

# Wildfire risk planning and prevention

Innovations in the  
Mediterranean  
and beyond



2024



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# INTEGRATING ECONOMIC SUSTAINABILITY INTO WILDFIRE PREVENTION

PRE-FEu – Fire prevention for wood supply chains initiative, in the Upper Susa Valley (Italy), created an integrated fire prevention plan which provides for the economic sustainability of planned actions.



## Background

The forest land in the Upper Susa Valley is divided between 14 municipalities (associated under the *Unione Montana Valle Susa*, owning 60% of the land) and private owners (owning the remaining 40%). Private forest plots are mostly abandoned due to extreme fragmentation: in some cases, plots measure less than 0.1 ha. Most of the land was cultivated for local subsistence until the second half of the 20th century. The current situation is characterised by smallholdings of hardly traceable ownership, overgrown with flammable vegetation and without a comprehensive management plan.

In the dry coniferous forests of the inner Alpine valleys, there is a need to respond to the potential for stand-replacing wildfire and to improve the forest's resistance and resilience to fire. In essence, in Susa Valley an integrated fire prevention plan was needed. In parallel, the local timber supply chain needed to be revitalised to support the local timber industry by increasing the value of wood from fire prevention and post-fire treatments in both private and public forests.



Overview of the intervention area: in the lower part, private, intervention will be implemented in 2024. Source: University of Turin

## Location

Susa Valley (Piedmont Region), Italy

## Actors

Forest Consortium of Upper Susa Valley, the University of Turin, Cooperativa La Foresta (private forestry company), *Unione Montana Valle Susa* (association of municipalities)

## Pros

The project incentivises the collaboration between stakeholders (both private and public) as well as the local economy, giving value to a resource often overlooked. Fuel management as civil protection action, protecting forest functionality, strategic buildings and wildland-urban Interface areas. Easy replicability in other supramunicipal areas in Italy.

## Cons

The legal framework may limit the application of some measures in private forests. Lack of human resources to cover all actions to be done. Difficulties in keeping forest multifunctionality while ensuring an economic viability of the interventions.

## Challenge

In the Alpine valleys of Italy, land abandonment has increased over the last 70 years. As a result of this abandonment, the area of forest and the amount of biomass have increased significantly, and in some places this has led to a continuous, unmanaged forest cover. As a result of these factors, exacerbated by the effects of the climate crisis, the inner Alpine valleys can experience large forest fires with significant impacts, including the degradation of forest functionality in protecting people from rockfall and landslides. **How preventive measures can include protection of ecosystem services and support for firefighting while being economically sustainable?**

## Solution

The *Fire prevention for wood supply chains* (PRE-FEu) project sustainably manages forest fuel in extensive areas by valorising the wood obtained through preventive silvicultural treatments in short value chains. This wood is transformed into assortments of different qualities destined both for the construction and interior design sectors and for the energy sector. The integrated fire prevention plan of Susa Valley aims to cover fuel management costs over time, while promoting economic, social and environmental sustainability.

## Technical implementation

The PRE-FEu project was launched in 2020 to reduce the impact of large fires in the forests of the Upper Susa Valley. The integrated fire prevention plan covers the forested area of the Upper Susa Valley (about 26,300 ha) and a pilot area in the Lower Susa Valley (about 1,000 ha). The plan integrated these three elements in its interventions: forest ecosystem services, fire-fighting support measures and economic sustainability. It included 35 types of preventive infrastructure such as shaded fuel breaks, strategic fuel management areas, and pyrosilviculture, to increase the resistance of forest stands in large blocks (> 10 ha), and reduce fuel in the wildland-urban interface. Preventive green infrastructure was installed and maintained to reduce flammability by altering fuel levels, structure and connectivity in the understory and canopy through variable retention cutting, prescribed burning and rotational grazing. These treatments have been designed and implemented in areas where fire behaviour can be altered by mountain topography and changes in vegetation flammability.

### Type of measure

Risk management: prevention and restoration



### Type of economic incentive

Productive infrastructure



### References

PSR 2014-2020: Operazione 16.2.1, Azione 1 Bando 2019 – PRE-FEu (Prevenzione degli incendi per le Filiere del Legno). 2020. Consorzio Forestale Alta Val di Susa (in Italian, some parts in English and French).

Dalle ceneri dei boschi della Val Susa nasce un bosco resiliente. 2023. SorgeniaUP (in Italian).

