction strategies while increasing insurance uptake and enhancing resilience to future disasters. Finally, the GoR could adopt a similar approach to wildfire recovery by establishing a government-backed financial assistance mechanism, drawing inspiration from models like other EU member states[232] to cover costs exceeding the capacity of insurance policies and enhance resilience. These steps would improve accessibility and uptake, ensuring a more resilient and prepared response to wildfire risks across Romania.

[227] For further information, please refer to 7.7. Increasing the forest area through afforestation between 2026 and 2030, with the perspective of 2050, under the section "Increasing the forested area and creating stable forests in the context of climate change, with rich biodiversity and enhanced carbon storage capacity." GoR 2022b.

[228] OECD 2023.

[229] The CatNat scheme in France is a public-private insurance program mandating a surcharge on property and motor insurance policies, with the state-guaranteed reinsurer Caisse Centrale de Réassurance (CCR) providing unlimited coverage for natural disaster claims. Link.

[230] A FAIR (Fair Access to Insurance Requirements) plan is a state-initiated insurance program designed to provide property coverage to individuals and businesses who are unable to secure insurance through the private market, often due to heightened risks such as wildfires. OECD. 2023, 108.

[231] OECD and World Bank 2019.

[232] Examples under the section on EU-Wide Risk Overview - Wildfires include Spain's Consorcio de Compensación de Seguros (CCS) and France's publicly owned CCR.

Leveraging PPPs and international cooperation in (post-)wildfire financing

Given the growing impact of wildfires on households, businesses, and the public sector, investing in risk reduction should be a whole-of-society effort. This presents Romania with an opportunity to develop a comprehensive DRF strategy that includes wildfires alongside other hazards. Integrating the private sector into disaster financing through public-private partnerships (PPPs) could support Romania's current wildfire financing, which relies on specific ministries (for example, MEWF and MARD), budget instruments at the MoF (for example, reserve funds), and international support through EU funds and the Cat DDO2 loan from the World Bank. Attracting PPPs can aid long-term recovery by funding forest restoration, rebuilding infrastructure, and enhancing risk management systems, with opportunities to expand these funds to ensure balanced resources for other DRM phases, including preparedness, response, and proactive mitigation.[233] Funding mechanisms should follow the BBB principle to ensure sustainable recovery and minimize vulnerability to future disasters.[234]

Additionally, collaboration with other countries could enhance joint financing of wildfire risks through the creation of joint reserve funds and joint contingent liability funding (see Figure 6) through bilateral agreements and partnerships, cross-border support in wildfire risk assessment and fuel management (for example, EU funding through Horizon 2020 and the EU Solidarity Fund), and the UCPM, offering Romania opportunities for collaboration and funding.[235] The EU funding instruments, such as the Resilience and Recovery Facility, Cohesion Policy Funds, Agriculture and Rural Development Fund, the LIFE Programme, the Interreg Danube Region programme, the Technical Support Instrument, the EU Mission on Adaptation to Climate Change, and UCPM funding programmes, should be fully exploited.[236] However, the MoF plays a crucial role in ensuring proper oversight of DRF decisions, balancing ex ante and ex post instruments like tax incentives, extrabudgetary funds, public insurance, and PPPs, which could introduce or exacerbate fiscal risks if not carefully integrated into government budgetary processes.[237]

[233] OECD 2023.
[234] European Parliament 2023.
[235] OECD 2023.
[236] Casartelli and Mysiak 2023.
[237] OECD and World Bank 2019.

Figure 6. A Risk Financing Strategy Mix Involving Public and Private Funding and International Collaboration

Source: OECD 2023.

Total Financing Deciding on total amount of financing based on optimal or acceptable levels of risk	**Public Financing**	• Ex ante: risk reduction measures, risk transfer measures • Ex post: recovery and rehabilitation financing through budget reallocation or revenue raising
	Private sector and household financing	• Private ex ante and axe post investments • Risk transfer mechanisms (insurance) • Public-private partnerships
	International collaboration	• Creation of joint reserve funds • Creation of joint contingent liability funding

CROSS-CUTTING TOPICS: SOCIAL RESILIENCE AND PRIVATE SECTOR

Social resilience, social protection, and inclusion

This chapter covers wildfire-related social resilience, social protection, and inclusion, referring to the ability of communities to withstand, recover from, and adapt to the impacts of wildfires, while ensuring that vulnerable groups are not left behind. These three elements work together to enhance communities' ability to withstand and recover from wildfires by strengthening networks, providing financial support and relief, ensuring vulnerable groups have access to necessary services and assistance, and contributing to building communities that are better equipped to handle the challenges posed by wildfires.

Vulnerable groups, as defined by the United Nations, are social groups at high risk of socioeconomic marginalization requiring specific attention. These include, but are not limited to, children and adolescents, the elderly, persons with disabilities, minorities, low-income or no-income individuals, migrants, homeless people, individuals living with HIV/AIDS, and those with chronic illnesses.

CURRENT ARRANGEMENTS

With Romania witnessing a significant rise in wildfires, social responsibility in wildfire prevention and preparation is increasingly vital. Despite efforts by MEWF, Romsilva, and platforms like 'Fii Pregătit', current initiatives to raise awareness, educate communities,[238] and promote responsible land management are insufficient, lacking monitoring and evaluation, and need to be expanded for broader impact. Public engagement remains low, with only 24 percent perceiving wildfires as a significant risk. Limited trust in authorities and minimal investment in protective measures are other identified impediments.[239] Fragmented forest governance, resource constraints, and the growing impacts of a changing climate exacerbate vulnerabilities at community levels. Additionally, CSOs in Romania face challenges in wildfire response due to limited resources, fragmented coordination, and a lack of consistent engagement with local authorities given the lack of an official collaboration framework, which undermines their ability to effectively support prevention and recovery efforts. Volunteer firefighter programs struggle with an aging volunteer base, insufficient long-term training plans, and limited financial support, making it difficult to ensure sustainable and effective wildfire response in rural and remote areas. This lack of coordinated efforts between local municipalities, forest management agencies, volunteers, and CSOs creates gaps in wildfire prevention and response, leaving communities vulnerable and hindering effective recovery and resilience-building strategies. Human negligence, including improper land-clearing practices and unsafe fire use, remains a primary driver of wildfires, exacerbating the need for targeted education, awareness and prevention strategies, stronger community involvement, and incentives for sustainable land and disaster management practices.

