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# Portugal Wildfire Resilience Guide

Understanding wildfire risk,  
terrain and property  
preparedness in rural  
Portugal

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A practical, landscape  
based guide

## Know the Landscape

Understand how terrain,  
vegetation and weather influence  
wildfire behaviour

## Assess the Risk

Identify fuel types, slopes and  
exposure factors around your  
property

## Prepare your property

Apply practical measures to reduce  
risk and increase resilience

Based on publicly available wildfire, terrain, climate and land cover  
data including ICNF, IPMA, Meteoblue and satellite imagery sources



# Part 1. Understanding Broad Fire Risk



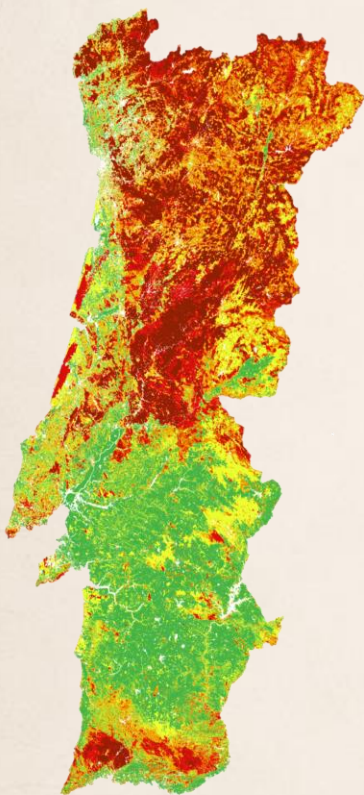
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**Wildfire risk is shaped by landscape, weather and vegetation patterns across entire regions. Publicly available maps and live weather tools can help you understand how risk changes over time and where large fires are most likely to develop.**

