



Regional Wildland Fire Networks:  
 North America – Mesoamerica – South America – Caribbean – Mediterranean – Southeast Europe / Caucasus – Euro-Alpine – Near East – Sub-Sahara Africa – Southeast Asia – South Asia – Australasia – Northeast Asia – Central Asia – Eurasia



## Sub-Regional Euro-Alpine Wildland Fire Network



### Landscape Fire Issues in the Alpine Region

Wildfires are an emerging issue in the Alpine region that can lead to high damages in protection forests, increasing natural hazards and resulting in high costs up to millions of euros for fire suppression and restoration measures. The expected increasing intensity of drought periods and heat waves together with the increasing hazard resulting from rural abandonment and more recreational activities will increase forest fire activity in the Alpine region in the near future. Current efforts to manage forest fires are unable to prevent the occurrence of extreme forest fire events. The implementation of a foresighted and integrated forest fire management for the Alpine region is highly needed. Therefore the EUSALP - EU Strategy for the Alpine Region Action Group 8 has launched an initiative to improve fire management by enhancing existing cooperation. The white paper for policy makers "Forest fires in the Alps: State of knowledge and future challenges" was worked out by the members of the Action Group 8 and the Sub-Regional Euro-Alpine Wildland Fire Network.

### Forest Fires in the Alps: State of Knowledge and Future Challenges

#### Landscape Fire Situation in the Alps

- Increasing temperatures, recreational activities and rural abandonment effect fire regimes in Southern / Northern Alps (Fig. 1)
- Fire danger rating systems are improved to cover the different drivers (Fig. 2)
- Investments in prevention, suppression, and post-fire management are going to increase (Fig. 3)
- Fire management practices differ (Fig. 4)