Whereas social protection in Romania faces challenges due to limited access to wildfire household insurance and a system that is not yet adaptive, leaving marginalized and rural communities particularly vulnerable to the impacts of wildfires. Despite economic growth, Romania continues to face significant regional disparities, particularly in rural areas where poverty, limited access to services, and underdevelopment are prevalent, with vulnerable groups such as the self-employed, elderly, rural residents, and Roma most affected. Additionally, the social protection system struggles to adapt to disasters and climate-induced shocks, lacking the capacity to incorporate poverty and disaster data to pinpoint vulnerabilities.[240] The exclusion of wildfires from the mandatory PAD insurance in Romania, combined with reliance on optional coverage, leaves households, particularly in high-risk areas, vulnerable to wildfire damage and highlights gaps in social protection for wildfire-related risks.

The challenge in inclusive wildfire risk management is overcoming disparities in local preparedness, where vulnerable groups, including people with disabilities and remote residents, face barriers in accessing early warnings, evacuation plans, tailored procedures and information, and involvement in risk planning. There is a disparity in the preparedness and response capabilities of local authorities, with some regions facing shortages of resources and trained personnel. Inclusive communication for preparedness activities as well as for response missions becomes a critical issue, as vulnerable groups, including people with disabilities, ethnic minorities, and residents in remote areas, often encounter barriers when trying to access EWSs

[238] National Forest Administration – Romsilva 2023.
[239] EC 2024.
[240] GoR 2024.

and accessible evacuation plans and procedures.[241] These challenges further exacerbate the difficulty of ensuring that all communities are equally prepared and protected during wildfire events. Additionally, these vulnerable groups are often not actively involved in wildfire risk planning activities in their communities, further hindering their preparedness and resilience during emergencies.

KEY OPPORTUNITIES

Improving communities' resilience to wildfires in Romania should focus on the following key measures: (1) developing accessible and targeted wildfire awareness and preparedness programs for communities, (2) enhancing social protection and financial assistance for individuals affected by wildfires, and (3) ensuring inclusive wildfire risk management and planning.

Implementing accessible and targeted community wildfire awareness and preparedness

Wildfire social resilience in Romania requires enhanced education, community engagement, and proactive measures to foster a culture of safety, shared responsibility, and preparedness, addressing vulnerabilities exacerbated by governance challenges and low public awareness. Expanding and enhancing public awareness campaigns is crucial, tailoring them to vulnerable groups and emphasizing responsible land management, wildfire prevention, and climate impacts, with increased funding for educational initiatives. Additionally, clear monitoring and evaluation systems must be established to measure the effectiveness of these programs and allow them to continuously integrate feedback and improve. Building trust and communication between local communities and authorities is vital, promoting transparency, accountability, and community-driven initiatives such as local risk management committees. Developing official collaboration frameworks for coordination between authorities, CSOs, and other stakeholders is also necessary, while volunteer firefighter programs should be revitalized through long-term training and financial support, focusing on recruiting younger volunteers with incentives like stipends.

Strengthening social protection and financial support for wildfire victims

To enhance social protection to wildfires in Romania, reforms are needed to expand insurance coverage, adapt social protection systems to climate risks, improve community and vulnerable groups' access to services, and better support vulnerable communities during wildfire events. The social protection system should be adapted to better incorporate climate-induced risks, integrating disaster and poverty data to identify and support vulnerable groups, including people with disabilities, older people, and marginalized communities. Improving access to services and infrastructure in rural areas, including mental health-related services, establishing financial safety nets such as emergency cash transfers, and ensuring targeted support for those affected by wildfires are essential.[242] Improving data collection on the social impacts of wildfires will ensure more effective and tailored protection responses.

Ensuring inclusive wildfire risk management and planning

Increased collaboration between community networks, authorities, and CSOs, including those representing women, children, Roma, and PwDs, is essential for fostering awareness, encouraging preventive behavior, and involving vulnerable groups in wildfire risk planning for more effective response and recovery. Romania has an opportunity to enhance inclusive training for emergency personnel by scaling up nationwide training for intervention personnel on inclusive communication with PwDs for better interactions in preparedness and response activities and developing an accessible standardized syllabus and activities on wildfire preparedness and fire safety at the national level. Furthermore, regular preparedness drills involving vulnerable populations, alongside the creation of a comprehensive registry to track individuals with specific needs, will ensure timely assistance and better coordination. Inclusive communication strategies, community-based support networks, and partnerships, especially between public authorities and Organizations of People with Disabilities (OPDs) and grassroots CSOs with a focus on social assistance and environmental aspects, are crucial.

[241] World Bank (2021) highlights that gaps persist in emergency response plans, risk mapping, access to services, and trained personnel, hindering adequate support for these groups during disasters. World Bank. 2021. "Diagnosis of the Situation of Persons with Disabilities in Romania." Link.

[242] GoR 2024.

PRIVATE SECTOR

This section considers the role of the private sector in wildfire risk management across all phases. It highlights opportunities for leveraging public-private partnerships and technological advancements to enhance wildfire resilience while addressing key challenges such as regulatory enforcement, fragmented land ownership, and funding gaps considers private sector involvement in wildfire risk management includes investing in prevention technologies, providing insurance solutions, supporting resilience initiatives, and collaborating with governments and communities to improve mitigation, prevention, response, and recovery efforts.

CURRENT ARRANGEMENTS

The private sector, especially SMEs, is vulnerable to wildfire impacts, with most Romanian companies struggling to recover from disasters due to inadequate preparation for climate or human-induced stressors, rare adoption of BCPs, and limited risk awareness. A diagnostic analysis in Bucharest and surrounding areas revealed limited awareness of the potential impacts of disasters, with two-thirds of companies lacking knowledge of disaster risks,[243] hindering proactive risk mitigation efforts. The reliance on exposed supply chains, particularly in rural areas, makes businesses more susceptible to the cascading effects of wildfires on transportation and resources. These challenges, paired with a lack of clear incentives for fire-resilient land management, make it difficult for businesses to effectively prepare for, respond to, and recover from wildfire events, affecting their resilience and long-term sustainability.

Romania's public sector faces challenges in wildfire risk management due to fragmented forest governance, inadequate enforcement of prevention measures, reluctance to share fire origin data, and the lack of a comprehensive resource inventory at the MEWF level. Romania's fragmented forest governance, with a mix of private and public ownership and many small landholders, complicates coordinated wildfire risk management and enforcement of prevention measures under MEWF. This fragmentation increases forest management costs, hinders reforestation and biodiversity conservation, and makes it difficult to encourage sustainable practices.[244] A key issue is the limited involvement of the private sector in forest fire management, despite legal requirements to contribute resources and expertise. Inadequate enforcement of these requirements, along with reluctance to share fire origin coordinates, limits accurate wildfire modeling and hinders the identification of landowners for subsidies. The lack of a comprehensive inventory of resources at the MEWF level, including for the private sector, hampers effective wildfire risk management, resource allocation, and coordination of prevention efforts.

