

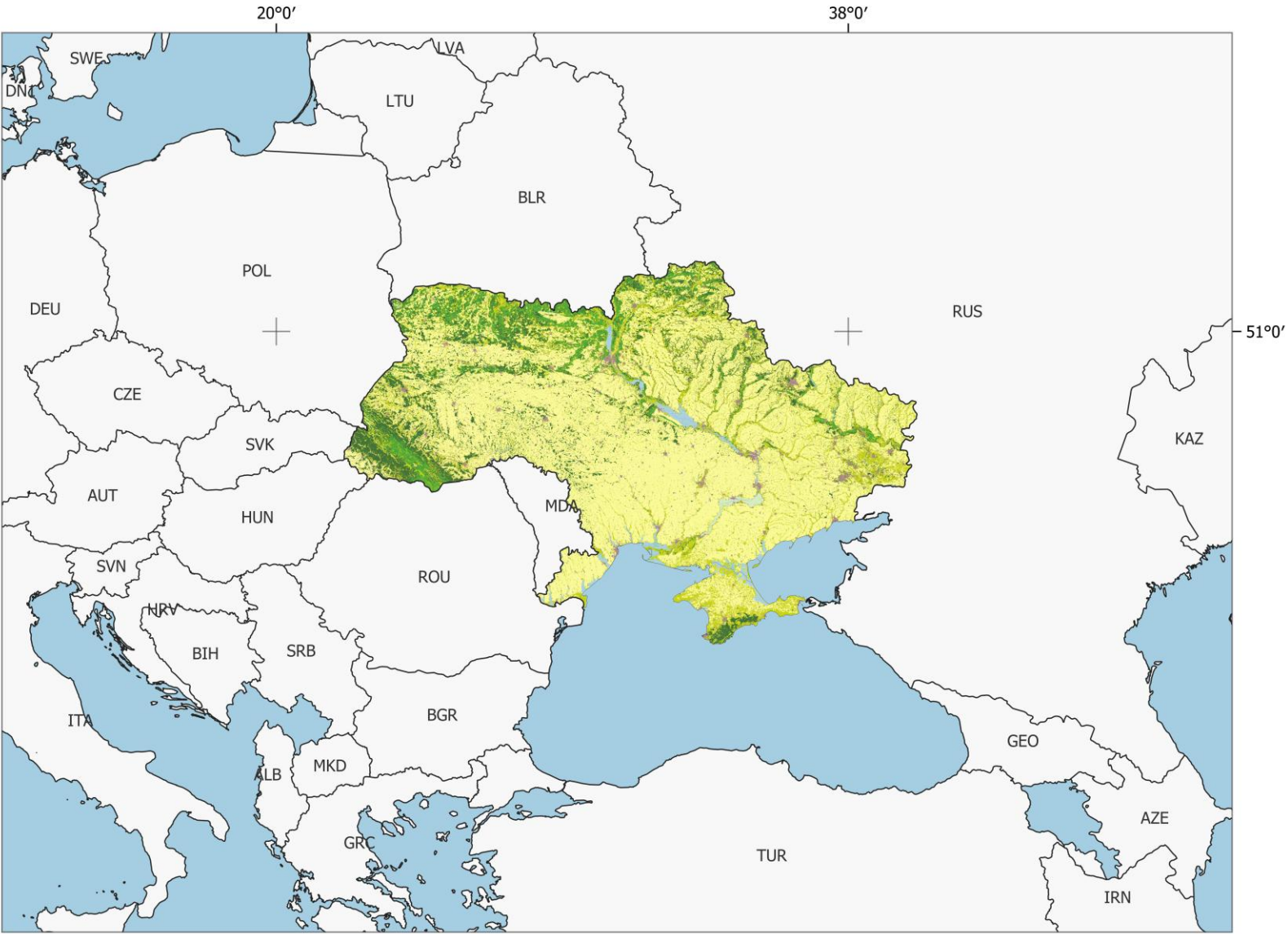
# From Crisis to Resilience with Close-to-Nature Forest Management in Ukraine

Soshenskyi O.<sup>1</sup>, Rosset Ch.<sup>2</sup>, Lobchenko G.<sup>1,3</sup>, Voloshyn N.<sup>4</sup>, Diachuk P.<sup>5</sup>  
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# LAND COVER, FORESTS





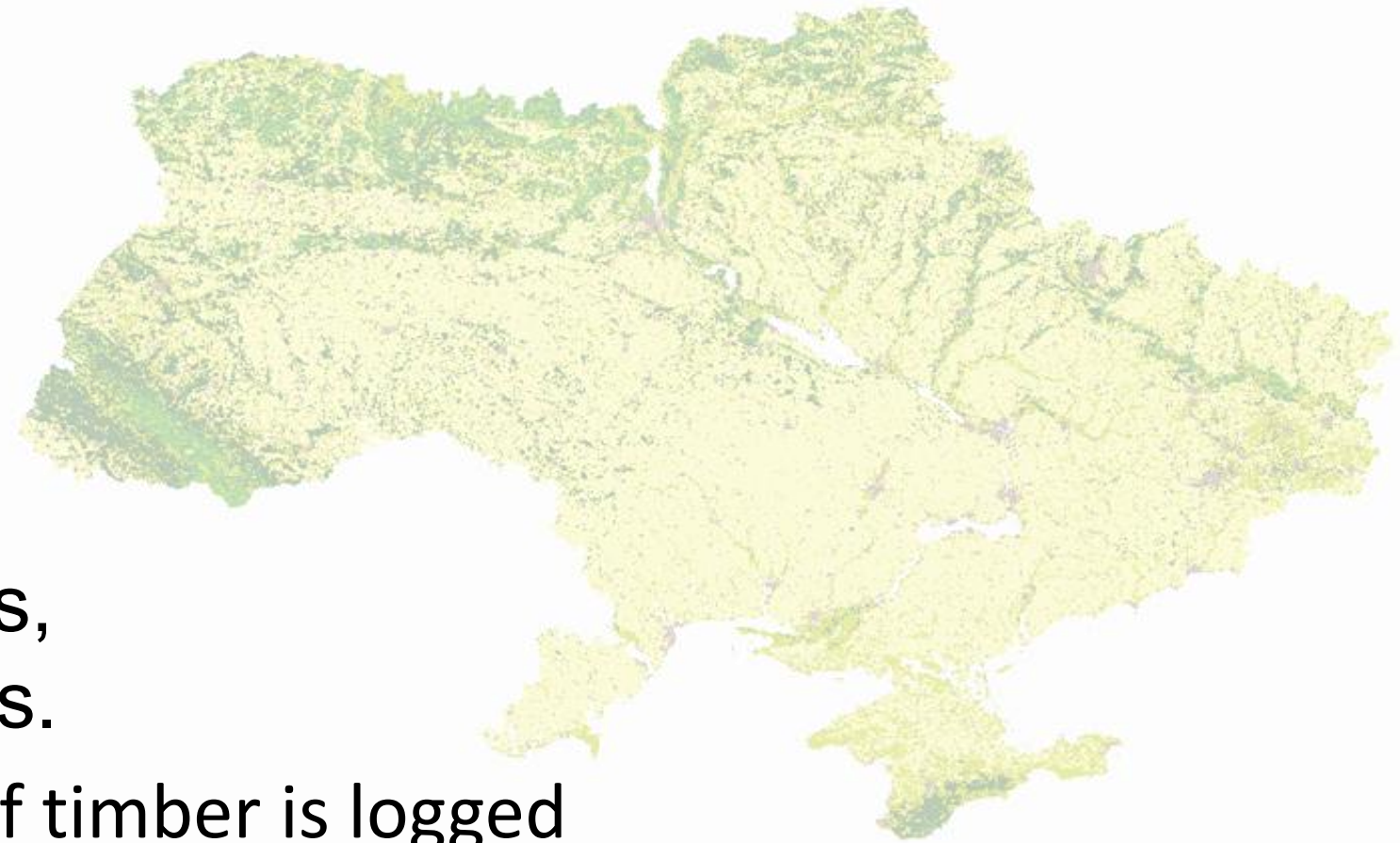
# BRIEF FEATURES

Agricultural lands - **41.3 million ha**,  
Forest cover - **10.7 million ha, 16 %**  
**43% of forests – coniferous**

Annual forest loss in Ukraine:  
- **5 thousand ha** from forest fires;  
- **14 thousand ha** as a result of insects,  
diseases and extreme weather impacts.

Annually, an average of **15.9 million m<sup>3</sup>** of timber is logged  
**(40%)** - in mature stands.

- **89% of logging** in mature stands - **clear-cutting**.



