

Wildfire Risk Assessment Break-out group

This session was organized in two parallel groups. The information below includes the summary of both groups.

At the beginning of the meeting, the FirEURisk approach to a comprehensive risk assessment was presented, as described in the scheme below:

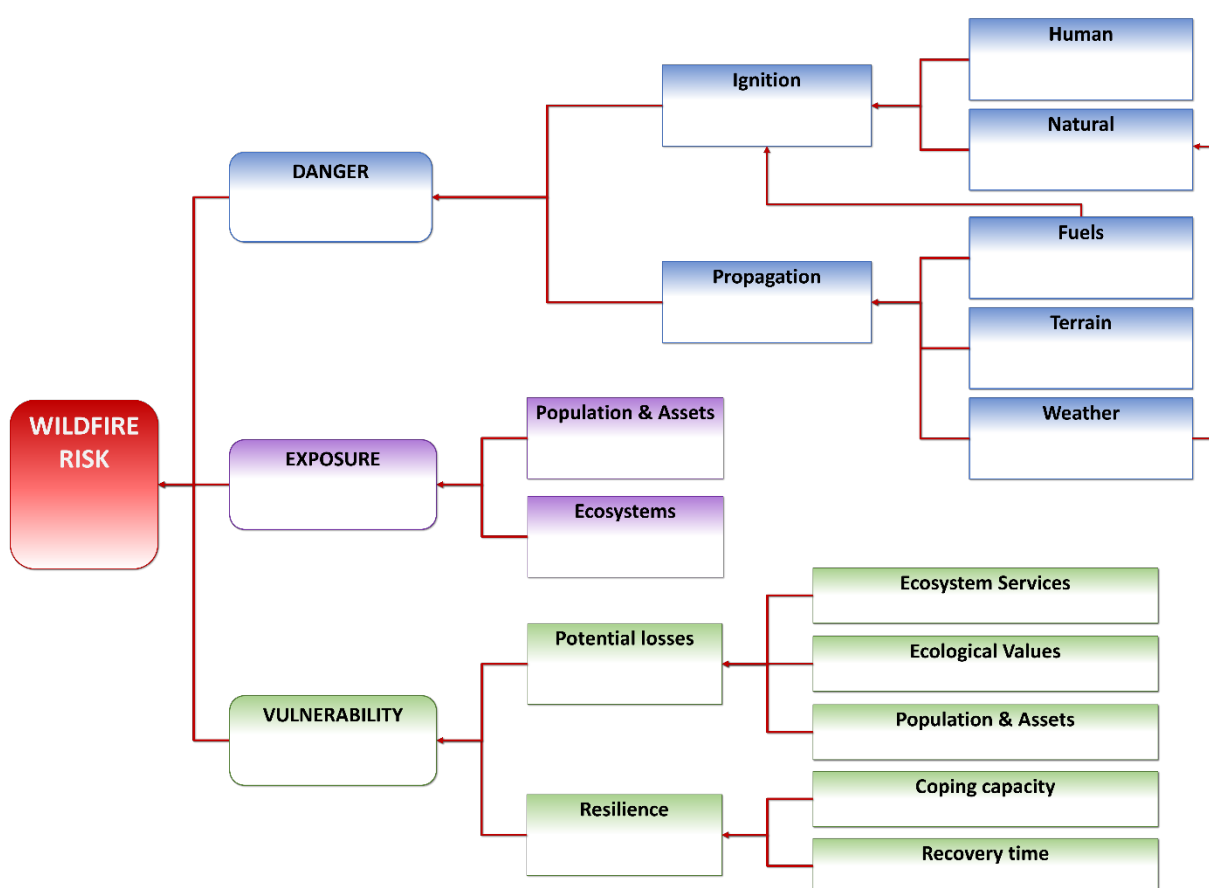


Figure 1: FirEURisk Wildfire Risk Assessment Scheme

Building on that scheme, projects were asked to specify their fields of work in relation to it, to depict linkages and opportunities for integration and synergies; this was done using sticky notes. The contributions are listed below, following the scheme from left to right:

Wildfire Risk

The Advanced Fire Analysis Network (AFAN)¹ offers a hub to all participants to share best wildfire assessment knowledge, experiences and science between agencies and countries and aims at creating a European wildfire expert knowledge-sharing network focused on fire risk analysis.