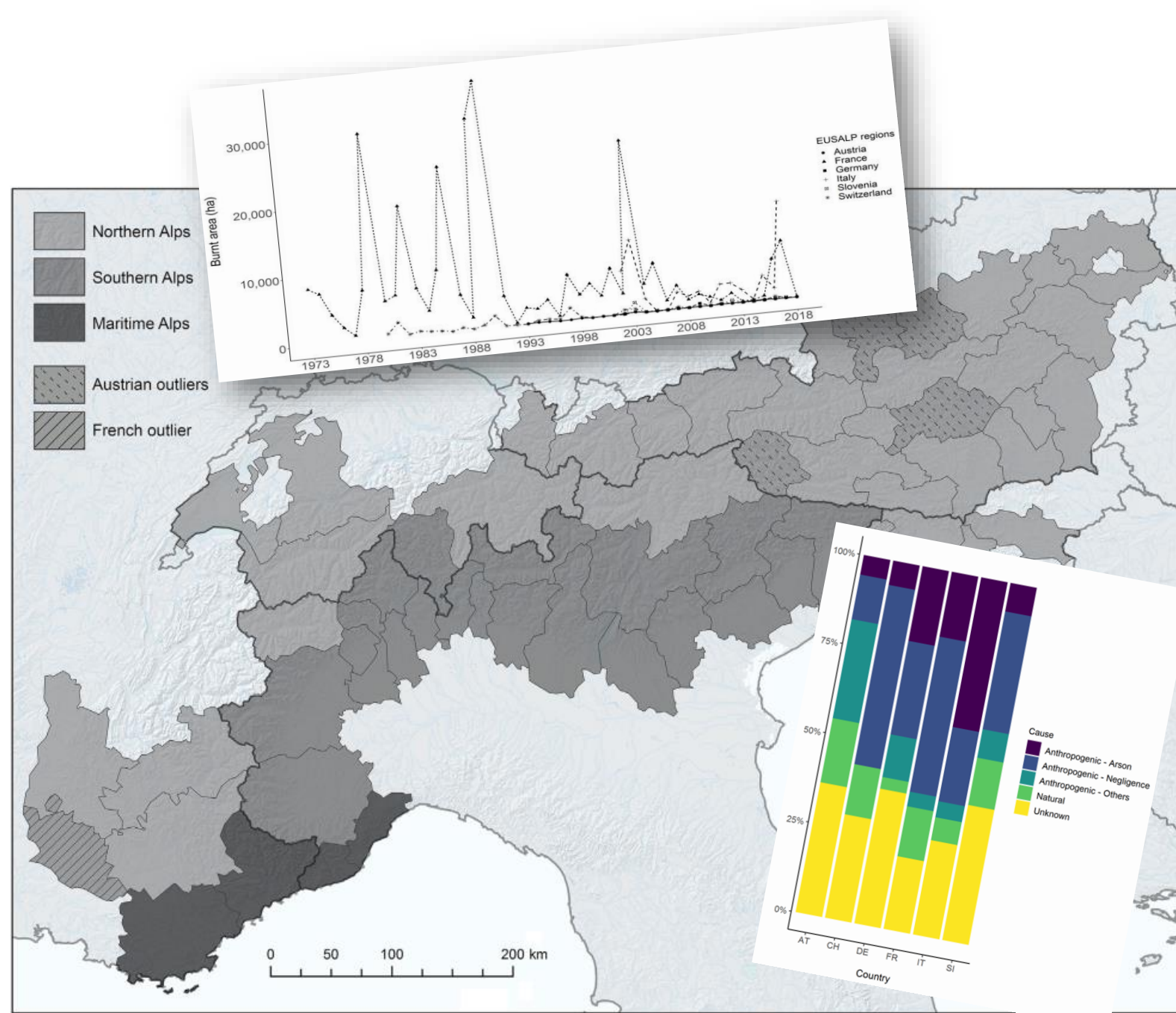


Figure 1. Distribution of Alpine fire regime clusters (Conedera et al., 2018) and main ignition causes (Müller et al. 2020)

- Outcomes from Alpine wide survey among 80 fire experts indicate challenges (Fig. 2)
- Forest fire workshop allowed discussion of survey results, identification of main challenges, and sharing of success stories on fire management (Fig. 4)
- White paper for policy makers (Fig. 5) and framework for integrated fire management (Fig. 6)

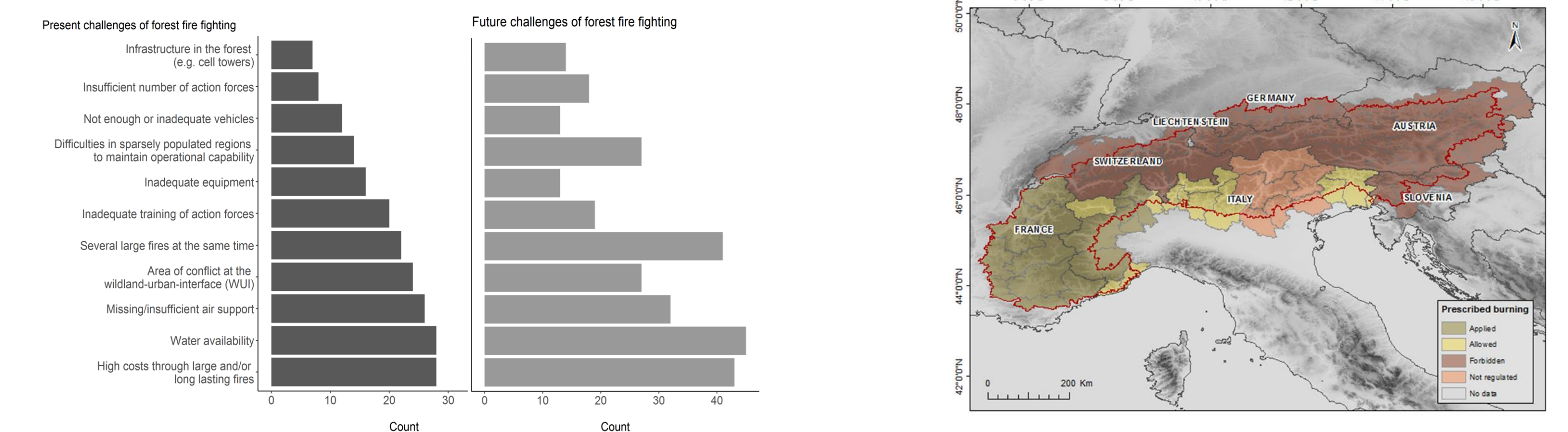


Figure 3. Main challenges for fire fighting and legal framework for prescribed burning in Alpine region

**Multi-stakeholder roundtable after extreme fires**

**Problem description:** Simultaneous large forest fires as a result of an exceptional drought (2017). Disturbed areas include forests for wood provision, biodiversity conservation, recreation, and slope stability. Challenge: deciding priorities for restoration with limited resources and stakeholders with contrasting interests.