Source: SSSU, 2023

[https://ukrstat.gov.ua/operativ/menu/menu\\_u/cg.htm](https://ukrstat.gov.ua/operativ/menu/menu_u/cg.htm)

# **CHALLENGES FOR FORESTS AND FORESTRY IN UKRAINE**

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# **CHALLENGES FOR FORESTS AND FORESTRY IN UKRAINE**

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- **Climate change**
- **Worsening of forest condition**
- **Reduction of forests' resistance to fires**
- **Increase in the number of large forest fires**
- **Contamination of forests by radiation**
- **Contamination of forests by Unexploded Ordnance**
- **Ongoing reforms in Forest sector in Ukraine**



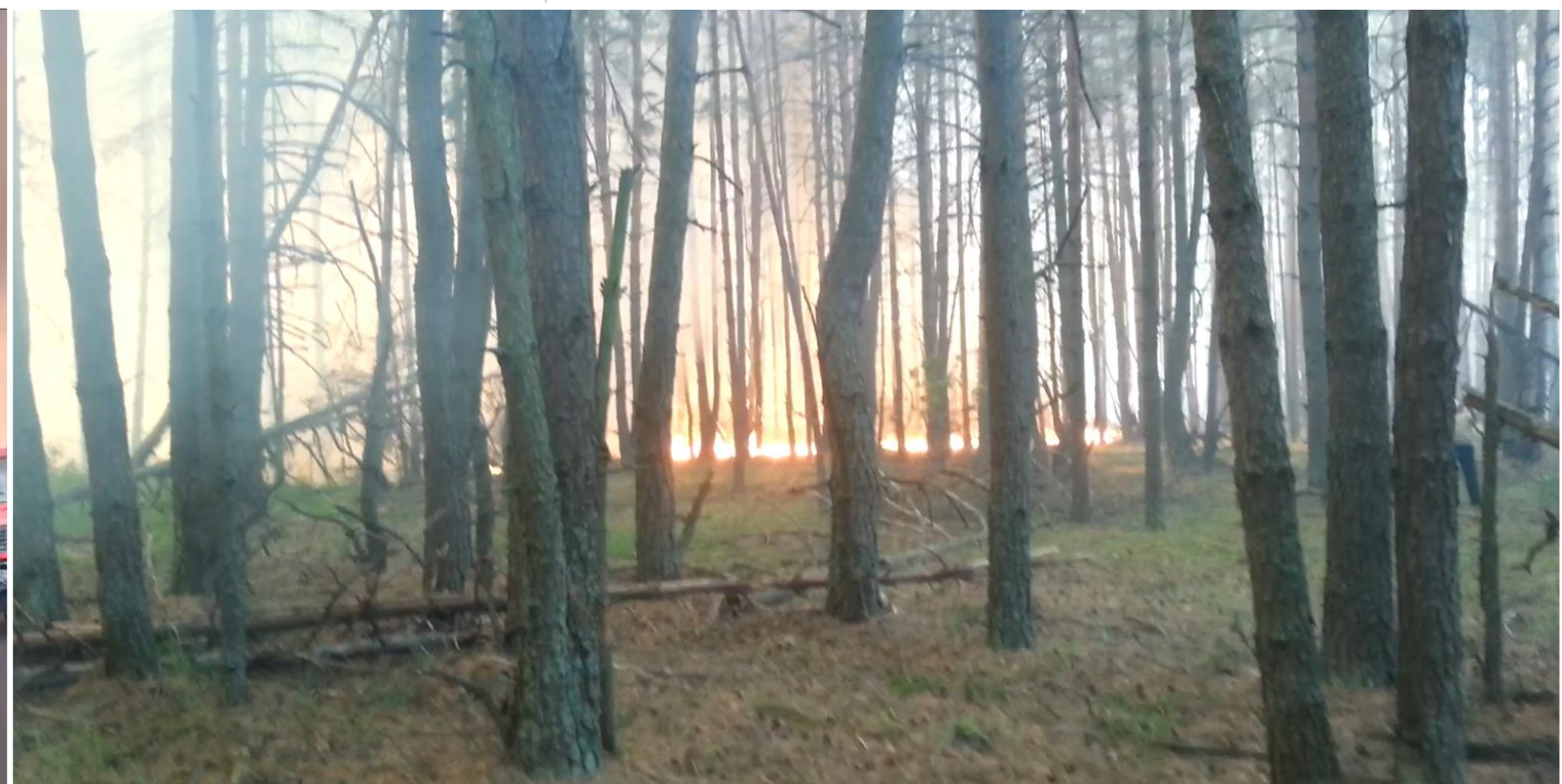
# FOREST DIEBACK

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# FOREST FIRES





# CLIMATE CHANGE, DIEBACK AND FIRES

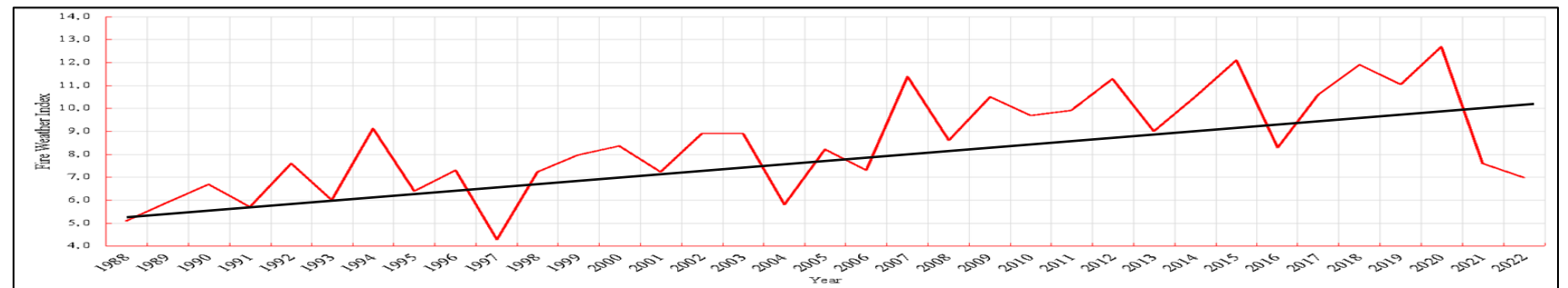
## 1) Annual area of forest fires(*REEFMC*)

- 1980-1990: 3,000–5,000 ha
- 1991-2010: 5,000–10,000 ha
- 2015: 20,000 ha
- 2020: 200,000 ha (17 fatalities, 22 villages burned)
- 2022: 57,000 ha
- 2023: 27,000 ha

## 2) Bark beetle impact on forests (ha) (*SAFRU, 2018*)

- 2016-2018: 420,000 ha (pine forests in Polissia)
- 2000-2020: 300,000 ha (spruce planted forests in Carpathian)

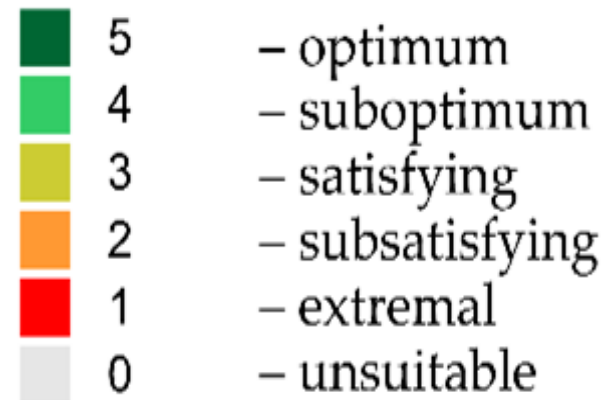
Fire Weather Index, *EFFIS*





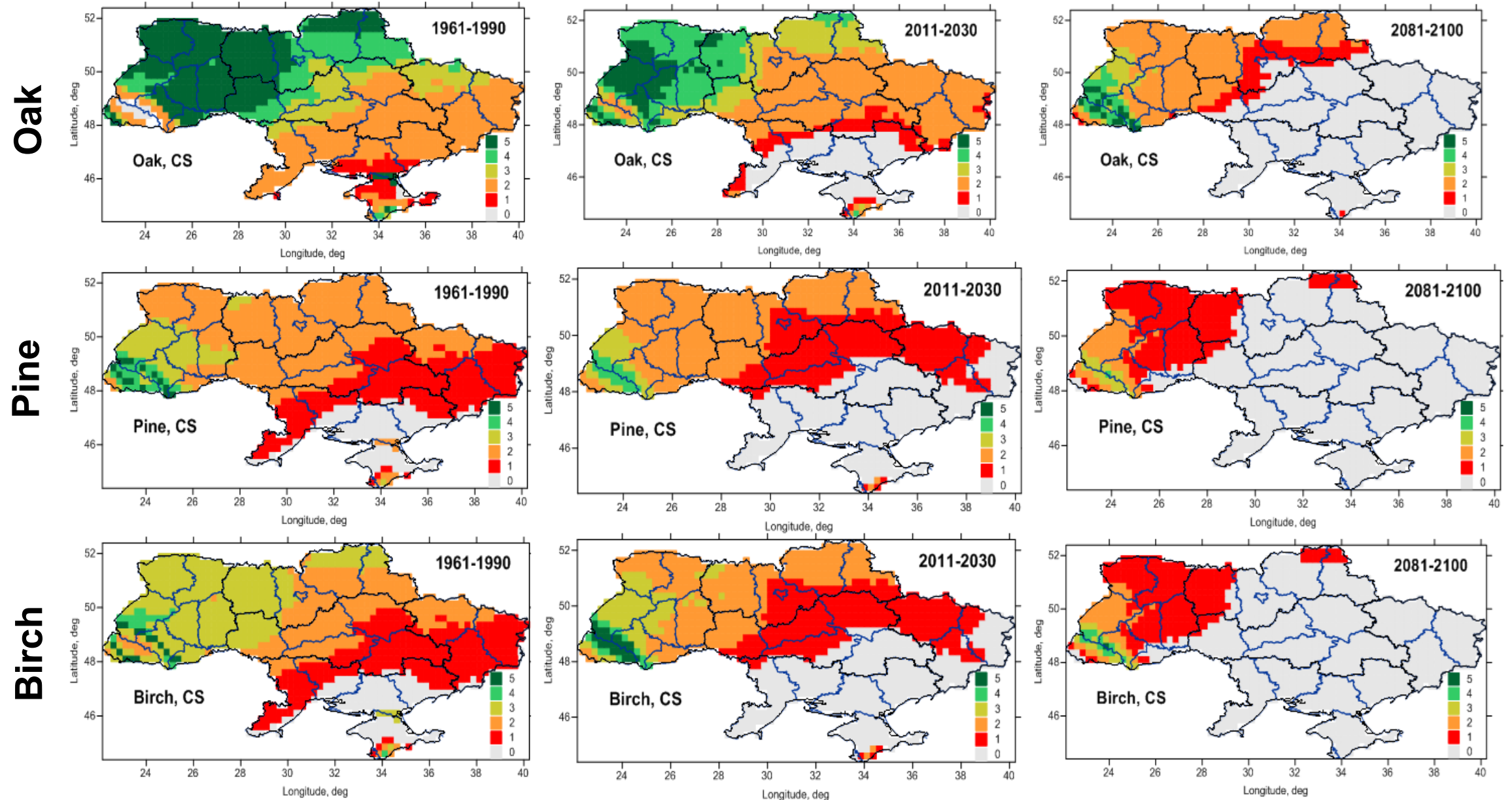
# Suitability of Ukraine's main forest species to 21st century climate conditions IPCC A1B Scenario (~RCP6.0)