1 Danger

Overall, *several* aspects of fire danger were discussed during the workshop:

- The **analysis of past event**: The CIMA Foundation for example works on developing wildfire hazard maps on past burned areas and relates it to topography and indexes among others.
- **Methodologies** for assessing fire danger which are for example harmonised by AFAN (see above).
- The **dissemination of fire danger information** to citizens (e.g. via smartphone and explained by the example of Sweden).
- The impact of climate change on **future fire danger** (analysed for example in Sweden)
- The development of **datasets related to fire danger**: The MYRIAD Project² for example develops stochastic event sets for multi-hazard events.

1.1 Ignition

Work on the analysis and assessment of ignitions can be differentiated according to the following categories:

- Work related to the **detection of ignitions**: For example, TREEADS³ develops detection technologies while The SILVANUS project⁴ develops ignition models and engages with citizens for detection purposes. Sweden for example makes use of satellite data for detection purposes and the SAFERS project worked on advancing the use of (thermal) satellite data for detection purposes⁵. Some governmental entities are working on public awareness, informing the people about fire risk with the objective of decreasing human ignitions.
- In terms of natural origins, **lightning forecasts** and **ignition probability assessments** are implemented in Sweden. SAFERS (RISC⁶) integrates linking forecasts and real-time lightning information into their assessments. FirEurisk developed research on methods to reduce human caused ignitions.

¹ <https://fireanalysisnetwork.eu/>

² [MYRIAD-EU About MYRIAD-EU - MYRIAD-EU \(myriadproject.eu\)](#)

³ [Homepage - TREEADS Project \(treeads-project.eu\)](#)

⁴ [SILVANUS | Integrated Technological and Information Platform for Wildfire Management \(silvanus-project.eu\)](#)

⁵ Contact: Links Foundation, [SAFERS PROJECT - Home \(safers-project.eu\)](#)

⁶ [Home \(riscognition.com\)](#)

1.2 Propagation

In terms of propagation, two main aspects can be distinguished: the assessment of fire propagation and its use for fire (risk) management.

- **Fire spread propagation** is addressed for example by the SILVANUS project by the means of fire spread forecasts. TREEADS works on fire and smoke propagation assessments. Sweden tries to use the WISE (water system information for Europe) in its GIS system. FirEURisk has a research line on some modes of dynamic fire behaviour that are associated to extreme wildfire events, namely eruptive and junction fires.
- In terms of the **use of fire propagation assessments**, the Pau Costa Foundation works on pre-identifying strategic management zones.

In addition, ongoing work related to the integration of fuel, terrain and weather information into assessments were discussed:

1.2.1 Fuels

FirEURisk developed a methodology to classify vegetation and fuel models and proposed a 1km² fuel map for Europe. Collaboration in obtaining more detailed data and the validation of the proposed approach to all regions of Europe. Fuel models are advanced by SILVANUS. TREEADS works on a fuel characterisation based on spectrometry and LiDAR. The SAFERS project (LINKS Foundation) developed a 10m Fuel Map from Sentinel 2 data that is updated seasonally. FIRE-RES⁷ addresses fuel characterisation and distribution over different types of landscapes. MSB, the Swedish Civil Contingencies Agency, has developed a Fuel Map for Sweden.

Other activities encompass for example the development of a methodology for mapping high hazard touristic areas at municipal level (WUITIPS project⁸, Elsa Pastor, Universitat Politècnica de Catalunya). In FIRE-RES, mechanical operations to assess fuel load reduction options as well as approaches to prioritise locations of fuel treatment options are developed. On this regard, for example, the Ministry of Environment of Greece is working on forest fire prevention by lessening the fuel biomass through logging activities.