**Solution:** Establish a multi-stakeholder roundtable to discuss restoration options based on best available science, interests, and resource constraints. Develop guidelines for post-fire restoration, available for private forest owners. Meet local population to explain causes, solutions, and actions being undertaken. Slope stabilization was given the highest priority, especially along recreational roads.

**Best practices:** Roundtable based decision making the most urgent actions for post-fire restoration. Forest owners were helped with an easy-to-read guideline for restoration decisions. Public money was channelled to the most effective solutions. Public opinion was given special attention with public hearings and newspaper articles.

**Training of aircraft operators for fire suppression in Alpine regions**

**Problem description:** Lack of preparedness of aircraft operators and helicopter crews for firefighting in mountainous areas. Inadequately collaboration between air support and firefighters on the ground. Inefficient use of equipment and tactics available.

**Solution:** Specific trainings for aircraft operators and helicopter crews regarding firefighting in Alpine areas together with firefighters and other action forces (e.g., mountain rescue units).

**Best practices:** Well-trained aircraft operators and helicopter crews. Numerous exercises lead to an effectively use of the equipment and tactics available. Increased safety for aircraft operators and ground personnel.

Figure 4. Examples of success stories on fire management in the Alpine region

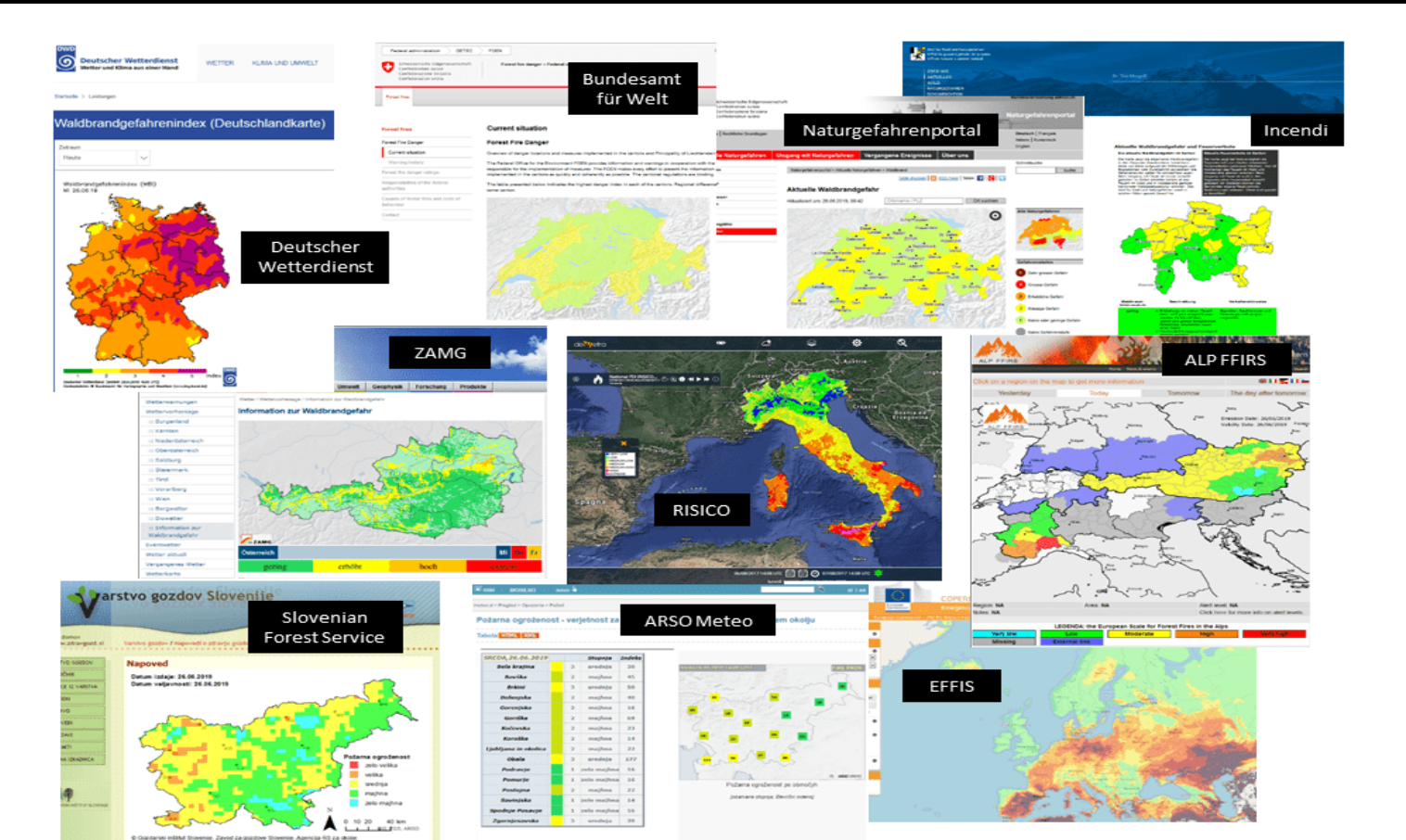


Figure 2. Various fire danger rating systems in the Alpine Region (Müller et al. 2020)

Figure 5. Participants of forest fire workshop for finalizing white paper for policy makers.

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**Climate change**

- Changed precipitation pattern
- Longer drought periods
- More heatwaves
- Dry lightning strikes

**Drivers**

**Socioeconomic changes**

- Increased recreational activities
- Extensive use of natural resources
- Rural abandonment
- Traditional fires

**New policies**

- Maintain biodiversity
- Renewable energy
- Sustainable development
- Open forests to new users

**FOREST FIRES**

**Impacts**

Destruction of protection forests | Natural hazards | Loss of natural resources | Soil erosion | High costs for firefighting and post-fire measures | Endangered Wildland-Urban-Interface | Air pollution and carbon release