## CLIMATE CHANGE



Forecast of climatic conditions:

**Green** - optimal  
**Red** - extreme



Source: Shvidenko, Buksha, Krakovska, Lakyda, 2017



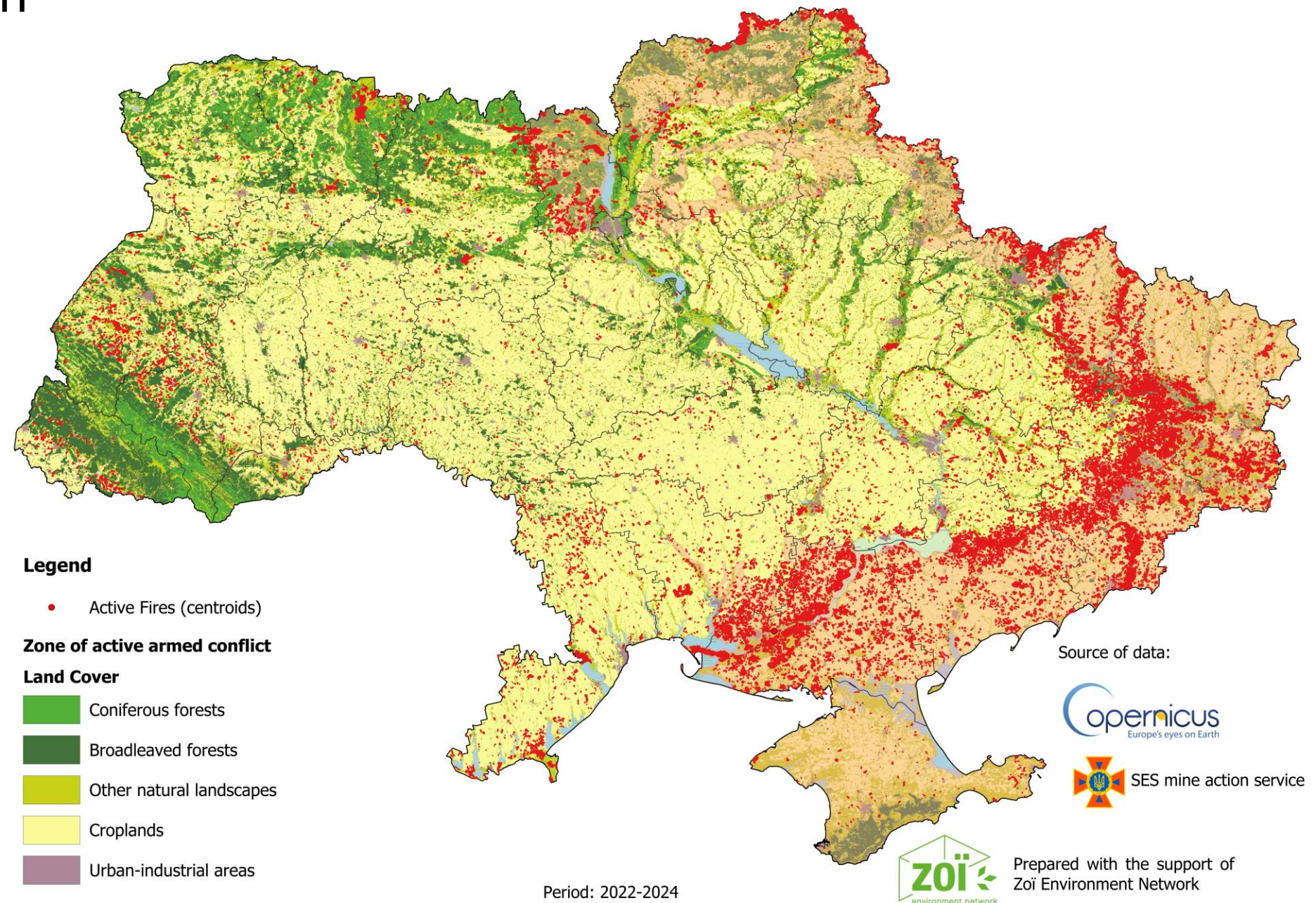
# WAR IMPACT

Over three years (2022–2024), wildfires covered a **total area of 1,903 million ha**, 89% of which was in a 60-kilometer buffer zone along the contact line. **Forest fires** accounted for **197,462 thousand ha**.

Forest fires accounted for **197,462 thousand ha**.

Nearly **30%** of Ukraine's territory is contaminated by **unexploded ordnance**

Source: REEFMC, 2024





- Mechanical damage of trees from artillery shelling in pine forests
- Heavy contamination of forests by broken armored vehicles, tanks and other weapon
- Limitation of future forestry activities due to UXO





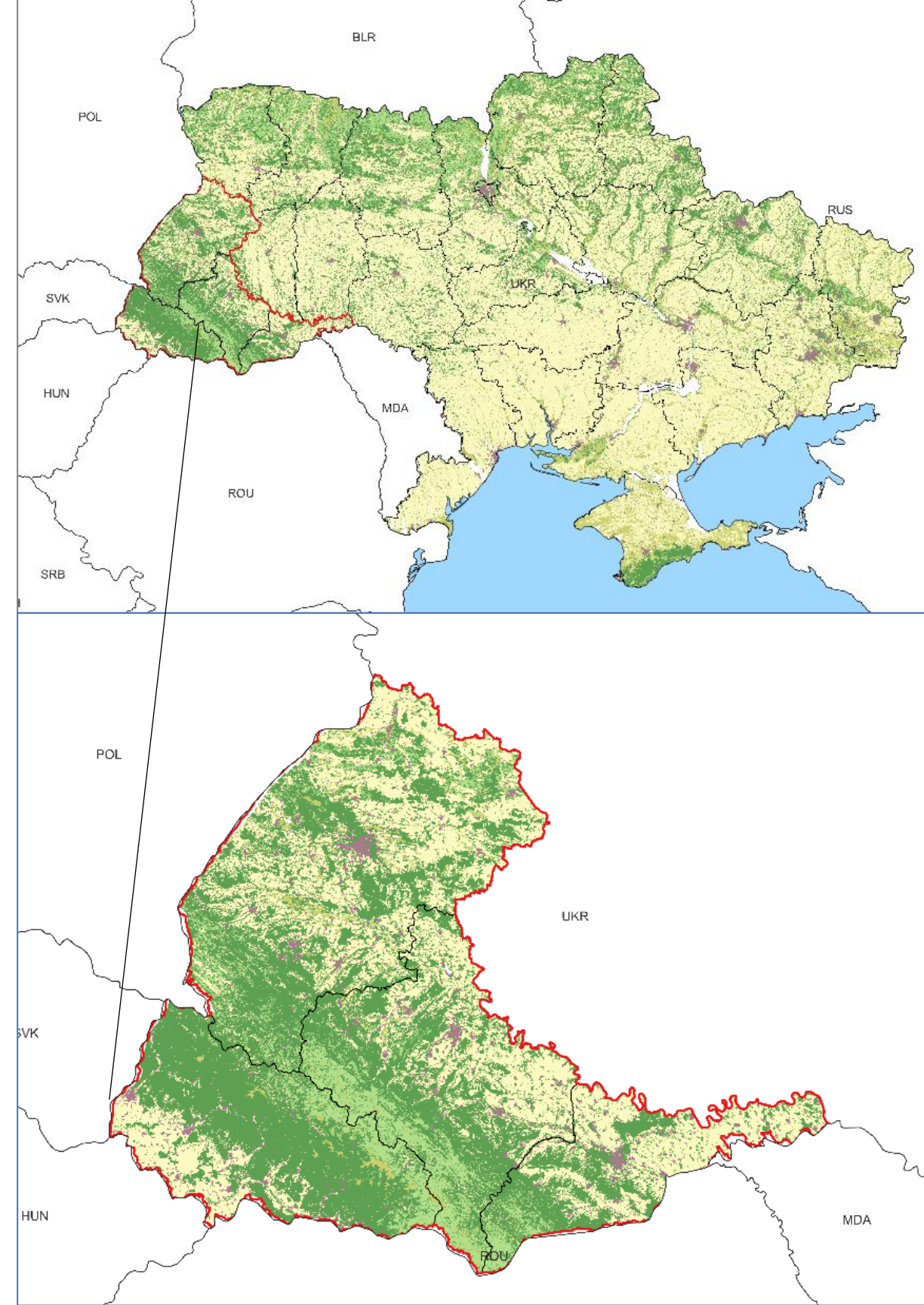
# **CHALLENGES IN THE CARPATHIAN REGIONIN UKRAINE**