Finally, the Romanian private sector faces challenges tied to low insurance penetration and limited risk transfer mechanisms. Insurance penetration for agricultural sites and forests in Romania is low, with no subsidies available for forest insurance and limited options for obtaining coverage, leaving landowners financially vulnerable to wildfire risks. Additionally, the lack of coordinated PPPs for household wildfire insurance hinders the development of affordable and comprehensive coverage, leaving many households unprotected or underinsured against wildfire risks.

KEY OPPORTUNITIES

Key opportunities for wildfire management in Romania exist for the private sector in (1) enhancing wildfire management and private sector coordination; (2) preparing businesses in Romania for wildfire impacts through awareness, BCPs, and strengthening supply chains and investing in technologies; and (3) financing resilience measures and risk transfer arrangements, such as wildfire insurance.

[243] GoR 2024.
[244] GoR 2022b.

Enhancing wildfire management and private sector coordination

Reforming forest governance, promoting sustainable practices, improving resource inventories, enhancing public-private coordination, and streamlining data sharing is needed for more effective risk management and prevention, especially with regard to the private sector. To address wildfire challenges in Romania, key opportunities include reforming forest governance to reduce fragmentation and lower management costs, promoting sustainable practices among landowners to reduce fire risk and improve forest health. By developing financial assistance programs and offering tax incentives for actions like forest thinning, private landowners can be encouraged to actively participate in wildfire resilience efforts. Developing a comprehensive resource inventory at MEWF would enhance risk management. Strengthening public-private sector coordination in Romania can enhance wildfire prevention by enabling collaboration between fire services, insurance companies, technology firms, construction companies, and utility providers with local authorities to improve resource allocation, offer financial incentives, and develop advanced monitoring technologies for high-risk areas. These partnerships would form a comprehensive approach to wildfire risk mitigation and response. Finally, encouraging data sharing on fire origins will enhance wildfire modeling, decision-making, and the targeting of fire prevention subsidies.

Preparing businesses in Romania for wildfires impact

By raising awareness, adopting BCPs, strengthening supply chain resilience, and fostering PPPs, businesses can better prepare for and recover from wildfire impacts. Raising awareness about the potential impacts of wildfires and promoting the adoption of BCPs can help companies better prepare for climate and human-induced stressors. Strengthening supply chain resilience, especially in rural areas, by diversifying and enhancing the capacity to withstand disruptions caused by wildfires (for example, diversifying suppliers, investing in fire-resistant infrastructure, implementing backup transportation routes, and developing contingency plans for resource shortages in wildfire-prone areas) will reduce cascading effects on business operations. Finally, encouraging PPPs to share best practices, technologies, and resources for disaster preparedness and recovery could help businesses better navigate the risks posed by wildfires and other environmental threats.

Financing resilience measures and risk transfer arrangements

An opportunity lies in engaging the private sector and households in financing resilience measures and risk transfer arrangements, alleviating the government's burden during disruptive shocks. In Romania, increasing insurance penetration for agricultural sites, forests, and households could significantly reduce financial vulnerability to wildfires. This could be achieved by introducing subsidies for forest insurance, expanding coverage options, and fostering PPPs to develop affordable, comprehensive household wildfire insurance. Strengthening these risk transfer mechanisms would not only provide financial security for landowners and households but also encourage investment in preventive measures, further enhancing wildfire resilience.

INVESTMENT NEEDS AND RECOMMENDATIONS

This chapter proposes key priorities for reforms and investment areas, which may be considered as part of technical assistance, policies or instruments. It is informed by desk research and consultations.

To manage and reduce wildfire risks effectively, Romania should prioritize investments in prevention, preparedness, response, and recovery, emphasizing sustainable forestry practices, ecosystem restoration, and NBS to enhance resilience. Strengthening the legal framework with better local support, targeted training, streamlined data-sharing protocols, and sufficient financial resources is essential. Key actions include updating risk assessments to account for socioeconomic, climate, health, and infrastructure factors, integrating them into planning, enforcing modernized building codes, and improving monitoring technologies and loss-tracking systems (for example, establishing a DLD repository for wildfire). Community preparedness must be bolstered through inclusive training, internationally integrated multi-hazard EWSs, targeted public awareness campaigns on compliance and the impacts of illegal practices, and dedicated resources for vulnerable groups. Expanding insurance coverage and availability through awareness, PPPs, and tailored DRFI strategies, along with investments in emergency and training infrastructure, burn care capacity, volunteer engagement, and stakeholder training, will further enhance response capabilities. Finally, implementing a multi-hazard recovery framework grounded in BBB principles, sustainable reforestation, adaptive land use practices, and mitigation strategies will support long-term resilience and recovery.

A list of recommendations is provided in Table 2, with further details provided below the table.

Table 2. Key wildfires risk management opportunities for Romania across sectors

Governance	• Reform the forestry sector to address ownership fragmentation for integrated wildfire mitigation through resilient ecosystems, sustainable practices, and flexible management systems. • Further detail and clarify the mandate of the MARD and update relevant documents (for example, GD No. 557/2016; the National Concept for Forest Fire Response) to define its roles in managing vegetation fires (that is, grasslands/shrubs, and cereal crops), where it currently plays a secondary role. • Promote adaptation and mitigation strategies for sustainable forestry. • Reform the New Forestry Code to improve legislation and management. • Enhance digitalization, data sharing, mapping, and monitoring of the forestry sector. • Improve inter-institutional data flow and collaboration. • Lighten the load and strengthen wildfire risk management personnel capacity. • Ensure effective data sharing between landowners and emergency institutions. • Enhance the engagement of CSOs, local communities, and the private sector in wildfire management at all stages. • Implement wildfire building codes and improve zoning.
Understanding Risk	• Improve hazard mapping with a holistic, dynamic approach considering climate, socioeconomic factors, fire behavior, and detailed future projections supported by updated legislation. • Enhance data collection and exchange. • Build the capacity of wildfire and forestry management personnel across sectors. • Strengthen scientific community involvement in DRM. • Increase public awareness and stakeholder engagement in risk assessment.

