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GREENPEACE REPORT ON WILDFIRES IN PORTUGAL:
MORE THAN 80 YEARS OF DATA SHOW THAT THE COUNTRY MUST CHANGE

Executive Summary

by
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01 INTRODUCTION

The wildfire risk in Portugal has been increasing over the past decades, driven by various factors, some related to natural or physical conditions and others to socioeconomic, political, and organisational activities. Using statistical data on national fire occurrence and extent, available since 1943, and on climatic factors, such as vegetation cover and properties, population evolution, and administrative changes in the wildfire risk management system, we provide an overview of wildfires in Portugal and their evolution over the past decades. The long-term data are used to provide an **overall perspective** on major factors over these eight decades, **with greater attention to the period from 2000 to 2025,** for which more data are available.

More than 80 years of data show that the risk of large fires in Portugal is not a summer fatality.

02
OVERVIEW OF WILDFIRES IN PORTUGAL

Continental Portugal has an area of 89,015 km², which is mostly covered by vegetation that can support wildfires. The forest and pasture and shrubland areas have been increasing while the agricultural areas have decreased, since 1960. The three main tree species are Quercus suber, native to Portugal; Pinus pinaster; and Eucalyptus globulus. Around 90% of the forest and agricultural land is owned by private citizens or companies, and the properties are highly fragmented, with ownership often not clearly defined, making the management of parts of the territory ineffective.

The climate in Portugal is dominated by two major influences: the Atlantic Ocean and the Mediterranean Sea. The first promotes good productivity of vegetation and biomass growth, while the latter favours severe wildfire conditions. Due to climate change, Portugal has experienced the impacts of tropical storms and more frequent and prolonged heat waves in recent years, creating conditions for very large fires, some of which have resulted in significant loss of life and damage to natural and human-made resources.

Since 1943, the number of fires and the burned area have increased markedly. The number of fires increased from a few hundred before 1970 to more than 30,000 per year in the early 2000s, while in recent years it has remained at around 6,000-10,000 fires per year in the recent years; **the burned area also increased** from a few thousand hectares before 1970, to around 100 thousand hectares thereafter, with **some record years, such as 2017 when 540 kha were burned**.

One of the factors contributing to the increase in burned area is the **abandonment of rural areas and their conversion to urban settlements,** leaving fewer people available to manage the land and suppress fires in their early stages. On the other hand, the growth of urban areas, which frequently encroaches upon forested land, has exacerbated the wildland-urban interface, where people and fires meet, complicating wildfire risk management.

Significantly, in the past years, **since 2017, the number of fatalities caused by wildfires among the civilian population has overtaken that of the victims among the operational agents,** underscoring the risk of wildfires for all citizens.

Over the past decades, the wildfire suppression system in Portugal has undergone significant structural and organisational changes. The number of firefighters increased between 1950 and 1990 from 15k to around 42k, then decreased over the following two decades to around 30k. Recent numbers indicate that this decrease was mainly due to the reduction in volunteer firefighters, partially offset by an increase in the number of professional firefighters, which rose from 8k to around 13.5k, between 2013 and 2023. The percentage of professional firefighters increased from 13% in 2013 to 41.2% in 2023.

Since 2017, the National Republican Guard (GNR), the Forest Authority (ICNF), and the Portuguese Civil Protection Special Force (FEPC) have also increased their personnel numbers. Data from the Portuguese integrated system indicate that these forces represent 15,4%, 19,2% and 1,7% of the total system capacity, respectively. Firefighters still represent the majority the force, accounting for 63,7% of total capacity. Overall, the number of human resources in the Portuguese system has increased by 45% since 2017, as reported by the Portuguese Integrated Rural Fire Management System (SGIFR) and the Agency for Integrated Rural Fire Management (AGIF) (AGIF 2022, 2025, and SGIFR 2024).

Overall, the system and involved forces have also been accompanied by **improvements in coordination, equipment, and operational planning**. In addition, the number of courses and hours of operational training have increased reinforced to address the growing complexity of wildfires.

The organisation of risk management has improved significantly from 1980 to the present day, particularly in fire suppression capacity. **A great effort is devoted to the initial attack on the fire,** especially on high-risk days: normally, when a fire is detected, an airborne team is launched very quickly, along with at least three ground crews from the nearest fire brigades. As a result of this effort, the percentage of fire ignitions that escape the initial attack and grow to more than 1 hectare decreased from 50% in 1980 to 9% in 2006, but has since increased to approximately 15%. This increase reflects both the r**eduction in the number of fires and the increasing severity of fire-prone conditions,** as indicated by other risk-related indicators.

Portugal is fighting fires better but remains highly exposed to extreme wildfires and at-risk populations.