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# ABOUT THE REGION

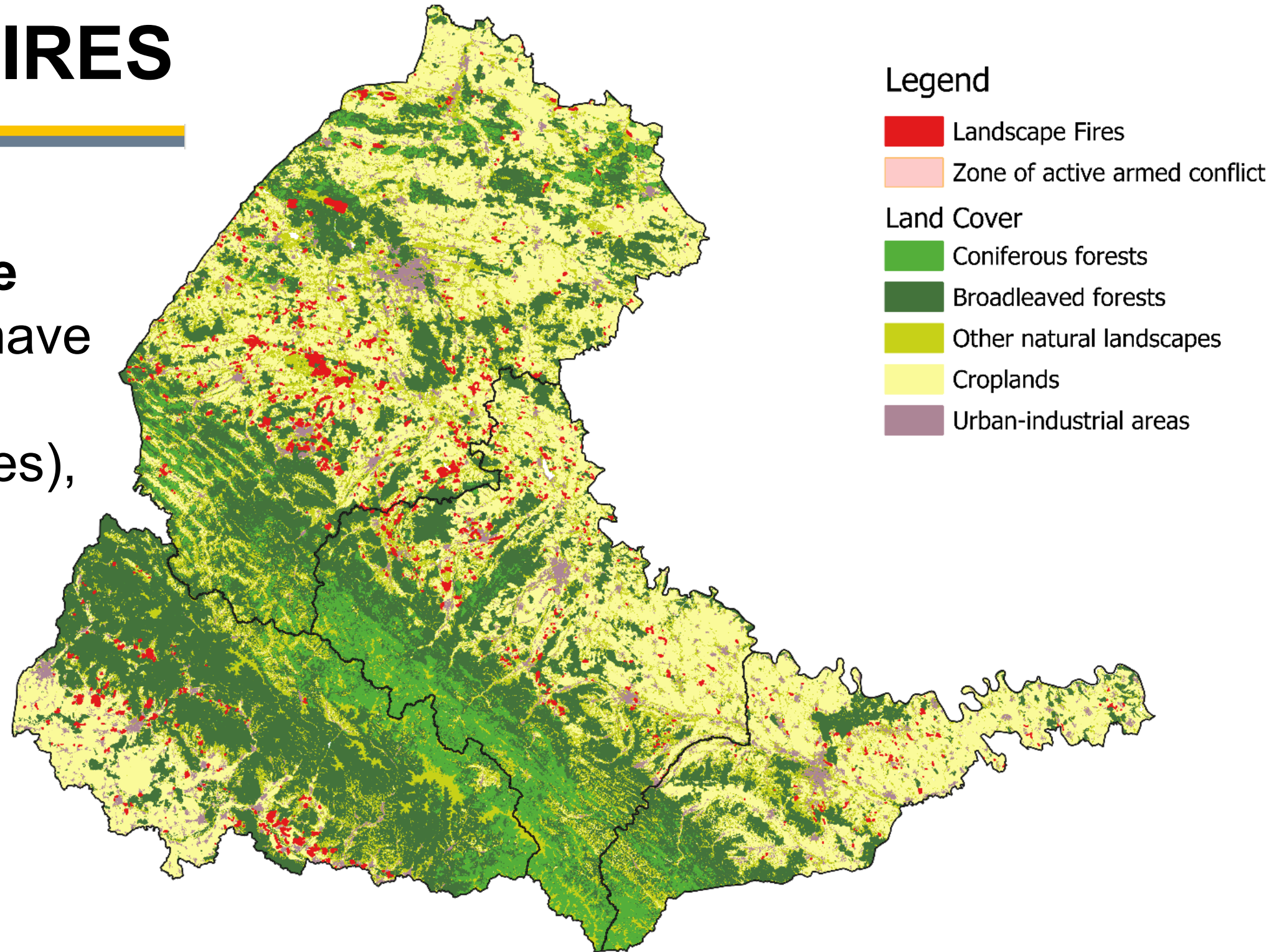
- The **four oblasts** (regions) affiliated with the Ukrainian Carpathians (Lviv, Ivano-Frankivsk, Zakarpattia and Chernivtsi)
- **9.3 % of Ukraine's territory** and **22 % of the forest lands** (SFRAU, 2023).
- **Forest cover** in the region has changed relatively little over the last decades and a **slight increase** in forest area is observed





# LANDSCAPE FIRES

Over three years, **since 2022**, landscape fires have covered a total area of **106,976 ha** (3,655 cases), of which **7,321 ha** are **forests**.