## Part 1: Assessing Broad Wildfire Risk

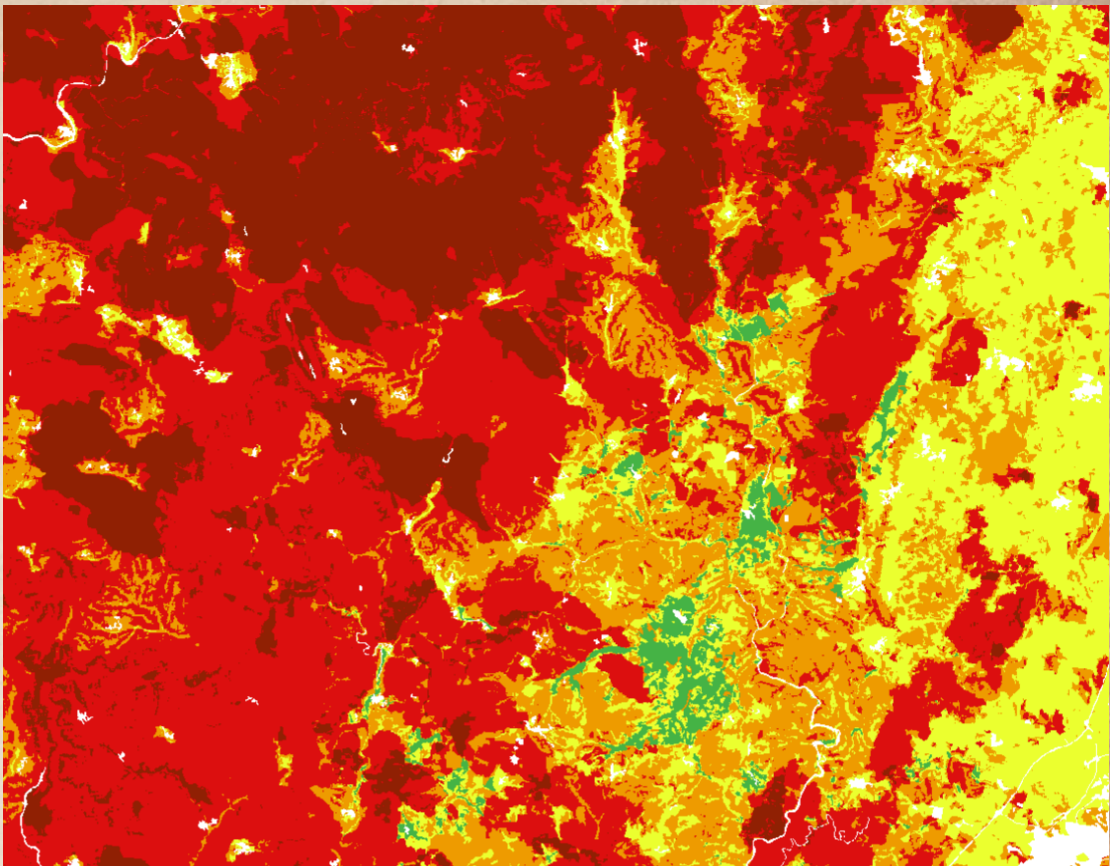


Scan the code to get  
the ICNF map

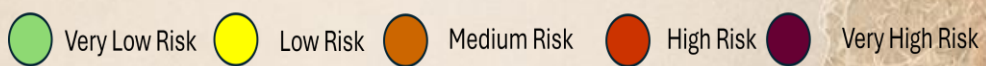


Locate your property on the ICNF wildfire risk  
map

- Identify which colour zone your property falls within
- Green and yellow zones generally indicate lower broad-scale wildfire risk
- Orange and red zones suggest increasing potential for large or intense fires
- A red zone does not guarantee disaster
- A yellow zone does not guarantee safety
- *The map should be used as a starting point for assessment not a prediction*
- Zoom out and examine the wider landscape 2–10 km around your property



ICNF Risk Key



Ask where a large fire could build momentum before reaching your property

Pay particular attention to:

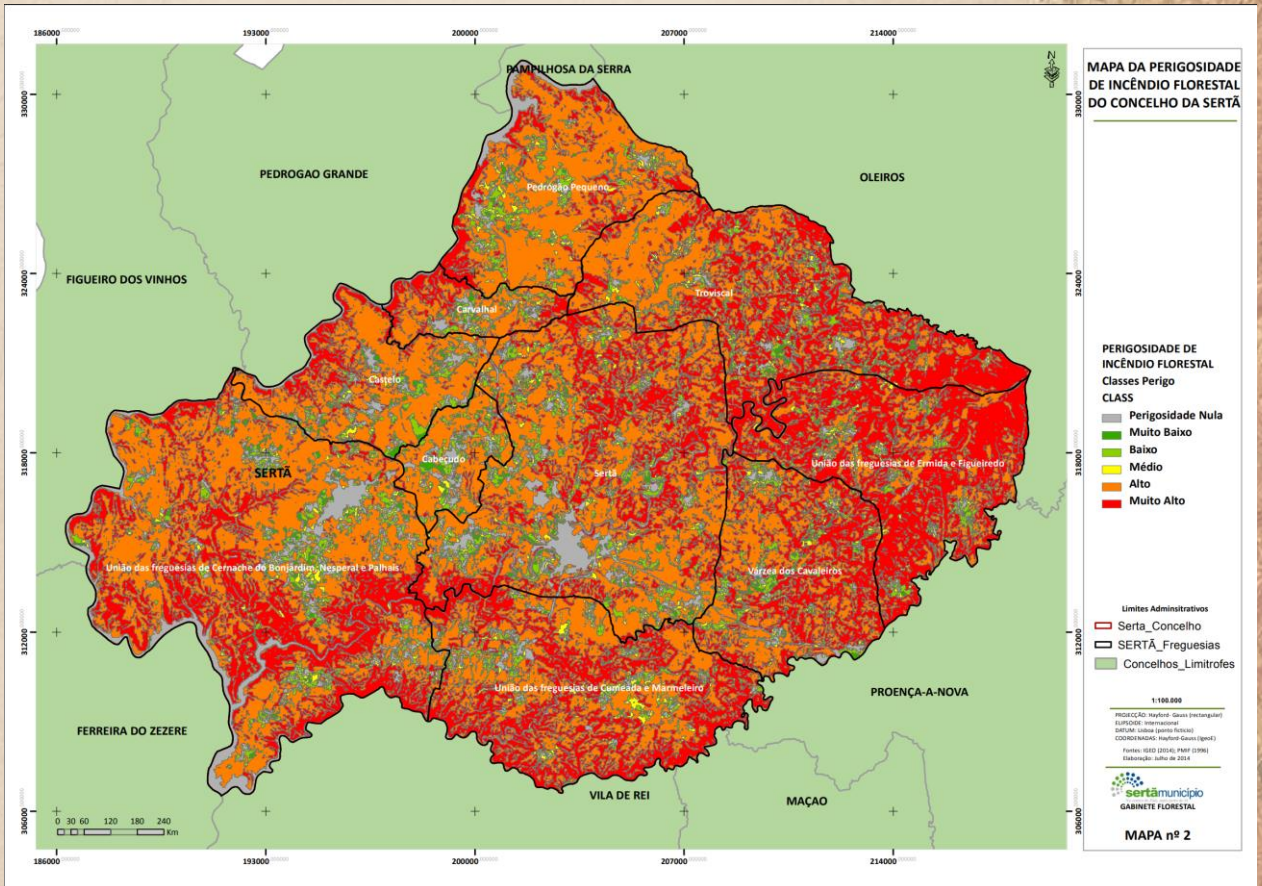
- Large connected forests
- Wind aligned valleys
- unmanaged vegetation
- Continuous vegetation to the east and north-east