### Contact

[cfavs.it/it-it/servizi/](https://cfavs.it/it-it/servizi/)

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Municipal forest after the preventive intervention. Source: University of Turin

The economic sustainability of the interventions has been achieved through economies of scale (thanks to joint forest management) and the use of harvested wood for high-value products and bioenergy, securing sustainable local wood supply chains.

### **Administrative implementation**

PRe-FEu project was coordinated by the Forest Consortium of Upper Susa Valley (CFAVS in Italian). The main territorial actors in the area of activity (municipalities, associations of forest owners, livestock associations, etc.) participated in the development of the integrate fire prevention plan. The implementation of the plan has significantly increased cooperation between local, regional and national public institutions. The activities of the PRe-FEu project focused on large public properties to plan its interventions, involving private smallholders when the relevance of their plots was high.



*Construction of a mountain hut with pine timber from preventive interventions. Source: University of Turin*

The integrate fire prevention plan was subjected to an econometric analysis of fuel management practices and the effectiveness of suppression of extreme wildfire events. The analysis used data collected in representative Mediterranean countries on the types and costs of forest fuel management and treatment, the amount of EU funds invested in fuel management and post-fire rehabilitation, the annual budget allocated to firefighting training, and the official costs of firefighting agencies.

### **Financial implementation**

PRe-FEu was a project funded by the Rural Development Programme of the Piedmont Region. PRe-FEu had a budget of €374,000, of which €74,800 (20%) were co-funded. The project earmarked 4% of the water charge paid by residents to finance the integrate fire prevention plan through a payment for ecosystem services mechanism. The business plan was the single most relevant aspect of the integrate fire prevention plan in order to obtain fundings, particularly from European Regional Development Fund and private donors.



**60% of salvaged timber  
was used for high-value  
products**

PRe-FEu carried out activities to maintain the local timber industry by removing and recovering burnt logs from the forests of the Susa Valley. The salvaged timber was used by the local cooperative *La Foresta di Susa*. 60% was used to produce highly valuable products and 40% for energy production. One of the cooperative's flagship products is a picnic table with benches made of Scots pine salvaged from the 2017 fires. Using the salvaged wood prevented economic losses of the forest interventions and increased the visibility of the project. A marketing campaign was organised to raise awareness of the use of salvaged wood from local fires.

It increased sales of the salvaged wood picnic table tenfold compared to ordinary picnic tables. Another iconic product was a mountain hut built with wood harvested in preventive interventions. Scots pine reclaimed timber was used for the internal structure and external cladding. These uses gave visibility to the project.



## Requisites for success

### Integration

Through PRe-FEu, CFAVS has improved its foresters' understanding of forest fires as a significant risk to local forests and human activities. The organisation is now seeking synergies to implement the integrate fire prevention plan through self-financed timber harvests and public funding. CFAVS staff have been trained in these activities.

### Continuity

CFAVS, with its expertise in forest management since 1953, will ensure the full implementation of the plan in the coming years. PEFC chain of custody certification will maintain the commitment of the project partners. The importance of revenue from timber sales varies from intervention to intervention, depending on the characteristics of the forest and its accessibility. In any case, most of the interventions will need other sources of funding to reach economic break-even. Currently, the main sources are regional/European funding and private crowdfunding companies interested in supporting the plan.

In 2023, the PRe-FEu integrated fire protection plan for the Upper Susa Valley is being tested and it will be replicated in other areas of the Piedmont Region.



### Specialisation

The project involved bibliographic resource activities and testing of innovative silvicultural practices, providing training for foresters to plan preventive interventions without the use of external resources.

**PRe-FEu integrated fire protection plan to be replicated in other areas of the region**

### Collaboration

PRe-FEu is a collaboration between the CFAVS, municipalities, the fire service, local sawmills and research institutions to improve forest management, prevent fires and safeguard ecosystem functions. It has been funded by the EU Rural Development Programme, LIFE project calls and private investment. Municipalities and the *Unione Montana Valle Susa* are raising awareness of forest fires and implementing local prevention practices. Firefighters were involved in the preparation of the fire prevention plan, specifically supporting the mapping of the available fire suppression resources and infrastructures. Private forest owners with plots located in relevant areas made them available to expand intervention areas. This activity has been very time consuming but very rewarding and has helped to change public attitudes towards forest management for wildfire prevention. Forestry companies were involved both in carrying out the activities (together with CFAVS loggers) and in producing local wood products. Their innovative design enabled the project to reach out to a wider audience and to build consumer and public support for preventive activities.