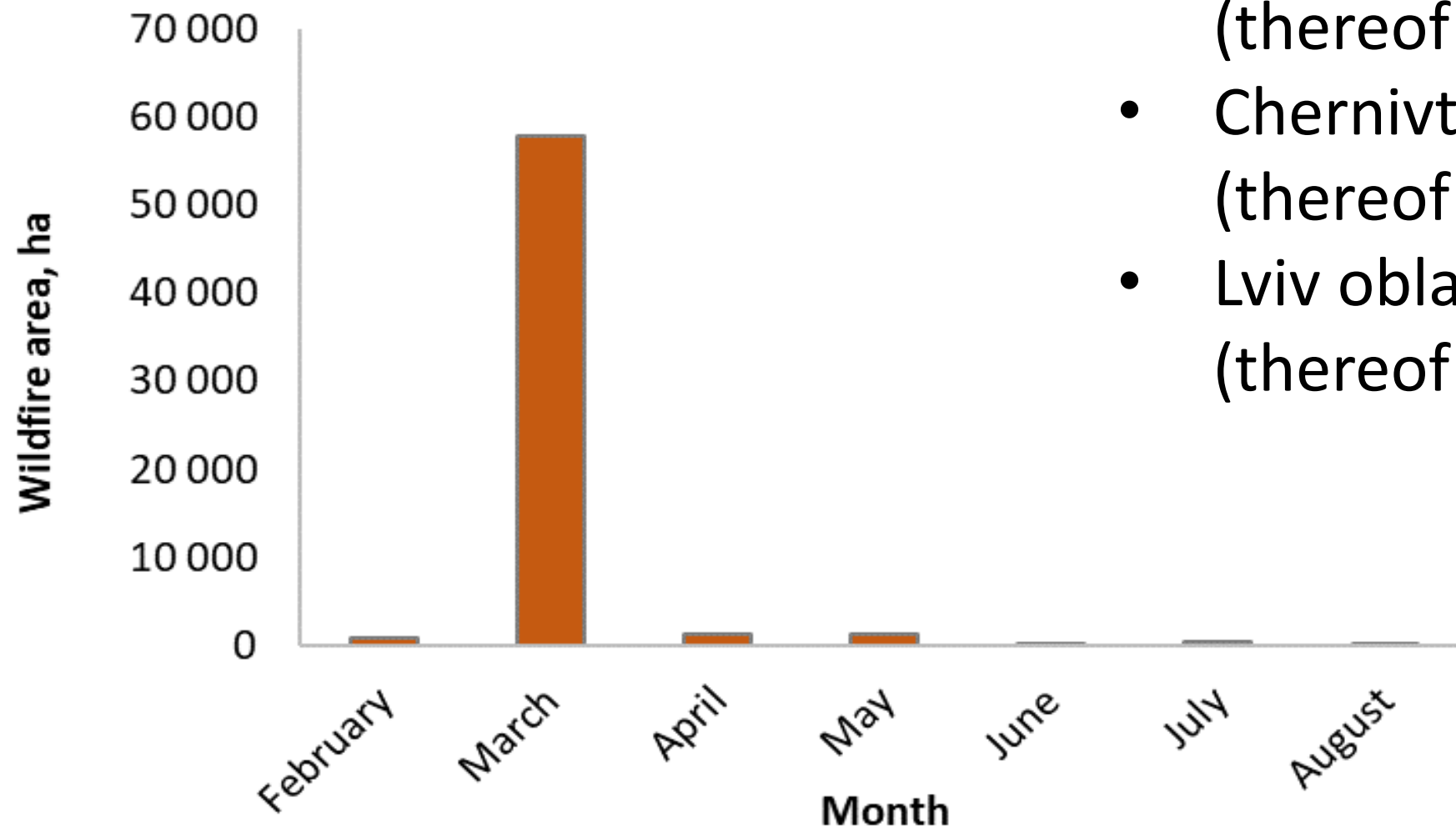


*Source: REEFMC, 2025*



# Fires

**94 %** of the area of all fires occurred in **March**



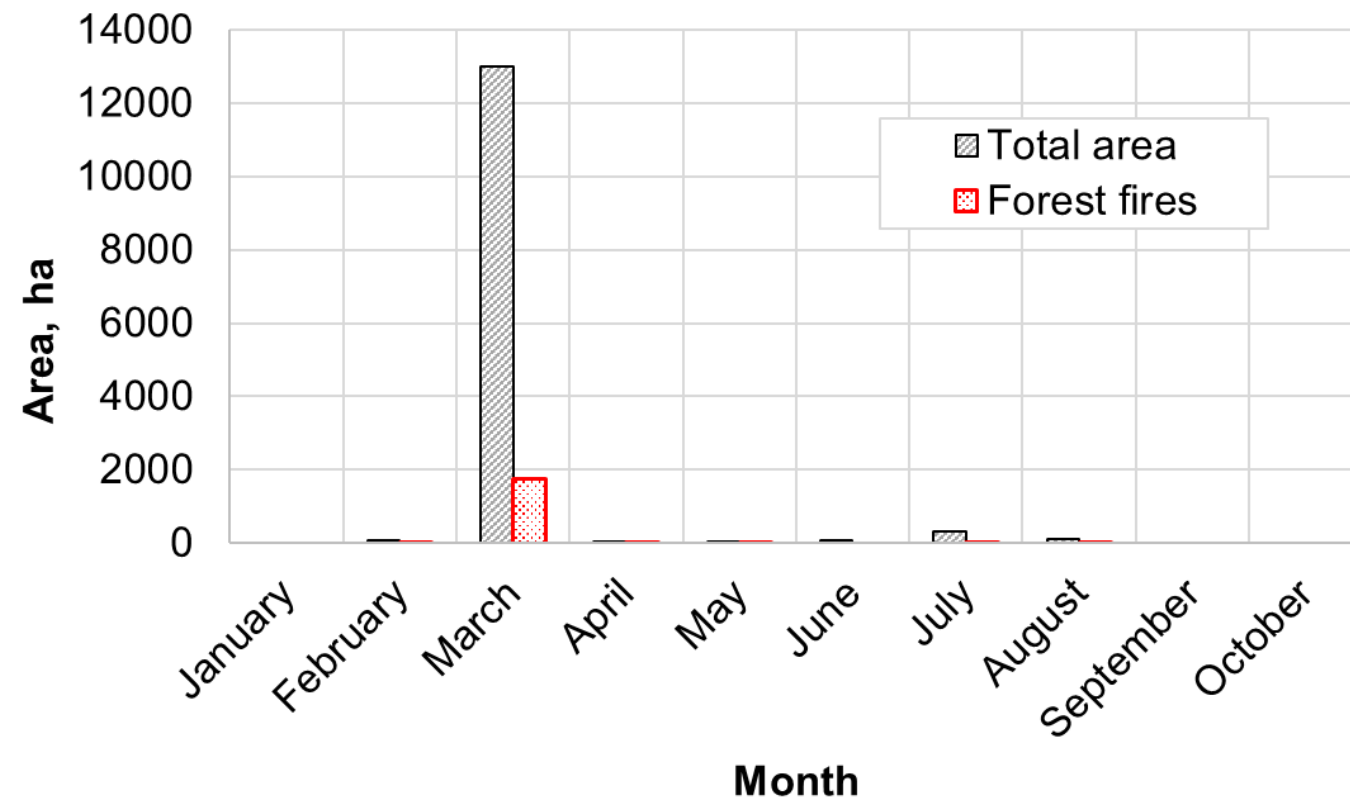
- Ivano-Frankivsk oblast - 19,388 ha (thereof **1,318 ha of forests**);
- Zakarpattia oblast - 18,782 ha (thereof **2,710 ha of forests**);
- Chernivtsi oblast - 5,326 ha (thereof **58 ha of forests**);
- Lviv oblast (6,2567 ha (thereof **3,235 ha of forests**).

*Source: REEFMC, 2025*



# Zakarpattia

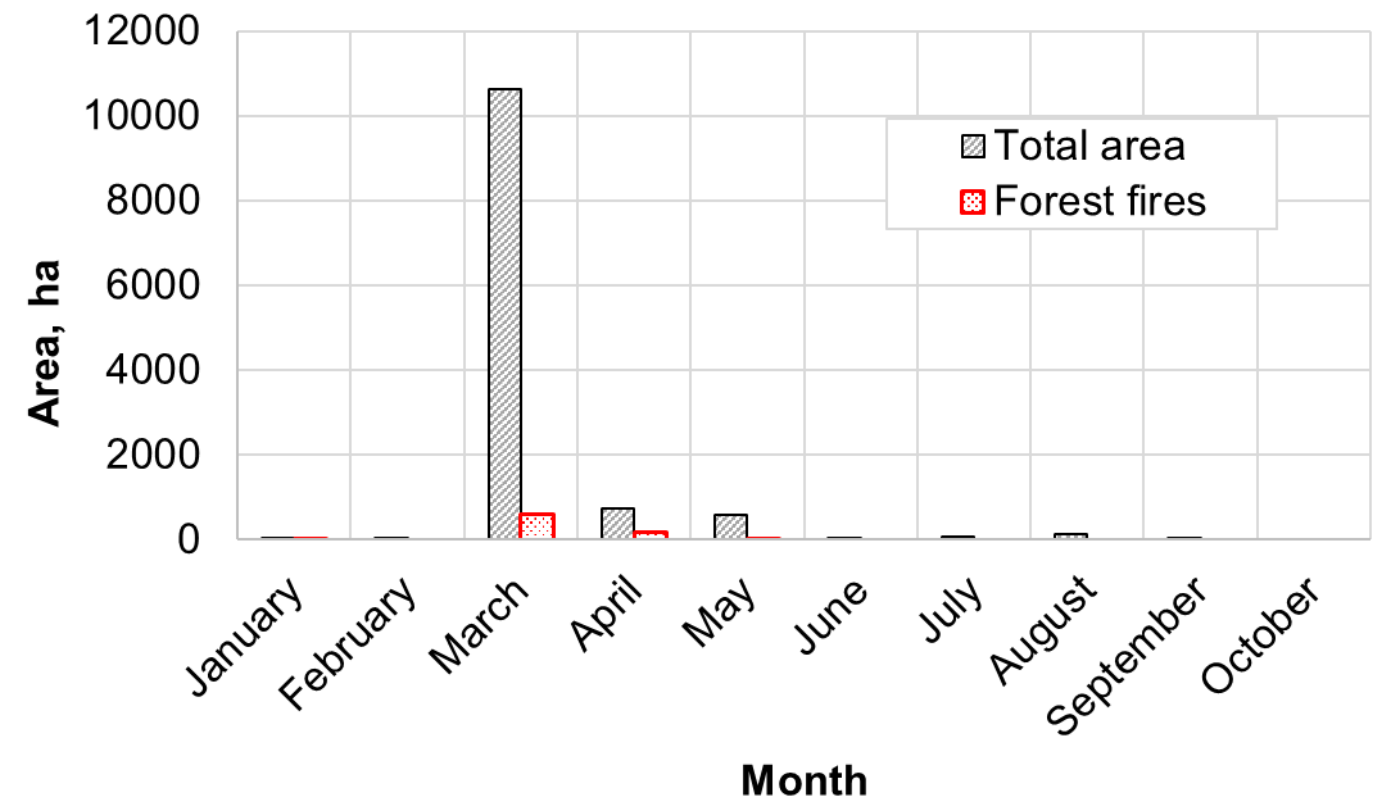
**231 fires** covering a total area of **13.6 thsnd ha**