Dangerous summer fire weather in central Portugal is often associated with easterly and north-easterly winds  
Consider whether your property is isolated from the wider fire landscape or connected to it through continuous vegetation and terrain

The landscape surrounding your property is often more important than the colour directly beneath your house

# Refine your assessment with local Câmara Maps

Some municipalities publish more detailed wildfire planning maps than the national ICNF layer. These maps can reveal local variations in hazard caused by terrain, vegetation, road networks and settlement patterns. Some Câmaras have few useful maps or they may be outdated and hard to interpret.



## What to look for

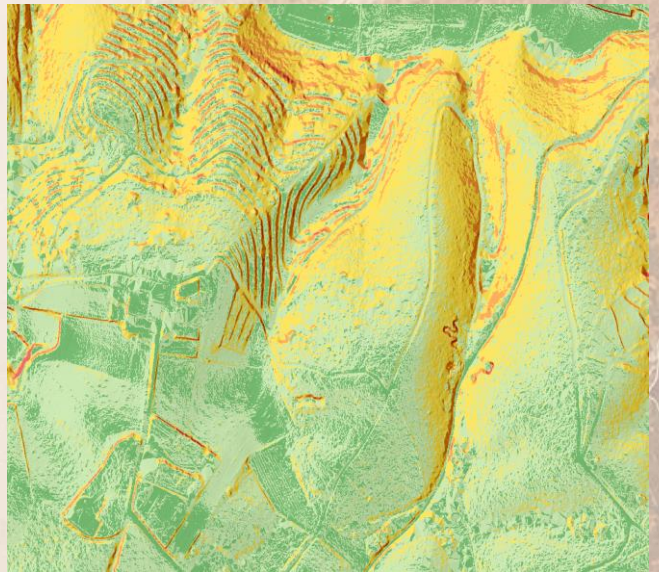
- Are you in a large continuous area of high hazard?
- Are there lower hazard corridors nearby such as river valleys, reservoirs or agricultural land?
- Does your property sit on a ridge, steep slope or valley side?
- How much high-hazard terrain surrounds your area?
- Are there obvious routes through which a large fire could approach?

Search online for: "[your municipality] PMDFCI"

## Part 2. Assessing Local Risk



Terrain contours



Slope analysis

How do terrain, vegetation and weather affect on the ground risk?

## 2.1 Slope

Fire spreads uphill faster

Is your property exposed above a slope?



Fire below a property on a steep slope can intensify rapidly. Pay particular attention to keeping slopes beneath buildings clear and well managed