Risk prevention, reduction, and mitigation	• Enhance wildfire building regulations and spatial planning. • Update technical standards for wildfire mitigation and field access. • Enhance fire prevention and mitigation with video surveillance while addressing personnel shortages. • Implement NBS for wildfire prevention such as pruning and natural firebreaks
Preparedness, EWS, awareness	• Strengthen essential wildfire response capabilities. • Expand health emergency resources for burn casualties and burn units. • Enhance the functionality and foster innovation in wildfire EWS systems. • Develop a comprehensive strategy for wildfire risk communication and preparedness.
Readiness and response	• Leverage future peer reviews to enhance emergency response and recovery. • Expand training and exercises for emergency personnel through enhanced facilities and advanced tools. • Strengthen partnerships with civil society and volunteers by offering technical and financial support while formalizing volunteer roles in local governance. • Enhance live wildfire technologies and local monitoring capabilities and processes to enhance response efforts.
Recovery, reconstruction, and post-disaster financing	• Develop a national framework for post-wildfire damage assessment and standardized procedures. • Combine international and national tools for comprehensive damage assessment. • Develop a wildfire recovery framework integrating the BBB principle for reconstruction and reforestation. • Scale up wildfire insurance coverage. • Leverage PPPs and international cooperation in wildfire (post-) disaster financing.
Social resilience, social protection, and inclusion	• Develop targeted wildfire awareness programs to promote education, community engagement, and shared responsibility, addressing vulnerabilities from governance challenges and low awareness. • Enhance social protection for wildfire victims by expanding insurance, adapting to climate risks, improving service access, and providing emergency cash transfers. • Ensure inclusive wildfire risk management through collaboration with vulnerable groups, inclusive training for personnel, accessible curricula, drills, and a registry for individuals with specific needs.
Private sector	• Enhance wildfire management and private sector coordination. • Prepare businesses in Romania for wildfire impacts through awareness, BCPs, strengthening supply chains, and investing in technologies. • Finance resilience measures and risk transfer arrangements, such as wildfire insurance

Governance and institutional collaboration: Reform forestry governance and redefine institutional collaboration by clarifying roles and strengthening community engagement. Integrate green groups, volunteer responders, farmers, and villagers into wildfire prevention and response efforts to foster a more coordinated, inclusive, and locally driven approach. Key investment recommendations include strengthening institutional coordination, enhancing community engagement, modernizing equipment and technology, ensuring long-term funding for community-led prevention initiatives, promoting sustainable land management practices, conducting awareness campaigns and training programs, developing integrated data-sharing platforms, and providing financial incentives, subsidies, or grants for landowners, farmers, and volunteers to adopt fire-safe practices.

Risk assessment, planning, and data management: Update wildfire risk assessments to include all regions, critical infrastructure, protected areas, and secondary hazards, incorporating dynamic elements like climate projections, health impacts, and socioeconomic trends. Reform DLD systems by creating an interoperable, GIS-based repository for wildfire events, aligned with the Sendai Framework and INSPIRE Directive. Key investment recommendations include advanced monitoring technologies, risk maps, dynamic modeling, a National Forest Registry, DLD and standardized methodologies for wildfire, integrated platforms for data sharing and analysis, standardized data protocols, long-term monitoring infrastructure (equipment and staffing), advanced remote sensing technologies, field data collection tools, training for accurate data capture, geoportal system development, GPS technology, real-time fire detection systems (for example, satellite technology), centralized georeferenced forest management maps, and legal framework funding.

Community preparedness and wildfire early warning systems: Enhance community preparedness through targeted and inclusive training programs with accessible educational tools and public awareness campaigns targeting illegal practices, with monitoring plans to gauge effectiveness. Modernize wildfire EWSs with integrated digital platforms, real-time alerts, and infrastructure improvements. Key investment recommendations include mobile training units, public awareness platforms, upgraded siren systems, and communication and advanced monitoring technologies for effective early warning, live monitoring, and evacuation (drones, surveillance cameras with special sensors).

Public administration and emergency response capacity: Strengthen the capacity of public and private actors in wildfire risk management through specialized training, e-learning platforms, and incentives for volunteer engagement. Equip local and regional units with modern firefighting resources and tools for vulnerable populations. Key investment recommendations include specialized training programs, expanding zonal training centers, volunteer engagement incentives, advanced firefighting technologies, an e-learning platform for continuous capacity building, funding and resource allocation for personnel solutions, strategic coordination, patrols, inspections, and operations, and regular multi-agency drills to simulate large-scale wildfire scenarios.

Infrastructure for wildfire prevention and response: Develop and maintain critical infrastructure to prevent and respond to wildfires effectively, including access roads, firebreaks, and strategically located water reservoirs. These investments are crucial for enabling quick access to affected areas, limiting fire spread, and supporting firefighting operations. Key investment recommendations include improved fire access roads in forested and hard-to-reach areas, firebreaks, water sources for firefighting, development of FireSmart initiatives, payment-for-ecosystem-services schemes, enhanced forest management, firebreaks, video surveillance, national wildfire risk reduction strategy/protocols, optimized firefighting access infrastructure, and modernization of buildings with fire-resistant materials and retrofitting. Implementing GIS-based tools for mapping and monitoring infrastructure can further optimize planning and response efforts.

Disaster financing and insurance: Reform disaster risk financing (DRF) by developing strategies to enhance funding for wildfire reduction and mitigation, as well as for recovery, while increasing insurance uptake for forests, agricultural areas, and households. Key investment recommendations include tailored insurance products, PPPs, centralized databases for funding opportunities, and streamlined claims processing platforms.

Multi-hazard recovery and resilient reforestation and reconstruction: Create a multi-hazard recovery framework rooted in BBB principles for reconstruction, integrating lessons learned and emphasizing sustainable reforestation, adaptive and mitigation forestry practices, and NBS. Key investment recommendations include a lessons-learned repository, recovery planning tools, resilient reconstruction and reforestation services, and capacity building for local stakeholders to ensure effective and sustainable recovery efforts.

ANNEX 1. ADDITIONAL INFORMATION

Table 3. Key National Legislation on Wildfire Managemen

Source: Authors.