**95% of all fires occurred in March**

# Ivano-Frankivsk

**399 fires** covering a total area of **12.2 thsnd ha**

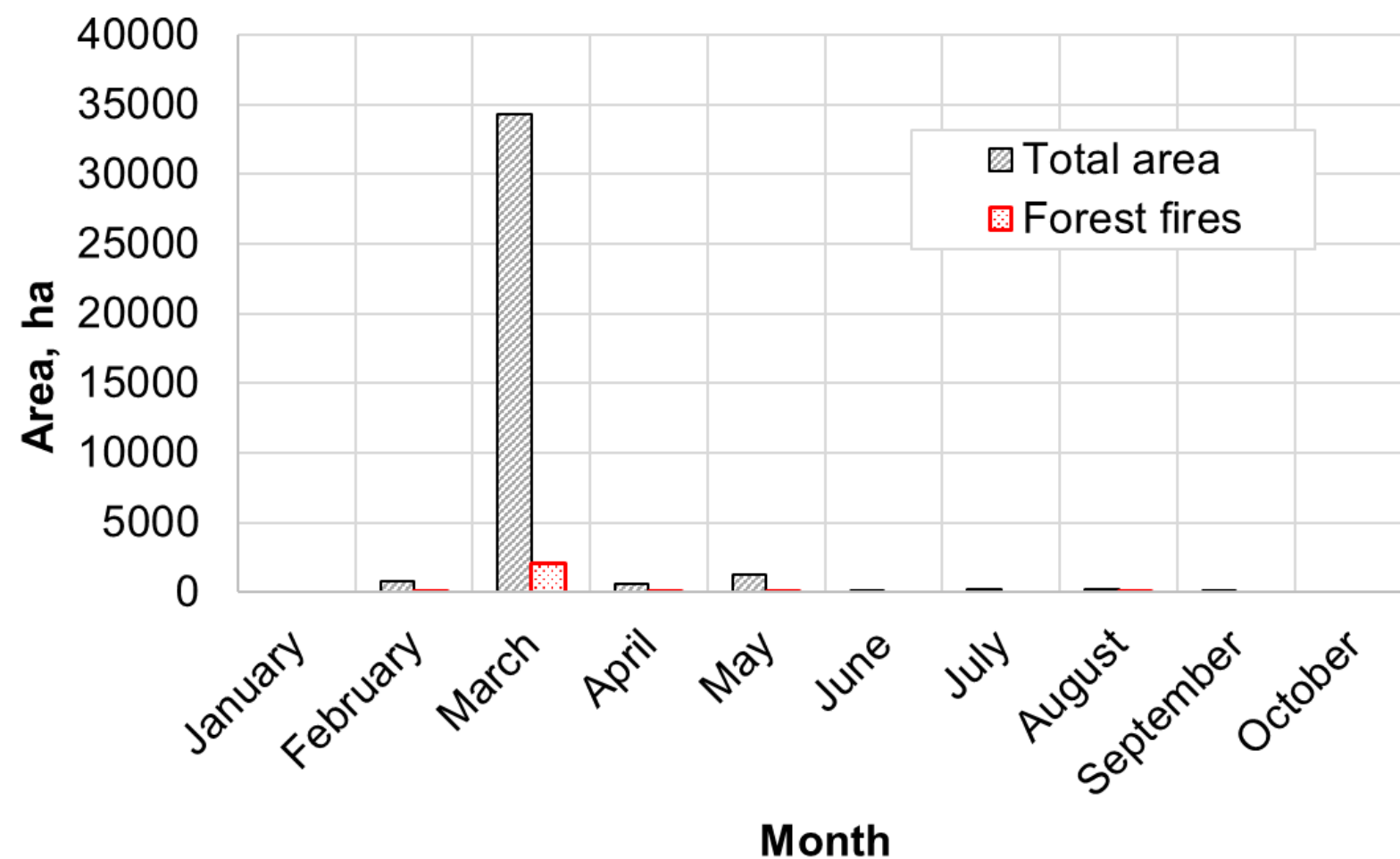


**87% of all fires occurred in March**



# Lviv

**598 fires** covering a total area of **37.5 thsnd ha**



**91% of all fires occurred in March**





# Clear-cutting





# Disturbance

Forest  
disturbed by  
extreme  
wind 2023









# ABOUT THE PROJECT

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## Project "From Crisis to Resilience with Close-to-Nature Forest Management in Ukraine« (2025-2029)

This **“from science to practice”** project aims to equip Ukrainian forestry researchers, professionals, decisionmakers, and youth with the knowledge, skills, and tools to implement Close-to-Nature Forest Management during current crisis and to support post-war forest recovery.



# CONSORTIUM

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- **Bern University of Applied Sciences** School of Agricultural, Forest and Food Sciences, Switzerland
- **Public Union World Wide Fund for Nature Ukraine**, Kyiv, Ukraine
- **National University of Life and Environmental Sciences of Ukraine**, Kyiv, Ukraine
- **FORZA Agency for sustainable development of the Carpathian region**, Uzhhorod, Ukraine
- **Ukrainian National Forestry University**, Lviv, Ukraine
- **Polissia National University**, Zhytomyr, Ukraine





Project "From Crisis to Resilience with Close-to-Nature Forest Management in Ukraine" (2025-2029) supported by VELUX STIFTUNG



# OUR SPECIFIC OBJECTIVES

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**Strengthen Ukraine's forest management** by integrating international expertise in Close-to-Nature Forest Management, particularly drawing on Swiss practices.

**Provide accessible educational resources** to promote the effective application of these principles across Ukraine.

**Facilitate practical implementation** through the establishment of demonstration sites and digital learning tools to ensure widespread adoption and further development.

**Foster a shared understanding of the environmental, social, and economic benefits of Close-to-Nature Forest Management among stakeholders**, including practitioners, decision-makers, and academic staff by **building Close to Nature Forestry Network in Ukraine**.



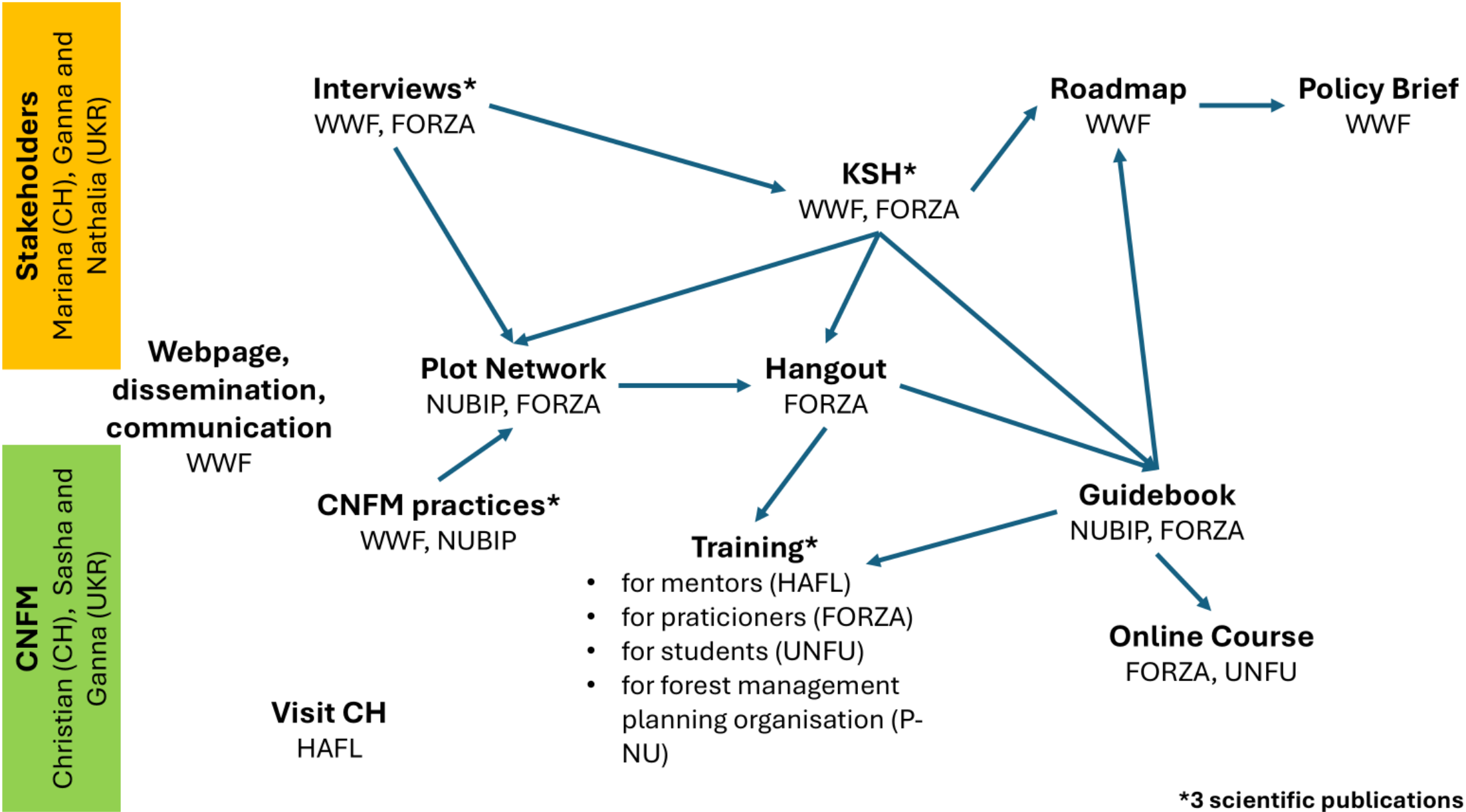
# KEY OUTPUTS

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- **Guidebook on Close-to-Nature Forest Management practices**, adapted for Ukraine, in both printed and digital formats.
- **Open-access online course for forestry practitioners**, focusing on the practical application of CNFM principles.
- **Network of 36 demonstration sites (marteloscopes)** in key regions for hands-on training.
- **Six workshops and seminars with international and local experts** (provide practical training on CNFM).
- **Research papers** outlining the benefits and challenges of implementing CNFM in Ukraine.
- **Exchange visits with Swiss experts**, involving forestry professionals and youth, to deepen practical knowledge and foster collaboration.
- **Knowledge-sharing hub** to ensure ongoing collaboration between Ukrainian and international forestry professionals.
- **Roadmap for integrating CNFM practices into Ukraine's national forestry recovery plan**



# KEY WORK PACKAGES AND DELIVERABLES





# WHAT IS CLOSE-TO-NATURE FOREST MANAGEMENT (CNFM)?

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CNFM is a forest management system that imitates natural forest processes.