## 2.2 Valleys

Valleys retain moisture and support greener vegetation

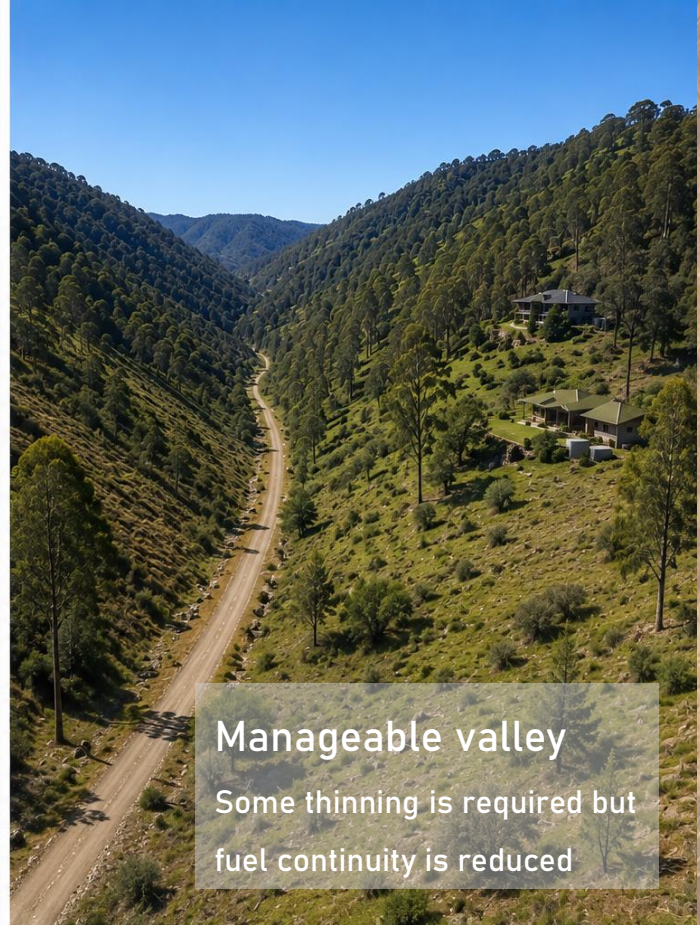
A broad, damp valley may reduce fire intensity and act as a partial fire break

Resilient  
valley



Manageable valley

Some thinning is required but  
fuel continuity is reduced



Narrow, unmanaged valleys can channel wind, smoke  
and fire uphill

A narrow, steep valley with dried fuel can bring a fire to  
you quickly

Dangerous, unmanaged  
valley

Dense, dry fuel

Limited access

Steep slopes

Fire can funnel uphill



## 2.3 Wind direction

Large summer fire events are often associated with hot, dry, easterly/ north-easterly winds

What lies in that direction?

Large, connected forest blocks or a mosaic of mixed use farmland and villages?



Scan the code and get climate data for your location

## 2.4 Fuel type and continuity

Small isolated patches of resinous trees and dry scrub are generally less dangerous than large, connected areas.