03
RELEVANCE OF THE LARGE FIRES

In Portugal, a fire is considered large if its area exceeds 100 hectares (ICNF, 2025), whereas in Europe large fires are generally defined as those exceeding 500 hectares (Tedim et al., 2020). Recent decades have been characterised by the emergence of **Extreme Wildfire Events (EWEs)**, **characterised by erratic behaviour, overwhelming intensity, and rapid spread that exceeds conventional control capacities** (Tedim et al., 2020).

Large wildfires are not just bigger: they are faster, more extreme, and harder to control.

Burned area shows a linear trend with the number of large fires (BA>500 ha). Some outliers in this trend correspond precisely to the four years that had the largest burned areas, indicating that EWEs, such as those that occurred in 2003, 2005, 2017 and 2025, can result in burned area values that are higher (or lower) than expected for a year with the same number of large fires.

The general perception **that wildfire risk has increased over the past decades is confirmed** by analysis of the areas burned by the five largest fires in each year in Portugal. Before 2003, only one fire with a burned area exceeding 10 kha was recorded, whereas more than 26 such fires were recorded in subsequent years. In 2017, the five largest fires exceeded all previous fires, and in **2025, the largest-ever fire, with a burned area of 68.5 kha, occurred**. The linear trend in the average area burned by the five largest fires each year shows an increase from 0.95 kha in 1980 to 9.73 kha in 2025.

It can be seen that, with very few exceptions, most of the major fires in 2017, 2022, 2024, and 2025 occurred in the Central and North regions of Portugal, confirming the trend observed in past years. It should be noted that in other years, large fires also occurred in southern Portugal, indicating that the risk of wildfires is present across the entire country.
The fire of **Pedrógão Grande**, which occurred on the 17th of June of 2017, was a landmark in the history of wildfires in Portugal due to its death toll of **66 persons** within a relatively small area and over the course of a **few hours**. The total area burned was 30,4 kha. Given its importance, this fire was analysed by two official committees (CTI, 2017; Viegas et al., 2017) and was the object of several scientific studies, namely Pinto et al. (2022) and Viegas et al. (2023).

This fire was caused by an electrical line that produced two ignitions, 3 km apart and separated by about one hour, resulting in very intense fire propagation under conditions poorly understood by the operational community. The interaction between the two fires, induced by an approaching thunderstorm, produced a fire acceleration similar to that observed in some previous large fires, as described in Raposo et al. (2018). The development of fire plumes resulting from fire spread was carefully analysed in Pinto et al. (2022). A field survey of the fire progression allowed estimation of a **peak rate of spread of 14km/h,** a record value for Portugal. The evolution of the fire was replicated in a laboratory experiment as reported in Viegas et al. (2023).
The report of Viegas et al. (2017) provides a detailed account not only of the fire spread but also of the accidents and of the impact of the fire on the houses and structures.

As a result of this fire, several changes were introduced to fire management and legislation in Portugal. Its profound impact on the lives of many citizens had a major effect of Portuguese society, facilitating the introduction of reforms and the enforcement of legislation.

In 2017, outside the normal fire season, a second episode of very large fires affected the country, producing a **burned area of around 240kha in a single day,** which remains a record for Portugal, and causing **52 fatalities** across several large fires.
A substantial fraction of tropical cyclones routinely undergoes extratropical transition as they move into mid-latitudes (Jones et al., 2003). However, events maintaining hurricane-force winds near Europe remain rare (Pérez-Alarcón et al., 2023). In certain cases, these transitioning systems can directly contribute to extreme wildfire conditions.

As in the case of the Pedrógão Grande fire, the National Assembly created a committee to study these fires, and a report was published (CTI, 2018). Similarly, the Government invited the University of Coimbra to prepare a report on these fires and related accidents (Viegas et al., 2019).
The largest fire in this series was initiated by an electric line in **Prilhão, Lousã,** and burned around 64.5 kha. This fire caused the death of **13 people**.
Besides the **fatalities and the extensive damage to the forest and the environment,** these fires caused significant losses to structures, namely residential houses and industrial areas. These fires were analysed in detail in the University of Coimbra's report.

In 2022 the meteorological conditions were very favourable for wildfire occurrence, making this a year similar to 2003, 2005 and 2017. The total burned area was 110 kha, with fires occurring in various parts of the country, particularly in the North and Central of Portugal. There were four fatalities. Given the relevance of the fires in 2022 the Portuguese government designated a group of scientists to analyse the conditions associated with the main fires that occurred that year (cf. José M. Mendonça e Cristina Máguas Coord., 2023).

The main fires that occurred in 2022 and were analysed in this report were: Serra da Estrela (24.3 kha), Murça (7.19 kha), Albergaria-a-velha (2.8 kha), the complex of fires of Ourém (5.9 kha).