Key Area	Legislation Name	Description
Risk management, Governance	GD No. 557/2016 on the Management of Risk Types	This decision regulates the national management of risk types, categorizing wildfires into three types—forest fires, grass and/or shrub fires, and cereal crop fires—and defines roles and responsibilities for various stakeholders and ministries at different stages of disaster risk management.
	Law No. 331/2024 regarding the Forest Code	The new Forestry Code introduces updated regulations for forestry management, conservation, and wildfire prevention by banning clear-cutting in protected areas, integrating trees and shrubs into agricultural lands as firebreaks, mandating forest owner registration in the National Forest Register, and requiring forest surveillance through private security or self-organized patrols.
RISK PREVENTION, REDUCTION AND MITIGATION	Law No. 307/2006 on Fire Prevention Law	Governs fire prevention, including regulations to mitigate forest fire risks and enforce penalties for illegal burning, specifies legal accountability, including disciplinary, contravention, material, civil, or criminal responsibility, depending on the case. Addresses the implementation of fire defense measures based on risk analysis plans approved by the MoIA. Local authorities and specialized forestry units are responsible for implementing these fire defense measures.
	Joint Order No. 605/579/2008 for the Approval of the General Provisions for Fire Prevention during the Use of Open Fires for Burning Stubble, Dry Vegetation, and Plant Residues	The joint order of the Ministry of Internal Affairs and Administrative Reform (currently the Ministry of Internal Affairs, MoIA) and MARD sets fire prevention rules for burning stubble, dry vegetation, and plant residues, outlining safety measures, permit conditions, and duties of mayors to ensure compliance, inform the public, and coordinate with emergency services, especially during dry and hot periods.
RISK PREVENTION, REDUCTION AND MITIGATION: FORESTRY SECTOR SPECIFIC	Law No. 289/2002 on Protection Forest Belts amended by Government Ordinance No. 36/2022	Regulates the establishment of protection forest belts within the National Forest Protection Belt System for various environmental and protective purposes, outlines the technical requirements for creating forest protection belts, defines the responsibilities of local authorities and landowners, and details funding sources for the implementation of these projects.
	Law No. 289/2002 on Protection Forest Belts amended by Government Ordinance No. 36/2022	Article 3 of the Government Ordinance No. 36/2022 amends, among others, Article 4 of Law No. 289/2002, altering the positions of protection belts, allowing access roads with a width of 3-4 meters to be designated along one edge of the belts, with land expropriation covering a full 30-meter width, while tree planting occurs within a 26-27 meter width.
	GD No. 1076/2009 for the approval of the Regulation on the Safeguarding of the Forest Fund	States the organization of protection activities and duties of the forestry personnel, where forest rangers, district chiefs, forest district heads, and forest engineers/technicians oversee fire prevention, patrols, equipment maintenance, enforcement, and coordination with authorities to protect forests.
	Law No. 171/2010 on the Establishment and Sanctioning of Forestry Offenses	Regulates forestry offenses, including illegal forest activities and violations related to forest management and protection, while more specifically, it imposes fines ranging from **2,000 to 5,000 lei** for violating fire prevention regulations in forest areas and from **600 to 1,000 lei** for refusing to assist in firefighting efforts when requested by authorities.
	Law No. 56/2010 (republished) regarding the Accessibility of the National Forest Fund	Regulates the improvement of accessibility to Romania's national forest fund through the construction and upgrading of forest roads and railways, aiming to support sustainable forest management, fire prevention, and ecological exploitation, with priorities and funding set annually for both private and public forests.
RISK PREVENTION, REDUCTION AND MITIGATION: FIRE SAFETY IN CONSTRUCTIONS, BUILDING USE	GD No. 571/2016 for the Approval of Categories of Constructions and Installations Subject to Fire Safety Approval and/or Authorization	Details categories of constructions and arrangements that are subject to approval and/or authorization regarding fire safety.
	MoIA Order No. 166/2010 for the Approval of the General Provisions on Fire Protection for Buildings and Related Installations	Approves the General Provisions regarding fire protection in buildings and related installations, aiming to prevent and reduce fire risks, ensuring measures to limit the spread and development of fires while protecting people, responders, property, and the environment from the effects of fire-related emergencies.

Key Area	Legislation Name	Description
RISK PREVENTION, REDUCTION AND MITIGATION: FIRE SAFETY IN CONSTRUCTIONS, BUILDING USE	GEO No. 80/2021 for the Amendment and Completion of Certain Normative Acts in the Field of Emergency Management and Fire Protection	Amends and supplements existing regulations in emergency management and fire protection, aiming to streamline fire safety procedures, simplify the process of obtaining fire safety permits, and ensure compliance with fire safety standards, including building use authorization and operational safety.
	MoIA Order No. 163/2007 for the Approval of the General Fire Protection Regulations	Contains the General Fire Protection Regulation, setting standards for fire prevention, suppression, and protection measures in buildings, including requirements for fire safety equipment, emergency protocols, and ongoing maintenance to ensure public safety.
RISK PREVENTION, REDUCTION AND MITIGATION: FIRE SAFETY IN CONSTRUCTIONS, BUILDING USE	Interministerial Order1 No. 551/1475/2006 regarding the Regulation on Managing Emergency Situations resulting from Forest Fires	Establishes the roles of authorities in managing forest fire emergencies, including necessary equipment and plans for fire defense, alerts, and prevention in forest areas, nurseries, and plantations. It highlights organizational and silvicultural measures for fire control and preparedness for large-scale incidents and cross-border cooperation. It also mandates the inclusion of fire defense plans in land use and zoning regulations, particularly for areas near national forests (Article 36). Each forest district within the National Forest Administration – Romsilva prepares a Forest Fire Protection Plan, which is reviewed by the territorially competent Inspectorate for Emergency Situations. The responsibility for drafting this plan lies solely with the forest districts, even though some of the information required by the standard framework outlined in Annex No. II of Order No. 551/1475/2006 falls outside their authority.
	MEWF Order No. 651/2002 for the Approval of the Classification of the National Territory Based on the Degree of Risk of Forest Fires	Classifies Romania's territory as low risk for forest fires in accordance with Council Regulation No. 2158/92/EEC and a national zoning study.
RESPONSE AND RECOVERY	National Response Concept for Forest Fires, No. 93152/2018	Details the organization and planning of response actions at various levels (national, regional, county, and local), focusing on risk identification, preventive measures, and resource utilization. It emphasizes clear communication, shared responsibilities, and includes a matrix outlining key responsibilities and actors for intervention and recovery.
	MEWF Order No. 2533/2022 for the Approval of the Technical Norms and Good Practice Guide Regarding Compositions, Schemes, and Technologies for Forest Regeneration and Afforestation of Degraded Lands	The order establishes technical regulations and guidelines for forest regeneration and afforestation of degraded lands in Romania, emphasizing the use of native and climate-resilient species and ecotypes to promote biodiversity, ensure ecological balance, and support sustainable, adaptive forest ecosystems tailored to current and future environmental conditions.

Table 4. Additional Key Legislation on the Forest Sector

Source: Authors.