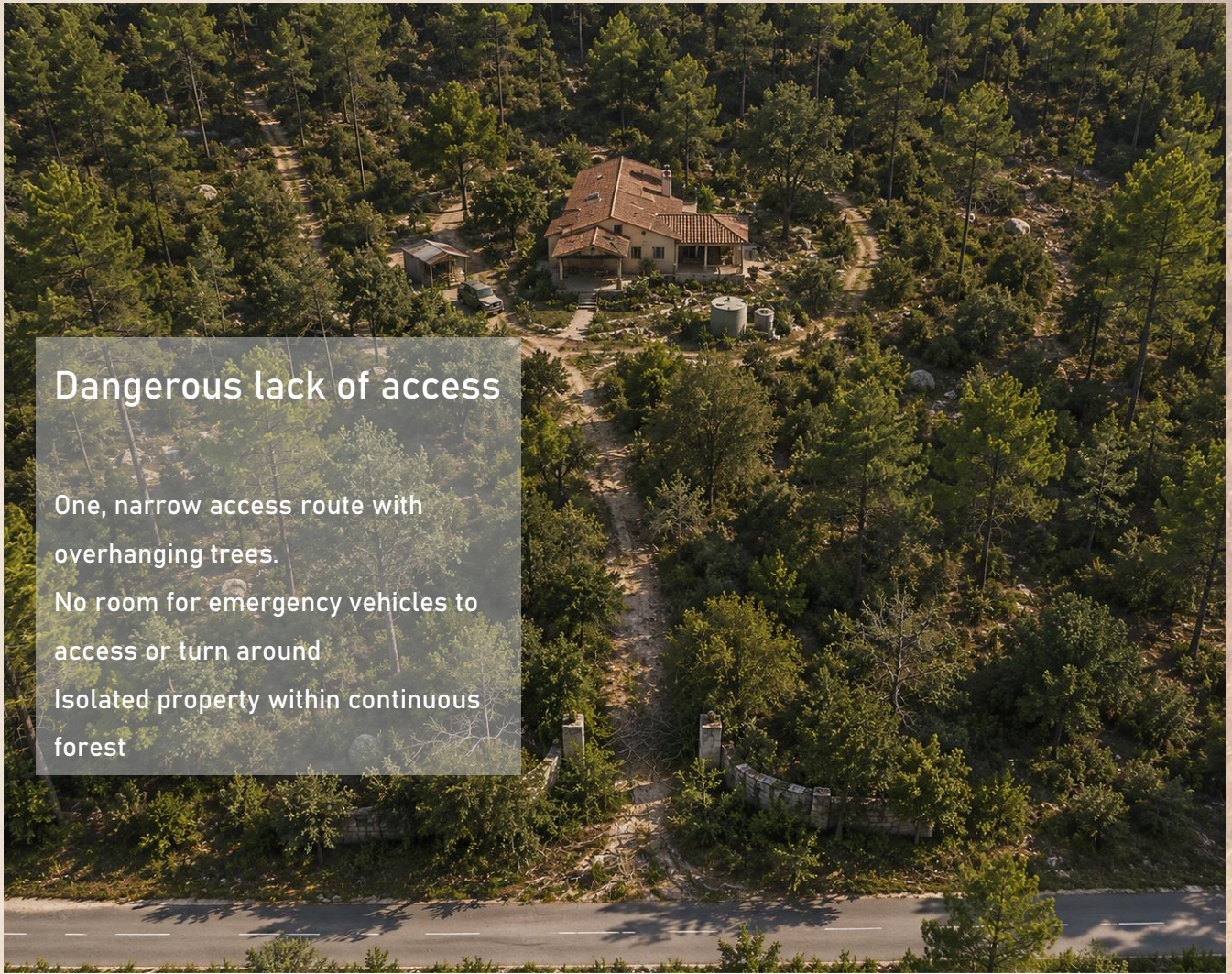
Fire builds momentum when uninterrupted.

What fuel types are surrounding your property and are there any natural or managed breaks in the vegetation?



*ICNF wildfire risk map with satellite overlay*

## 2.5 Access and Defensible Space



### Dangerous lack of access

One, narrow access route with overhanging trees.  
No room for emergency vehicles to access or turn around  
Isolated property within continuous forest



### Good access

Wide entrance clear of trees  
Room for emergency vehicles to access and turn around  
Improved defensible space

## 2.5 Defensible Space

Clearing the few metres directly around the house can be the difference between your home surviving or burning. Keep it lean, clean and green!

In Portugal a minimum of 50m managed vegetation is a legal requirement in many rural areas  
A managed 50m vegetation zone  
Improves firefighter access  
Lowers radiant heat exposure  
Slows the spread of fire

Although vegetation management rules exist, enforcement is uneven. Landowners should not assume neighbouring or abandoned land has been inspected or cleared.

Improved defensible space

## 2.5 Defensible Space - Land clearance

### Important

Vegetation clearance restrictions may apply during periods of elevated wildfire risk due to sparks from machinery and hot engines.

Always check current ICNF and Proteção Civil guidance before undertaking land management work.



#### Managed woodland:

- Reduced ladder fuels
- Lower crown fire risk
- Improved visibility and access

#### Unmanaged woodland:

- Continuous undergrowth
- Flames can spread into canopy
- More intense fire behaviour

*The aim is not to create a barren landscape, but a managed woodland that is healthier, safer and more resilient during extreme fire conditions.*

## 2.6 Embers

In many wildfires, embers are responsible for more structure ignitions than the main fire front itself

They can travel hundreds of metres ahead of the fire front

Clear leaves and pine needles from gutters

Shield vents with mesh

Remove fuel sources from near the house

Don't park a vehicle on dry vegetation near house

Vents are any small opening where embers can enter: roof vents, eaves, attic vents, air bricks, underfloor vents, extractor vents, gaps around roof tiles, and unscreened openings. Before evacuation, close windows, doors and shutters if safe to do so.