1.2.2 Terrain

Aspect not addressed by represented projects/authorities. This variable is usually tackled directly using existing Digital Elevation Models at different scales.

1.2.3 Weather

SAFERS developed a fire weather forecast, and MSB has also its own Fire Danger System.

⁷ [FIRE-RES - Innovative solutions for fire resilient territories in Europe - FIRE RES](#)

⁸ [WUITIPS | UCP Knowledge Network: Applied knowledge for action \(europa.eu\)](#)

2 Exposure

The analysis of exposure patterns can be grouped into work on population and asset exposure. However, most projects work on both aspects.

The WUITIPS project is developing a standard framework for fire exposure assessment at plot scale. The Universitat Politècnica de Catalunya furthermore develops a global wildland-industrial interface global map. SAFERS project makes use of EU population and infrastructure data for assessing exposure and their API access (Riscognition solutions). More broadly, it developed exposure extraction approaches from open data (population, assets, land cover) (Links Foundation).

TREEADS develops an earth-observation-based fire exposure toolkit and the MYRIAD projects maps critical infrastructure at EU scale. FIRE-RES develops approaches on identifying locations with expected values at risk and approached to manage the Wildland-Urban Interface (WUI).

3 Vulnerability

3.1 Potential losses

3.1.1 Ecosystem services

Not addressed by the represented projects.

3.1.2 Ecological values

The Pau Costa Foundation works on the recognition and quantification of ecosystem services provided by (fire) flocs.

SILVANUS develops a forest map.

3.1.3 Populations and assets

The WUITIPS project develops a quantitative vulnerability self-assessment tool on a plot scale. The French Office Nationale des Forêts works on characterization of the Wildland Urban Interface according to density and compactness to evaluate the risk.

3.2 Resilience

3.2.1 Coping capacity

SAFERS (Links Foundation) developed a chatbot for citizen awareness and engagement of citizen volunteers.

3.2.2 Recovery time

SAFERS developed an on-demand mapping of post-fire vegetation/recovery mapping as well as tools for the characterisation of burned areas (Links Foundation). The MYRIAD project makes use of night

Remaining challenges in assessing wildfire risk

In a second step, participants were asked about the remaining challenges. The following aspects were discussed:

- There is a need to have a **standardised definition of “Fire Risk” vs “Fire Danger”**, as some of the actors involved in fire management are not used to this nomenclature. It was mentioned that it is crucial to define fire risk assessment (components) to get the respective terminology accepted by all stakeholders.
- FirEURisk project proposed a methodology to integrate the various components of fire risk going beyond the fire danger concept that reduces the risk of fire mainly to weather conditions. The proposed approach was accepted by the participants and no other proposal was presented.
- It is necessary to **reassess and weight the risk of agricultural fires vs. forest fires**.
- **Transferability of data between areas** should be strengthened.
- **Fuel mapping:**
 - o Need to have a common fuel map across Europe, and a **fuel mapping methodology independent of scale**. On this respect, FirEURisk has proposed such a methodology, but it should be assessed and adopted by the different actors.
 - o More research and data are needed regarding **live Fuel Moisture**.
 - o It would be necessary to include agricultural areas and low vegetation areas to the fuel maps.
 - o It would be useful to have fuel maps and models at a local or regional scale.
 - o Further improvements are needed in fire behaviour models.

Conclusion

FirEURisk has proposed a comprehensive wildfire risk assessment methodology. The approaches and data that are used for the calculation of the individual components can be found in the [respective publication](#). However, many projects and organisations work on advancing individual or several components of assessing wildfire risk. There is a potential to improve some of the components of the approach proposed by FirEURisk, through collaboration among the various approaches, namely with AFAN/FireAdapt. An initial overview of the respective activities has been developed above. Firelogue will continue to depict the risk assessment landscape, jointly with the wildfire projects and stakeholders.

In terms of the remaining challenges, Firelogue will explore to facilitate the sharing of information and results and the overall knowledge exchange related to the development of a standardised risk assessment approach and terminology.