Legislation Name	Description
Law No. 18/1991 (republished) on the Land Fund	Governs the land fund, including forest land regulations. It is one of the key laws regulating the forest restitution process
Law No. 247/2005 (updated) on Reform in the Fields of Property and Justice, as well as certain related measures	Further regulates forest restitution, completing the legal framework with additional measures
Law No. 1/2000 on the Reconstitution of Property Rights over Agricultural and Forest Lands	Governs the reconstitution of property rights over agricultural and forest lands under Law No. 18/1991 (republished) on the Land Fund and Law No. 169/1997, including accessory buildings, ensuring restitution to rightful owners on original or consolidated sites; also allows individuals or their heirs to request restitution of forested lands taken by the state
MEWF Order No. 766/2018 on Technical Forestry Standards and Methodology for Harvesting	Regulates technical forestry standards and procedures for amending forest management plans. The law includes two annexes: the Technical Standards for the development of forest management plans, their amendment, and land use changes within the forest fund, and the methodology for approving the exceeding of the annual allowable harvest for collecting accidental products

Table 5. Additional Key Legislation Relevant to Wildfire Management

Source: Authors

Legislation Name	Scope for Wildfire Management
GEO No. 195/2005 on Environmental Protection	Establishes Romania's legal framework for environmental protection, pollution control, natural resource conservation, and disaster prevention, while ensuring sustainable development. It outlines public authorities' duties in sustainable development, disaster prevention, and environmental health protection, integrating restoration actions for affected areas, and ensuring cooperation between disaster defense, public health, and environmental authorities to prevent and manage disasters.
GEO No. 38/2022 for Amending and Supplementing Certain Normative Acts to Improve Waste Management	In response to Romania's widespread issue of waste abandonment and open-air burning that threatens public health, the amendment to GEO No. 92/2021 prohibits the burning of any type of waste, substance, or object, while also mandating that authorized waste operators store hazardous waste separately and implement fire safety measures, including appropriate fire-fighting substances for each waste category.
GEO No. 57/2007 on the Regime of Protected Natural Areas, Conservation of Natural Habitats, Flora, and Fauna	Regulates the management and conservation of natural protected areas, allowing specific forestry treatments, disaster impact removal, and ecological restoration actions with the approval of relevant authorities, while ensuring compliance with park management plans and environmental protection guidelines.
Law No. 481/2004 (republished) on Civil Protection	Regulates measures to safeguard the population, property, cultural values, and the environment during war or disasters, assigning fire prevention and response duties to specialized civil protection units, the Ministry of Internal Affairs, local mayors, and municipal or county councils for coordinated emergency management.
GEO No. 88/2001 on the Establishment, Organization, and Functioning of Community Public Services for Emergency Situations	Establishes community public emergency services as specialized structures for fire protection and civil defense, including both professional and volunteer services, operating under the authority of central and local public administration, with provisions for private sector involvement, and regulates their organization, financing, and functioning.
GD No. 1579/2005 (updated) for the approval of the Statute of Volunteer Personnel in Volunteer Emergency Services	Governs the selection and participation of volunteers in local emergency services, recognizing their work as professional experience and granting rights such as medical check-ups, free transport, protective equipment, liability exemption, food, travel support, and financial compensation, with local councils overseeing contracts and benefits.
Law No. 500/2002 on Public Finances	Regulates disaster funding through the Government Reserve Fund and the Intervention Fund, allowing flexible resource allocation, with different ministries managing budgets and the Ministry of Finance overseeing fund reallocations.
Law No. 260/ 2008 (republished) on the Mandatory Insurance of Homes against Earthquakes, Landslides, and Floods	Establishes mandatory insurance for homes owned by individuals or legal entities against earthquakes, landslides, and floods, detailing the creation, responsibilities, and operation of the Pool for Insurance against Natural Disasters (PAID), while also specifying exclusions such as annexes, dependencies, utilities, and interior goods not structurally connected to the insured building.
Law No. 575/2001, on the approval of the National Territorial Planning Plan (Natural Risk Zones)	Approves the National Territorial Planning Plan, which establishes the requirements for mapping natural risk areas, such as earthquakes and landslides. However, it does not include wildfires, leaving them subject to specific regulations.
GD No. 525/1996 (republished) for the approval of the General Urban Planning Regulation	As part of the legislative framework for mitigating risks in hazard-prone areas, the General Urban Planning Regulation (republished in 2002) ensures fire safety by requiring minimum firefighting access distances (Article 24), emergency evacuation routes (Annex 4), and unobstructed access for firefighting vehicles (Article 25), with roads designed for heavy traffic and emergency interventions (Article 11).
GD No. 382/2003, for the approval of the Methodological Norms for Territorial Planning and Urbanism Documentation for Natural Risk Zones	Establishes the minimum requirements for urban planning and territorial development documentation in natural hazard zones, focusing on earthquakes, floods, and landslides, and mandates a diagnosis of existing natural risk issues, analysis of affected infrastructure and activities, a development strategy for mitigating or accepting risks, and specific regulations for urban plans in these zones, addressing current urban conditions, land use, and disaster risk management (Article 14). It outlines a two-stage methodology for drafting these plans (Article 10), based on publicly available local and county studies of natural risks (Articles 6-8), while also ensuring that these zones are managed according to ecological protection and revitalization principles (Article 15).

Table 6. Key Reference International Documents for Forestry and Wildfire Management

Source: As mentioned in the National Strategy for DRR and the National Forestry Strategy. GoR 2022b, 2024.