In 2024, from the 15th to the 17th of September, a period of very warm, strong winds led to a series of severe wildfires in the Agueda and Aveiro regions, which burned 116.9 kha and caused 15 fatalities.

2017 and 2025 confirm the escalation in scale of large fires in Portugal.

The year 2025 was the fourth-worst since 1980, with a total burned area of 250 kha and five fatalities. Triggered by two successive heat waves in July and August, conditions were conducive to the spread of several very large fires that, within a few days, overwhelmed the capacity of the fire suppression system. For the first time, six fires with burned areas exceeding 10 kha occurred in the same year, including the largest fire ever registered in Portugal. This was the fire that started in Pióda̋o on the 13th of August and burned an area of 68.5 kha over eight days.

04
GOVERNANCE OF THE RISK

During the past decades, wildfire governance in Portugal evolved from a predominantly suppression-centred model towards a more integrated, though still incomplete, approach to rural fire risk. **This transition evolved in steps, often under pressure, a**nd usually after particularly severe fire seasons. For much of the twentieth century, fires were still regarded as a largely seasonal rural disturbance – serious, certainly, but mostly manageable through suppression and local response. The wider territorial dimension of the problem was poorly understood, and the response remained mainly centred on the fire suppression effort. **After 2003 and 2005, there was increasing recognition that the problem was structural** and linked to landscape organisation itself, not merely to operational shortcomings during difficult summers.

After 2017, the language of governance began to change more visibly. **The expression "forest fires" started to give way to "rural fires",** partly because the fires themselves no longer fitted neatly within forest boundaries. Agricultural land, shrublands, villages, isolated houses and transport infrastructure had become part of the same risk landscape. The distinction mattered politically because it implied that **the issue could not be treated solely as a forestry problem.** The reforms launched after 2017 were broader than previous ones, but they did not appear all at once.

The first turning point came with the reform package approved in October 2017: AGIF (Agency for Integrated Rural Fire Management) was created in 2018; the National Plan for Integrated Rural Fire Management (PNGIFR) was approved in 2020; the National Action Programme (PNA) followed in 2021; and the legal framework of the SGIFR was consolidated later that same year. **This sequence shows that the shift towards integrated fire governance was gradual, legislatively layered and still unfinished.**

Nowadays, many of the st**ructural conditions that favour large fires remain largely unchanged. Some may even worsen over the coming decades.** Landscape transformation occurs slowly, especially in territories marked by depopulation and weak economic activity. Prevention measures are difficult to sustain politically due to the implementation and maintenance costs and because their effects are often invisible when they succeed. Suppression, by contrast, remains immediate, visible and publicly scrutinised.

Climate change has become an unavoidable factor in discussions of wildfires in Portugal. **Extreme weather alone does not explain the scale of recent disasters.** Severe fire behaviour usually emerges from the **interaction between atmospheric conditions and highly combustible landscapes** shaped by **decades of abandonment and fuel accumulation. In this sense, climate change intensified an already vulnerable territorial structure rather than creating the problem from scratch** (Parente et al., 2024).

Climate worsens the risk, but fire thrives in abandoned and fuel-heavy territories.

Eucalyptus plantations generate much controversy in Portugal's wildfire debate as the species became symbolically associated with large fires, especially after 2017, and remains at the centre of disputes involving environmental organisations, forestry interests and political actors. **Eucalyptus can contribute to severe fire behaviour,** particularly when poorly managed or integrated within highly continuous fuel landscapes. Yet major fires also occur in shrublands and unmanaged pine areas. In many regions, **fuel continuity and land abandonment appear to be more decisive than the presence of a single species alone.** Even so, eucalyptus continues to be associated to broader tensions regarding forestry models, economic priorities and landscape management in rural Portugal.

Over time, Portugal developed a large and increasingly sophisticated suppression system. **Prevention evolved more slowly.** Fuel management programmes, prescribed burning and landscape planning expanded gradually, although implementation remained uneven across the territory.

After 2017, criticism of the suppression-centred model intensified. Several studies and official reports have argued that operational reinforcement alone cannot compensate for accumulated territorial vulnerabilities under extreme climatic conditions (CTI, 2017; Viegas et al., 2019). Yet, **shifting political and financial priorities towards long-term prevention remains difficult**, **partly because successful prevention is far less visible than emergency response.**

Cooperation between Portugal and Spain gained particular prominence as wildfires intensified across the Iberian Peninsula. Shared ecological conditions, cross-border landscape continuity and increasingly similar fire-weather patterns created strong incentives for joint action, not only in emergency response but also in research, planning and policy learning. The most relevant forms of this cooperation are examined below.

