

# EU Research and Innovation to support forest fire management

## EU R&I efforts from 1980 to 2020

In Europe, Forest Fire Research started slowly in the 1960s and 1970s and concentrated on the ecological role of fire. Its significant development at the European scale was only made possible by the creation of the EU Research Framework Programmes (FP) as the main instruments used by the European Union to implement its common science and technology policies. The first multinational programmes STEP and EPOCH were instrumental in starting pan-European forest fire research, with an initial focus on technologies such as fire modelling and automatic fire detection. More work followed under the Fourth Framework Programme (1994-1998) with projects addressing the impacts of wildfires as well as the ecological role of fire. Triggered by a sharp increase in the number and scale of forest fires, associated to social and economic changes as well as climate changes, the research started investigating other aspects of the forest fire problem from the elements of fire risk to the effects of the fires, and from fire behavior to fire suppression methods. This was complemented by research under the Fifth Framework Programme (1998-2002) into Earth-observation satellite technologies to enhance the development of forecasting, prevention, impact assessment and mitigation techniques. In this respect, the role of the Joint Research Centre (JRC) and in particular the set-up of the **European Forest Fire Information System** (EFFIS), is instrumental for providing accurate fire danger predictions while



providing daily updates on active fires and fire damages in Europe. In the most recent decades, from FP6 to Horizon 2020, and through the LIFE and Civil Protection Programmes, the EU has invested **103 million Euros in 56 forest fire-related research projects** in an array of fields (security, space, agriculture and forestry, environment, etc.) and with various instruments (large or smaller collaborative projects, fellowships, exchange schemes and networks, and SME measures).

# Highlights from EU R&I projects

- Extreme weather conditions are expected to occur more frequently in the future due to climate change, and wildfire severity will also increase.
- The length of the fire season will increase (starting from spring and extending to mid-autumn) as well as areas that will become more fire-prone.
- Management of fire-prone areas must take into account fire ecology to specifically manage fire-prone areas for various purposes including wood mobilisation, limiting land degradation, increasing ecosystem resilience, notably against a more severe climate, maintaining biodiversity and reducing fire hazard.

## Future research avenues on the wildfire problem



Future research under Horizon 2020 (2018-2020) will focus on innovative solutions, including ecosystem-based approaches, to reduce wildfire risk under new trends in climate, demographic and land use change. Actions shall contribute to develop an improved assessment of the changes in fire regimes, with focus on recurrence, intensity, spatial extent of forest fires and expansion of the fire-prone areas in Europe.

Research will also address the inter-relation of forest fires with other hazards that may be triggered by fire. New guiding references for forest fires risk reduction and sustainable forest management will help local decision-makers, private forest owners and urban/regional planners to make risk-informed decisions on the optimal adaptation options to maintain or create fire-resilient landscapes.

### Facts and Figures

- About **65,000 fires** take place every year **in the European region**, burning, on average, **around half a million Ha of forest areas**. Over **95% of the fires** in Europe are due to **human causes**.
- Approximately **85% of the total burned area** occurs in the EU **Mediterranean region**
- The total **burned area in the European Union in 2017** amounts **993,840 Ha**
- **In Portugal** wildfires burned **over 563,674 Ha** which represents about **56% of the EU total in 2017**
- In 2017, **242,066 Ha (24% of EU total)** of **Natura 2000 sites and other Protected Areas** burned
- **Economic damages** caused by wildfires every year, **between 2000 and 2011 in the 28 EU countries** are estimated ca. **EUR 2.9 billion**
- **Forest fire-fighting** represents a yearly budget of **EUR 2.2 billion** for EU governments and public agencies.

*sources: EFFIS and EU H2020 project Smart Fire Barrier.*

*NB: The numbers of burned areas are those of the areas mapped in EFFIS, which account for over 90% of the "real" numbers*