Document Name	Description as it Relates to Forestry and/or Wildfire Management
Regulation (EU) No. 1305/2013 of the European Parliament and of the Council of 17 December 2013 on Support for Rural Development	Regulation (EU) No. 1305/2013 supports farmers through the European Agricultural Fund for Rural Development (EAFRD), promoting sustainable practices, adaptation, rural development, training, and income stabilization, while also supporting forestry for mitigation by enhancing carbon sequestration, reducing emissions, and improving forest resilience.
Council Regulation (EEC) No. 2158/92 of 23 July 1992 focuses on the Protection of the Community's Forests against Fire	European Commission regulation referenced in the classification of wildfire risks in Romania, establishing measures to prevent, monitor, and fight forest fires, while promoting sustainable forest management practices to minimize fire risks, safeguard forest resources, and enhance overall forest resilience.
EU New Forest Strategy 2030 (2021)	Romania, through its new NFS30, aligns with the EU's commitment to achieving ambitious climate, energy, and environmental goals, recognizing that forests and the forestry sector can significantly contribute to these objectives. The strategy's goals are closely tied to other EU policy instruments related to forests.
Bioeconomy Strategy (2018) and Its Updated Action Plan (2018)	Focuses on renewable energy sources, contributing to the EU's renewable energy targets of 20 percent by 2020 and at least 32 percent by 2030, while also aiming to achieve land degradation neutrality by 2030 and restore at least 15 percent of degraded ecosystems by 2020.
European Green Deal (2019) and Its Action Plan (2019)	Aims to increase forested areas and improve forest quality in the EU, ensuring reforestation and restoration of degraded forests to enhance CO2 absorption capacity, while also improving forest resilience and promoting the circular bioeconomy.
EU Biodiversity Strategy for 2030 (2020) and Its Action Plan (2020)	Aims to protect one-third of natural areas (10 percent land and 10 percent marine), legally protect 30 percent of land and marine areas, and ensure strict protection of primary and old-growth forests. It includes maintaining the conservation status of all protected habitats and species, planting three billion trees, integrating ecological corridors, promoting NBS, and enhancing forest genetic conservation and biodiversity.
EU Regulation 2018/841 on Land Use and Forestry for 2021–2030 (LULUCF 2018)	Includes greenhouse gas emissions and absorptions from land use, land use change, and forestry activities within the climate and energy policy framework for 2030.
Regulation on Sustainable Investments (2020)	Focuses on sustainable forest management and preventing deforestation and forest degradation by supporting investments that meet criteria for determining whether an economic activity qualifies as ecologically sustainable.
EU Strategy on Climate Adaptation (2021)	Promotes sustainable forest management and integrates adaptation measures into afforestation guidelines to encourage biodiversity growth.
EU Soil Strategy for 2030 (2021)	Emphasizes that forest management must avoid unsustainable practices that degrade soil, such as compaction, erosion, or the loss of organic carbon.

Table 7. Key Measures and Programs/Plans for Wildfire Risk Management in Romania

Source: Authors.

Area	Project Name	Measures	Actor	Estimated budget	Period
Key International Projects					
Forests Sustainable Management, and Climate, and Biodiversity Protection	Empower citizens to join forces with public authorities in protecting the environment – Enforce Project	Involve authorities and researchers in environmental monitoring, develop toolkits to align citizen-collected data with official standards, use the Data Readiness Level (DRL) framework to assess data maturity, and enhance data quality with geo-spatial intelligence and AI tools for improved governance.	INCDS	N/A Horizon Europe Programme	2024-2027
	Climate Resilient Development Pathways in Metropolitan Regions of Europe – CARMINE Project	Review resources, create tools, practices, policies, and methodologies to identify gaps, develop high-resolution risk models linking climate, earth system processes, and socioeconomic drivers, create adaptation frameworks with NBS for decision-making, provide Impact-based Decision Support Services (IDSS), and support coordinated risk assessments for future Research and Innovation (R&I) priorities and policies through 2050.	INCDS	N/A Horizon Europe Programme	2024-2028
	Integrated Wildfire Management Ecosystem for Prevention, Detection, and Restoration of Environmental Disasters – TREEADS Project	The project integrates advanced prevention technologies, augmented and virtual reality (AR/VR) firefighter training, surveillance and rapid response protocols, decision-making systems, and community awareness initiatives to reduce wildfires and enhance forest resilience.	MEWF	N/A Horizon Europe Programme	2021-2025
	Harnessing Forest Genetic Resources for Increasing Options in the Face of Environmental and Societal Challenges – OptFORESTS Project	Supports the protection and sustainable use of forest genetic resources (FGR) in Europe by strengthening cooperation and knowledge sharing to promote adaptation and biodiversity-friendly forestry practices, by promoting resilient natural forests, developing NBS, and restoring biodiversity in degraded ecosystems.	INCDS	€390,000 Horizon Europe Programme	2022-2027
	Optimizing Forest Management Decisions for a Low Carbon Future and Climate Resilience in Europe – OPTFOR-EU Project	Optimizes management practices, provides forest ecosystem services, increases the absorption of emissions by forests, increases the resilience and mitigation capacity of forests to climate change.	ANM, INCDS, WWF RO	N/A Horizon Europe Programme	2023-2026
	FirEUrisk Project	The FireEUrisk project consists of work packages focused on fire risk assessment (WP1), minimization of fire risk factors (WP2), future fire regime scenarios (WP3), integration of fire risk management phases (WP4), demonstration of holistic fire management strategies in pilot sites (WP5), communication and dissemination (WP6), and overall project coordination (WP7).	INCDS	€10 mil. EUR H2020 + €180,000 INCDS Budget	2021-2025
Research and Innovation	Innovating Forest-Based Bioeconomy – ForestValue2 Project	The project enhances coordination of national and regional funding for forestry bioeconomy research, supporting the European Research Area, Green Deal, and transnational C&I projects.	INCDS	Horizon Europe Programme	2023-2017

Area	Project Name	Measures	Actor	Estimated budget	Period
Cross-Border Emergency Response	A More Secure Cross-Border Area by Enhancing the Emergency Response Capability – COOP – Interreg IPA Romania-Serbia	Enhancing risk prevention, disaster management, and emergency preparedness in the cross-border area through joint cooperation, training, awareness measures, and improved intervention capacity of emergency services and local communities.	GIES	€9,5 mil. EU funding + State budget	2023-2026
	Streamlining Cross-Border Cooperation: Joint Approach in Disaster Resilience – STREAM 2 – Interreg VI-A Romania-Bulgaria	Increasing population safety in the eligible area by enhancing adaptation, disaster risk prevention, and emergency response through cross-border centers, capacity building, and joint interventions.	GIES	€24,3 mil. EU funding + State budget	2024-2028
	Firefighter Intensive Ground Training in the Cross-Border Area" border area" – FIGHT – Interreg IPA Romania-Hungary	Enhancing disaster risk prevention, adaptation, and resilience by improving the intervention capacity of professional and volunteer emergency services, through cross-border cooperation, training sessions, and the acquisition of specialized equipment.	GIES	€1,1 mil. FEDR (EU funding) + State budget	2025-2027
	Timely and Efficient Response in Case of Emergency Situations in Cross Border Area – TERES – Interreg IPA Romania-Hungary	Strengthening Romania-Hungary cooperation in disaster response, adaptation, and resilience through joint centers, training, and protective equipment and procurement purchase of vehicles for operative work and vehicles to transport intervention site.	GIES	€10,9 mil. ERFD (EU funding) + State budget	2025-2027
International Exercises	Exercises on Civil Protection Modules, Other Response Capacities, Technical Assistance and Support Teams, and UCPM Teams – EU MODEX Cycle 12 LOT 2 Project	As part of the European Civil Protection Mechanism, Modex Cycle 12 (2024-2026) includes six field exercises—three water-related, two forest firefighting, and one CBRN—each lasting four days with 42+ hours of continuous operations, testing intervention modules' response capabilities with different disasters, including forest fires scenarios on 11 April 2025; 12-16 May 2025 and 4-8 May 2026.	GIES	N/A EU funding	2024-2026
Key National Projects					
Research Personnel Capacity Building	Sustainable Forest Management Adapted to Climate Change and Societal Challenges – FORCLIMSOC Core Program	Increasing the capacity, quality and competitiveness of forestry research by assessing the impact of climatic factors, pollution, pests, and pathogens on forest ecosystems, ensuring sustainable management of forests and vegetation for mitigation, and preserving genetic diversity and biodiversity of forests and wildlife.	INCDS	€41 mil.	2023-2026
Capacity Building	Climate-Resilient Development Paths in Metropolitan Regions of Europe	Promoting sustainable forest management research by enhancing the genetics team at INCDS, increasing laboratory capacity through equipment upgrades and repairs to support forestry and environmental policy needs.	INCDS	€25,400	2024-2025