Its main principles include:

- conserving biodiversity and ecosystem resilience;
- natural regeneration;
- minimal human intervention in natural dynamics;
- multifunctional use of forests (timber, recreation, ecosystem services);
- focusing on long-term stability and climate resilience of forests against pests, wildfires, and disturbances.

**Key nature-based solution for climate adaptation and sustainable resource management**



# WHY IS CLOSE-TO-NATURE FOREST MANAGEMENT (CNFM)?

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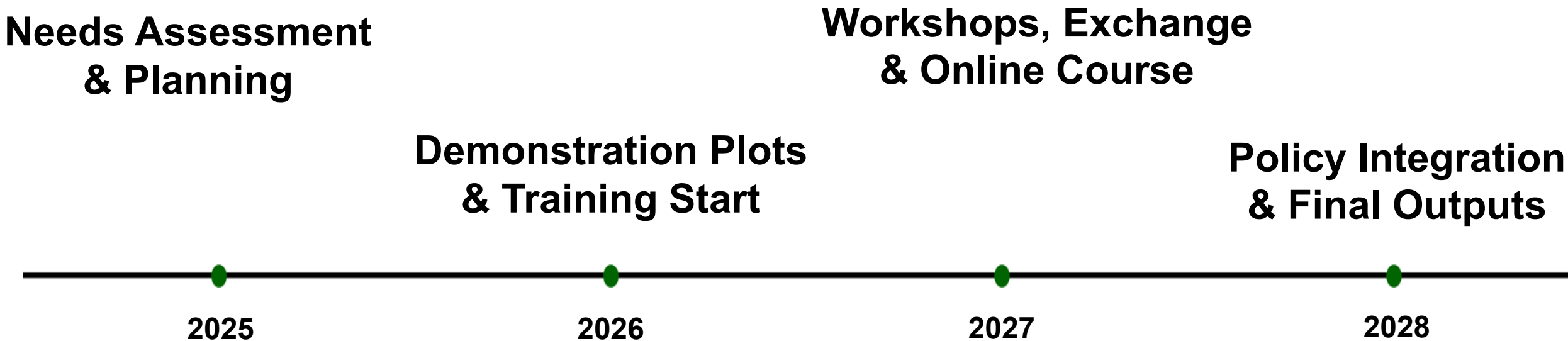
**Resilience and Recovery** (CNFM builds biologically stable, high-quality forests more resistant to climate change, reduces costs for reforestation, tending, and environmental restoration).

**Alignment with European Standards** (CNFM is part of Ukraine's Forest Management Strategy until 2035. Its adoption supports Ukraine's path toward EU integration and sustainable forest governance).



# PROJECT TIMELINE

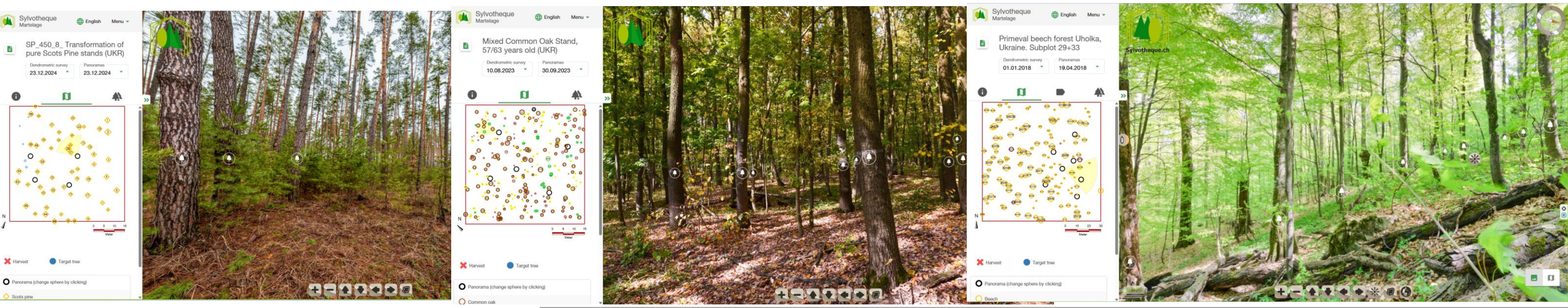
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# DIGITAL TOOLS FOR ACHIEVING GOALS

- **Martelage.sylvotheque.ch** (an online platform developed in BFH (Switzerland) for training and knowledge exchange - <https://martelage.sylvotheque.ch>)
- **Network of martelosopes.**
- **360° virtual tours** (making training accessible even when field visits are not possible)
- **MSC Mobile App**



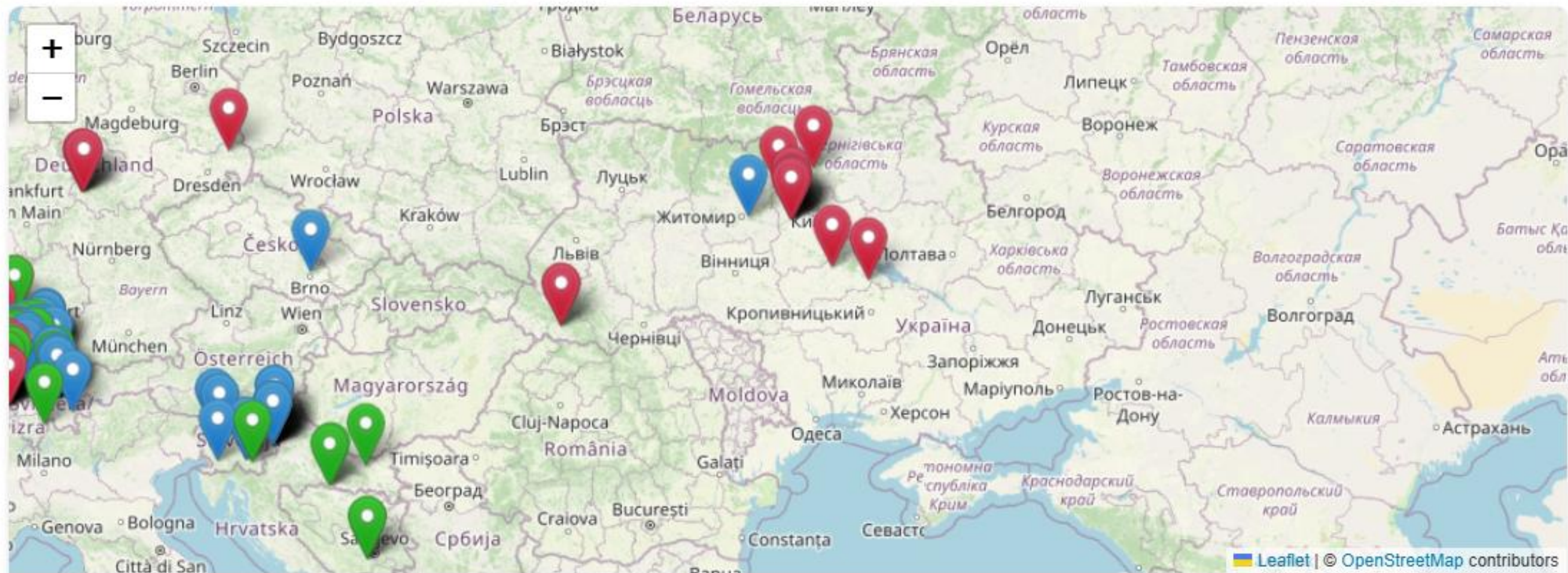
Project "From Crisis to Resilience with Close-to-Nature  
Forest Management in Ukraine" (2025-2029) supported by VELUX STIFTUNG