**Elements of integrated fire management**

**Prevention measures**

- Improve early warning systems
- Increase resistance and resilience of forests
- Anticipate effects of natural hazards

**Suppression measures**

- Knowledge on forest infrastructure
- Promote deployment of specialized action forces
- Adapted firefighting techniques
- Quick and efficient air support
- Use of technical fires

**Post-fire management**

- Improve forest fire management planning
- Foster awareness-raising
- Restore the forest cover
- Minimize risks of fire effects and natural hazards
- Continuous monitoring of burnt sites
- Investigate fire behavior
- Establish case studies

**Knowledge transfer and exchange**

Establish a multi-stakeholder approach | Transnational trainings of fire brigades and action forces | Continue forest fire research | International workshops | Address negative effects of rural abandonment | Joint terminology



Figure 6. Drivers and impacts of forest fires and elements of an integrated fire management for the Alpine region

### Key Options for Integrated Forest Fire Management in the Alpine Region

1. Enhance or establish **knowledge transfer** and a **multi-stakeholder approach** on a transnational and collaborative basis, including widespread exchange activities.
2. Improve the **training of fire brigades** and specialized action forces, including scenarios with several large fires at the same time in difficult terrain and with the participation of helicopters.
3. Minimize the risks of **natural hazards** after forest fires and improve **post-fire restoration** activities.
4. Address and minimize negative effects of **rural abandonment** and **recreational activities**.
5. Adapt **forest management**, including prescribed burning, and establish protection measures at the WUI.
6. Improve education and **awareness-raising activities** for stakeholders and the population.



Federal Ministry  
 Republic of Austria  
 Agriculture, Forestry, Regions  
 and Water Management

EUSALP EU STRATEGY FOR THE ALPINE REGION  
[www.alpine-region.eu](http://www.alpine-region.eu)



Website of White paper: <https://www.alpine-region.eu/results/forest-fires-alps-state-knowledge-and-further-challenges>

Website of Regional Euro-Alpine Wildland Fire Network: <http://gfmcc.online/GlobalNetworks/EuroAlpine/EuroAlpine.htm>