Area	Project Name	Measures	Actor	Estimated budget	Period
National Projects under the NRRP (EC funding)					
Forests and Biodiversity Protection — Component C2	Reforestation and the Creation of Forested Areas	Creating new forests and forested areas in climate-vulnerable zones by identifying and evaluating lands, funding reforestation, maintaining plantations, and expanding forest vegetation in various areas, including urban and agricultural zones.	MEWF	**€500 mil.** NRRP (EC)	2022-2026
	Restoration of Forest Potential	Providing support for the restoration of forest potentially affected by fires, unfavorable weather phenomena that can be considered natural disasters, plant infestations with harmful organisms, and catastrophic events.	MEWF	**€100 mil.** NRRP (EC)	2023-2026
Renovation Wave — Component 5	Energy Efficiency and Resilience in Public Buildings	10 projects from INCDS were approved for seismic strengthening and energy renovation of public buildings to enhance efficiency and resilience.	MDPWA, MCID, INCDS	**€3,3 mil.** NRRP (EC)	Present-2026
National Measures under the NDRMP (State budget)					
Forest Fires Preparedness	Interinstitutional Cooperation	Intensifying joint actions to monitor farmers' compliance with agricultural and environmental standards regarding the burning of stubble, crop residues, and permanent pastures, according to the collaboration protocol between the GNM, APIA and GIES.	GNM, APIA, GIES	State budget	2021-2027
Equipment	Equipment	Equipping forest districts with forest fire-specific intervention tools to ensure the initial response in case of forest fires.	MEWF, Romsilva	EU Funds + State Budget	2021-2027
Awareness and public education	Awareness and public education	Intensifying public information and preparedness actions, alongside training authorities responsible for managing emergency situations caused by forest fires, as well as developing communication strategies for each target audience to establish common measures.	MEWF, Romsilva	State budget	2021-2027
Preparedness	Preparedness	Conducting forest fire simulation exercises to prepare intervention forces and authorities.	GNM, APIA, MEWF, GIES	State budget (annually)	2021-2027
Emergency Response and Disaster Relief	Enhancing Disaster Response Capacity for HILP Events – VISION 2020 – Stage II	Strengthening disaster response and HILP event management by developing strategic pillars in terrestrial, maritime, aerial, and command-control operations, including the acquisition of specialized equipment (e.g., fire trucks, boats, and a national disaster response center).	GEIS, IGAv, Ambulance Service Bucharest	€85,5 mil. EU Funds + State Budget	2024-2025
	Integrated Mechanisms for Fire Risk Data Utilization	Developing software tools for organizing interventions, evacuations, and resource deployment in high-risk areas, utilizing 3D spatial databases to assess fire risks, highlight hazards, plan interventions, and optimize evacuation routes and technical defense measures.	GIES	EU Funds + State Budget	2021-2027
	Enhancing Emergency Response through Integrated Dispatch Centers	The project enhances coordination of national and regional funding for forestry bioeconomy research, supporting the European Research Area, Green Deal, and transnational C&I projects.	GIES	EU Funds + State Budget	2021-2027
	The Strengthening Disaster Risk Management Project	Prioritizes up to 28 high-risk disaster and emergency response facilities, including fire stations, for seismic upgrades and energy efficiency enhancements.	GIES	€142 mil. WB loan	2019-2025

Area	Project Name	Measures	Actor	Estimated budget	Period
Emergency Response and Disaster Relief	Enhancing Disaster Response Capacity for HILP Events – VISION 2020 – Stage II	Strengthening disaster response and HILP event management by developing strategic pillars in terrestrial, maritime, aerial, and command-control operations, including the acquisition of specialized equipment (e.g., fire trucks, boats, and a national disaster response center).	GIES	EU Funds + State Budget	2021-2027
	Modernization of Alert/ Warning Systems for Emergency Situations	Modernizes and integrates alert, warning, and alarm systems by upgrading existing sirens with remote command modules, ensuring interconnection with local authorities and the RO-ALERT system for efficient emergency management.	GIES	Over 10,4 mil. EUR POCA + State Budget	2021-2027
	Training Centers – Multirisc II and III Projects	Creating 10 training centers with modern facilities, including virtual reality, to meet international standards for initial and continuous professional training, enhancing the operational capacity of emergency response personnel and institutions.	GIES	EU Funds + State Budget	2021-2027
	Maintenance and Repair Capacity for Emergency Equipment	Developing maintenance capacity, optimizing costs, and reducing emergency equipment downtime.	GIES	EU Funds + State Budget	2021-2027
	Improving Logistical Capacity for Emergency Situations and Disaster Relief	Developing regional emergency logistics, including accommodation and food facilities, to meet evacuation needs during disasters, while updating the legislative framework for stock management.	GIES	EU Funds + State Budget	2021-2027
	Strengthening National Volunteering Capacity for Disaster Response	Enhancing national volunteer capacity for disaster response by revising regulations and involving volunteers in training processes, both as trainees and trainers.	GIES	EU Funds + State Budget	2021-2027
	Contributing to EU's RescEU Reserve for Disaster Response	Contributing to the EU's RescEU reserve by creating intervention reserves with aerial and medical capabilities for natural disaster response.	GIES	EU Funds + State Budget	2021-2027
	Professional Training Systems for Emergency Medical Personnel	Strengthening and adapting initial and continuous training systems to international standards, while creating an integrated certification system for personnel involved in emergency medical assistance.	GIES	EU Funds + State Budget	2021-2027

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