# ESTABLISHED PLOTS



Search



☐ Virtual tour



Tour with tree positions and panoramas



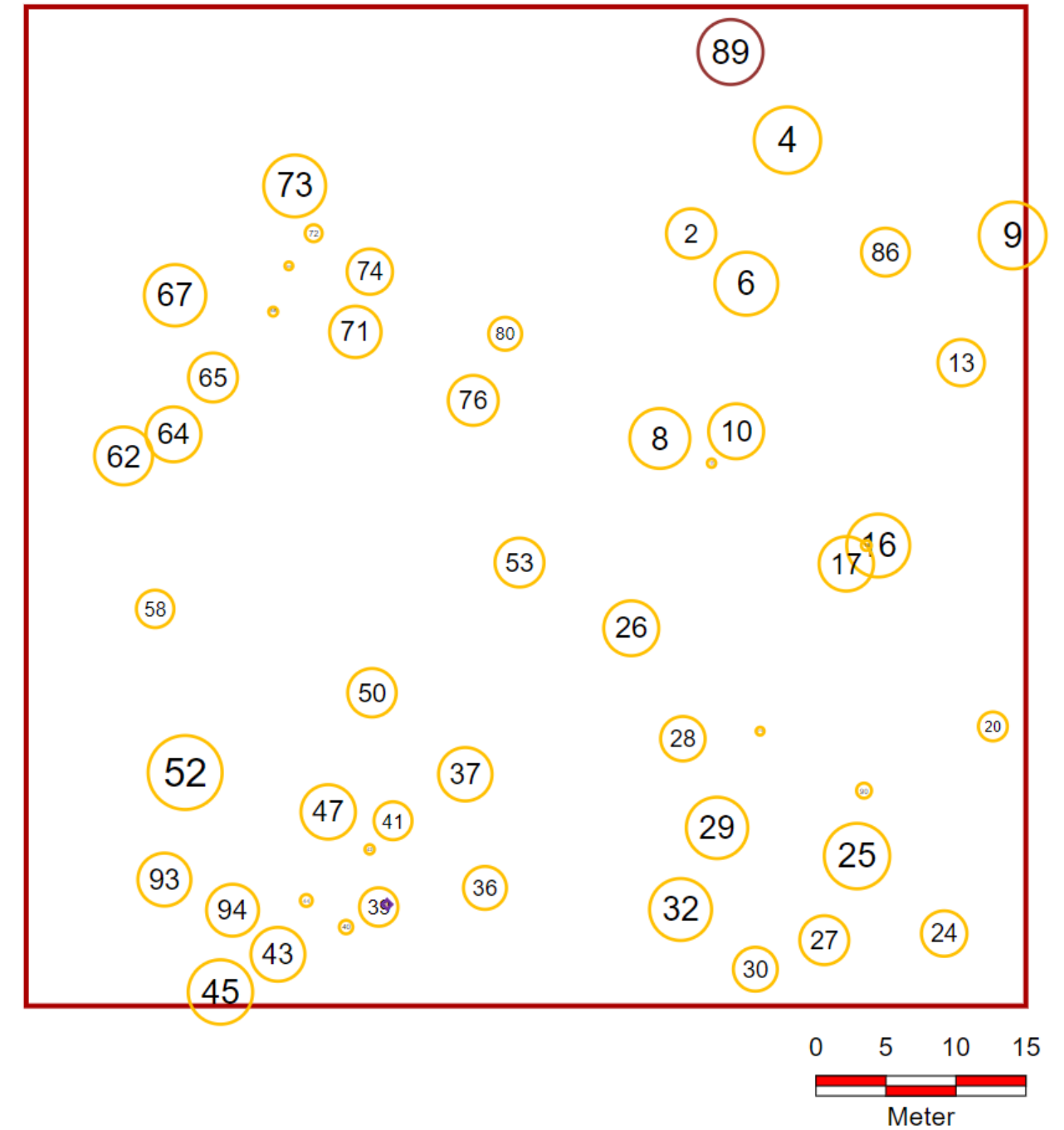
Tour with tree positions



Tour with panoramas













# martelage.sylvotheque.ch

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Thematic filter

Silviculture

- Uneven-aged - broadleaves
- Uneven-aged - coniferous
- Tending and thinning
- Natural regeneration
- Plantation
- Coppice
- Coppice under standards
- Forest pasture
- Primary forest

Main tree species

Main focuses

Diameter Class

Content types

Tours

Map of Europe with location pins

Virtual tour with tree positions and panoramas

Tour with tree positions

Tour with panoramas

New Tours

Marteloskop Goldach Witenwald

Marteloscope spruce -

martelage.sylvotheque.ch is an online platform to train for tree marking in a great variety of situations. It includes a documentation, quantitative and visual (through photospheres), of training areas. This application works best with Google Chrome.

READ MORE

MSC News

15/02/2023

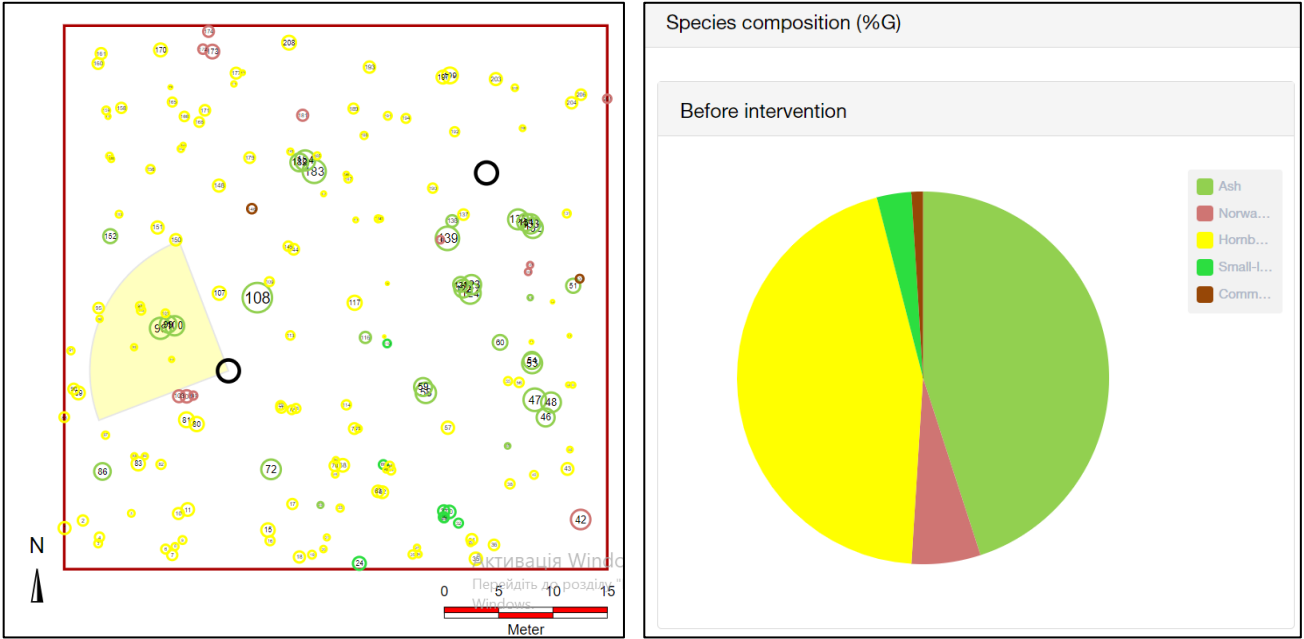
Christian Rosset

Three articles for practitioners

20 marteloscopes du Centre de Compétence en Sylviculture de Lys



Link - <https://martelage.sylvotheque.ch/>



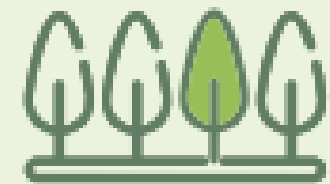


# CONCLUSIONS

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**CNFM** can play a transformative role in supporting biodiversity conservation, boosting forest resilience, and securing the long-term sustainability of forest ecosystem services in Ukraine.

By fostering **collaboration between Swiss and Ukrainian institutions**, creating a national stakeholder network, and developing a roadmap for integrating CNFM into Ukraine's forest recovery strategy, this initiative contributes to a more resilient and sustainable future for Ukraine's forests.





# CONCLUSIONS

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The Ukrainian Carpathians face urgent **environmental, social, and economic problems**, including:

- **increased pressure on forests due to population displacement to western regions by the war;**
- **escalating climate threats** such as wildfires and pest outbreaks;
- major social disruptions caused by military conflict and the **loss of skilled forestry workers;**
- acute economic pressures from the **sharp rise in timber demand** for wartime needs and post-war reconstruction;
- **need to align with EU forest management** practices that require more careful and less intensive use of forests. All these challenges demand immediate attention and action.



# CONCLUSIONS

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The transition to **CNFM** in the Carpathian region as well as in whole territory of Ukraine is essential because it:

- **strengthens ecosystem resilience and biodiversity;**
- **mitigates climate threats** (wildfires, pests, erosion);
- **supports local communities** through sustainable jobs and resources;
- **aligns Ukraine with EU forest management practices** and funding;
- **fulfills national legislation and Carpathian Convention** commitments;
- **reduces social tensions** between foresters and society caused by clear-cutting practices.



# CONCLUSIONS

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Critical **gaps hindering a green recovery** include underfunded forest research, outdated forestry education and training, weak coordination among institutions, and a lack of modern tools and close-to-nature practices in current forestry curricula.

**Close-to-Nature Forest Management** (CNFM) offers a science-based and practical solution for Ukraine's post-war recovery by enhancing biodiversity, climate resilience, and sustainable timber production, while reducing long-term costs of forest restoration

The project **bridges science and practice** through international collaboration (notably Swiss expertise), demonstration sites, and digital learning tools, creating a strong foundation for long-term forest sustainability and stakeholder capacity building in Ukraine



# NEEDED INITIATIVE

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**Regional Collaborations:** Specific collaborations with Carpathian region partners (such as neighboring countries' forestry agencies, universities, and NGOs) is needed to exchange knowledge, create demonstration sites, and train local specialists in nature-based forestry.

**Carpathians Network:** Members of the S4C network and their universities can help address urgent Carpathian challenges by conducting targeted research, integrating findings into education and outreach, and providing evidence-based guidance to policymakers – thereby filling knowledge gaps and strengthening local capacity through science–policy engagement and international collaboration.



# NEEDED INITIATIVE

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The **Carpathian Convention** serves as a vital regional instrument by coordinating cross-border sustainable development policies, sharing best practices in forest management, and mobilizing collective support among Carpathian countries to tackle the region's environmental and socio-economic challenges

Effectively **bridging the gaps between civil society, academia, and decision-makers** in the Carpathians requires inclusive collaboration platforms (e.g. multi-stakeholder forums and networks) that promote knowledge exchange, evidence-based policy dialogue, and a shared vision for sustainable forest recovery.



# THANK YOU FOR YOUR ATTENTION!

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