

## Science-Driven approaches for Wildfire Resilience

### PROJECT PARTNERS

Center of Integrated Geomorphology for the Mediterranean Area  
PSRI Institute for Protection and Ecology of the Republic of Srpska  
AVMap GIS Digital Applications S.A.  
Kreo Association  
University of Western Macedonia  
Municipality of Kocani  
Institute for Development and Innovation  
Prlekija Development Agency  
Public Institution Kozara National Park

**For detailed information on the project deliverables and methodologies,**



**please visit:** <https://res2fire.interreg-ipa-adrion.eu/>

**The RES2FIRE project is co-funded by the European Union through the Interreg IPA ADRION programme**

**DISCLAIMER:** The brochure has been produced with the financial assistance of the European Union. The content of the brochure is the sole responsibility of AVMap GIS SA and can under no circumstances be regarded as reflecting the position of the European Union and/or IPA ADRION programme authorities.

**Interreg**  
IPA ADRION

Co-funded by  
the European Union

**RES2FIRE**



Project budget:  
**1.192.509,38 €**

Interreg funding:  
**1.013.632,96 €**

Project duration:  
**36 months**

Participating countries  
Italy, Bosnia and Herzegovina, Greece, Albania, North Macedonia, Serbia, Slovenia

Innovative Models & Practical Solutions for  
**Wildfire Management**

Models and Tools for Enhancing the  
Resistance and the Resilience to  
Wildfire in Natural Protected Areas  
and Wildland-Urban Interfaces

The Science Behind Fire

Effective Treatments by Forest Type

Protection in Wildland-Urban Interfaces

Conclusions & Recommendations

Enhancing Resilience  
of Mediterranean Ecosystems

# FlamMap

fire behaviour model

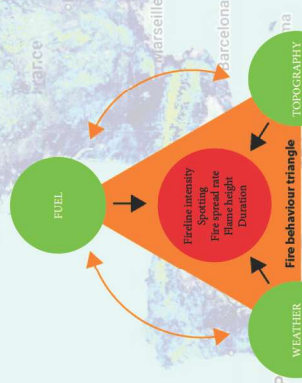
**Data provided for the model**

**Landscape data**

- Topography
- Fuel

**Weather data**

- Wind speed and direction
- Fuel moisture conditions for surface fuels



## Effective Treatments by Forest Type

### Guidelines for Forestry Services and Protected Area Managers

(our simulations demonstrated that Close-to-Nature Forestry significantly reduces fire intensity)

#### Coniferous Forests (e.g. Pines, Firs)

30% thinning: Removal of small trees to reduce density (up to 30%).

Pruning: Removal of branches up to 2-3 meters high to break the ground-to-crown continuity.

🌿 Result: 30% thinning combined with understory removal was the most effective treatment, significantly reducing flame length and rate of spread.

#### Broadleaved Forests (e.g. Oaks, Beeches)

Mechanical thinning (10-25%) and creation of shaded fuel breaks.

🌿 Result: 30% thinning proved to be the most effective method for reducing fire intensity.

#### Mediterranean Macchia (Shrublands)

Mechanical mastication to reduce fuel height (<50 cm) and targeted grazing.

🌿 Result: Mechanical reduction and heavy grazing drastically reduced flame length and rate of spread.

## Guidelines for Municipalities and Civil Protection

Wildland-Urban Interface (strategic planning in buffer zones)

### Zone 1 (200m): Fuelbreak

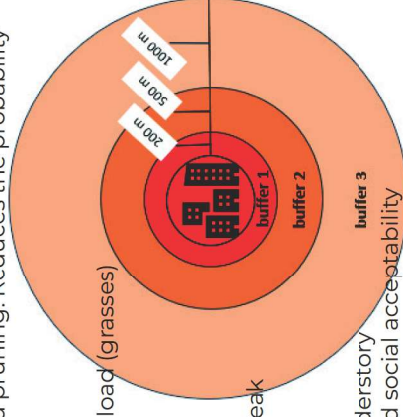
Complete removal of fuel or creation of a "dead zone" around houses (bare ground)

### Zone 2 (500m): Shaded Fuelbreak

Retention of tall trees, but removal of understory and pruning. Reduces the probability of crown fires

### Zone 3 (1000m): Grazing / Management

Light grazing or manual clearing to reduce fine fuel load (grasses)



## Scenario Effectiveness

### Scenario 1 (Maximum Protection)

The combination of a fuelbreak and a shaded fuelbreak delivered the maximum reduction in fire intensity.

### Scenario 2 (Balanced approach)

Shaded fuelbreak and light grazing and manual understory removal, is a compromise between effectiveness and social acceptability

### Scenario 3 (Targeted grazing)

Approaches the effectiveness of mechanical treatments, especially in areas with grassy vegetation.

## Conclusions & Recommendations

### • Fuel management

Reduces risk, transforms wildfires into manageable low-intensity events

### • Maintenance

Treatment must be every 2-3 years for shrubs, 5-10 years for forests

### • Prioritization

Distance-based interventions are effective in significantly reducing the risk to people and infrastructure

### • Holistic Approach

The combination of moderate-intensity silvicultural treatments and surface fuel management improves the resilience of natural systems to fire.