Despite increasing cooperation, Portugal and Spain continue to approach wildfire governance through somewhat **different institutional models**. The Spanish system is more decentralised, with substantial responsibilities held by autonomous communities, while Portugal maintains a comparatively centralised structure. These differences occasionally complicate coordination, particularly in operational procedures and decision-making. **Even so, the broader trajectory clearly points towards greater integration, largely because both countries increasingly face similar wildfire risks, especially in cross-border zones.**

The main challenges facing Portuguese wildfire governance are increasingly linked to **landscape transformation and climate adaptation.** Fuel management around settlements may reduce local exposure, but maintaining resilient landscapes across large rural areas is far more difficult under conditions of ageing populations, weak economic activity and continuing abandonment. Another challenge **concerns the balance between emergency response and long-term prevention.** Large fire seasons still generate **political pressure for immediate operational reinforcement,** while prevention measures tend to yield slower and less visible results.

At the same time, **extreme wildfire behaviour** increasingly challenges assumptions that most fires can always be suppressed safely and effectively under severe conditions. Discussions around **coexistence with fire-prone landscapes, community preparedness and territorial adaptation** are therefore becoming more central to wildfire policy in Portugal. Much of the difficulty lies in the fact that wildfire governance depends not only on firefighting systems, but also on broader demographic, economic and climatic processes that evolve over decades rather than political cycles.

05 CONCLUSION

Portugal has been, **over the past decades, one of the European countries most affected by wildfires**, as measured by annual burned area relative to the country's area, and in some years, it was even the country with the largest area in all of Europe. Several factors contribute to this situation, as illustrated in this report: **climatic conditions, the organisation of the forest landscape and its lack of management.** Despite improvements in the fire suppression system and a reduction in the number of fires, **very large fires have become more frequent.** Since 2000, the years **2003, 2005, 2017 and 2025** were outstanding in terms of burned area and number of victims.

In Portugal, the **majority of the forest land belongs to private owners.** In large parts of the north and centre of the country, property is highly fragmented, rendering the economic exploitation of very small plots ineffective. In the south, although the climate is warmer, the vegetation cover and better management of larger properties help reduce the risk of wildfires. The **abandonment of agriculture and the displacement of the rural population to large cities** over the past decades have left fewer people available to respond to the initial attack, facilitating the spread of the fires. To overcome this lack of human resources for wildfire prevention and suppression, Portugal has established several agencies and services. In recent years, these agencies have worked with the population to increase awareness and have reduced the number of fire ignitions and mitigated their impact, while maintaining the use of fire in the landscape. Some programs, such as “safe villages and safe citizens” and “village condominiums”, help improve the preparedness of citizens and their settlements to face fires.

Without structural prevention, firefighting will continue to arrive too late.

In spite of these efforts and achievements, **we unfortunately cannot expect the problem of wildfires to be eliminated or even significantly reduced in Portugal in the coming years. The pace of climate change may outpace the collective effort to modify the forest landscape and better prepare citizens for future challenges, unless wildfire risk management is given a higher national priority.**

06
GREENPEACE DEMANDS: MEASURES FOR A SAFER FUTURE

- **AMBITIOUS CLIMATE ACTION:**
  Portugal must meet its climate neutrality target by 2040 by phasing out its dependence on fossil fuels. A fair taxation system must be established for major polluters to fund landscape adaptation policies and enhance fire resilience.

- **STRATEGIC LANDSCAPE MANAGEMENT:**
  The government must commit to managing at l**east 1% of the total forest area annually** to break fuel continuity and act as an "exemplary manager" for private landowners. This **includes strictly limiting the expansion of unmanaged eucalyptus monocultures and promoting fire-resistant native species..**

- **PRIVATE SECTOR MOBILIZATION:**
  Given that around **90% of forest land is privately owned** and highly fragmented, the State must urgently complete the Simplified Land Registry Information System (*Sistema de Informação Cadastral Simplificado*) to define property boundaries and directly engage the private sector in risk reduction efforts.

- **INCLUSIVE GOVERNANCE TO REDUCE FIRE IGNITIONS:**

  To address the fact that 95% of wildfires are human-caused, the State must shift from a prohibition-based approach to a social prevention strategy. This involves effectively engaging farmers, forest managers, and pastoralists in regional planning, while providing technical support for legal agricultural burning and biomass reduction to minimize the risk of accidental fires.

- **ECONOMIC REVITALIZATION:**

  Rural management must become a rational economic choice. Landowners should receive **compensation for ecosystem services** with "positive external factors", such as carbon sequestration and fire resilience, to **combat rural abandonment,** which drives large-scale wildfires.

- **AN IBERIAN PACT FOR FIRE RESILIENCE:**

  Portugal and Spain must establish a permanent pact to coordinate cross-border fuel breaks, harmonize operational protocols, and act jointly within the EU to secure **long-term funding** to counter rural depopulation and boost fire resilience.

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