## 2.7 Water resources

Water should be viewed as part of a wider resilience system, not a guarantee of protection. Stored water can help maintain green zones, reduce ignition risk and support emergency response, but it is most effective when paired with reliable delivery systems such as gravity-fed tanks or independent petrol-powered pumps. Multiple water sources such as tanks, wells, boreholes or ponds can improve resilience during power cuts, pump failure or major fire events



A solar powered pump is used to fill a tank on the hillside to provide gravity fed water to the house and land. Rainwater is collected from the roof of the house. Ponds and overflow tanks would also add redundancy.

No single water source or delivery system should be relied upon in isolation.

## 2.7 Water resources – Sprinkler systems

Water can help reduce ember ignition close to buildings, but it should be seen as one layer of defence, not a guarantee of protection. The aim is simple: keep vulnerable surfaces, nearby vegetation and key access areas damp enough to reduce ignition risk if embers arrive.



The most reliable systems are usually the simplest. Elevated tanks can provide gravity-fed water without electricity, while pumps may depend on mains power, batteries, petrol or a generator. Before fire season, check how long the system can run, which areas it reaches, and what happens if the power fails. If evacuation becomes necessary, set any automatic or safely operated system before leaving, but follow official instructions and put personal safety first.

## Part 3. During Fire Season



Awareness, preparation and decision making  
during high fire risk conditions

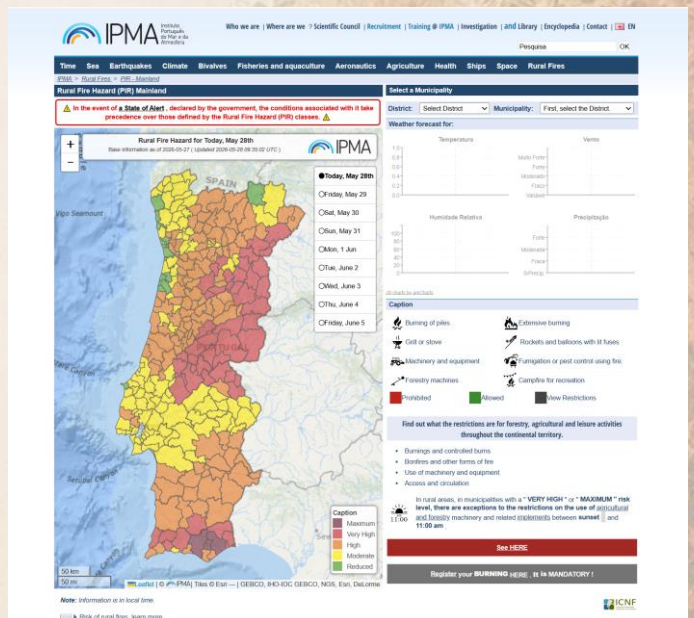
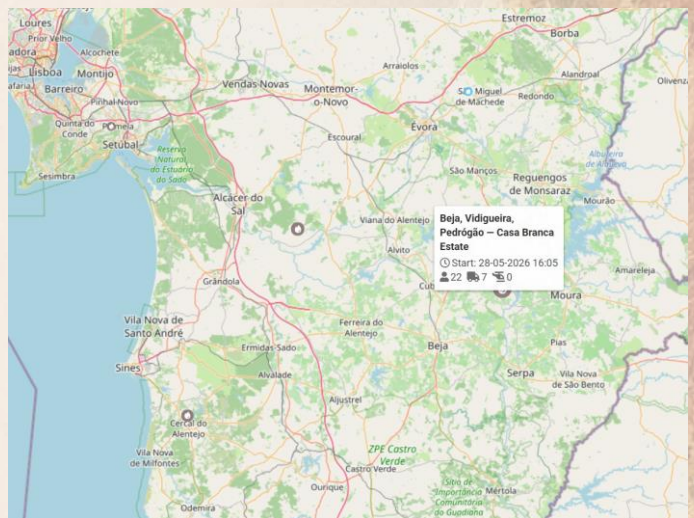
## Part 3.1 Situational Awareness

Situational awareness is one of the most important factors during a wildfire event. Conditions can change rapidly, especially during hot, dry and windy weather.



Fogos provides live information on active fires across Portugal. Check it regularly during periods of hot, dry or windy weather

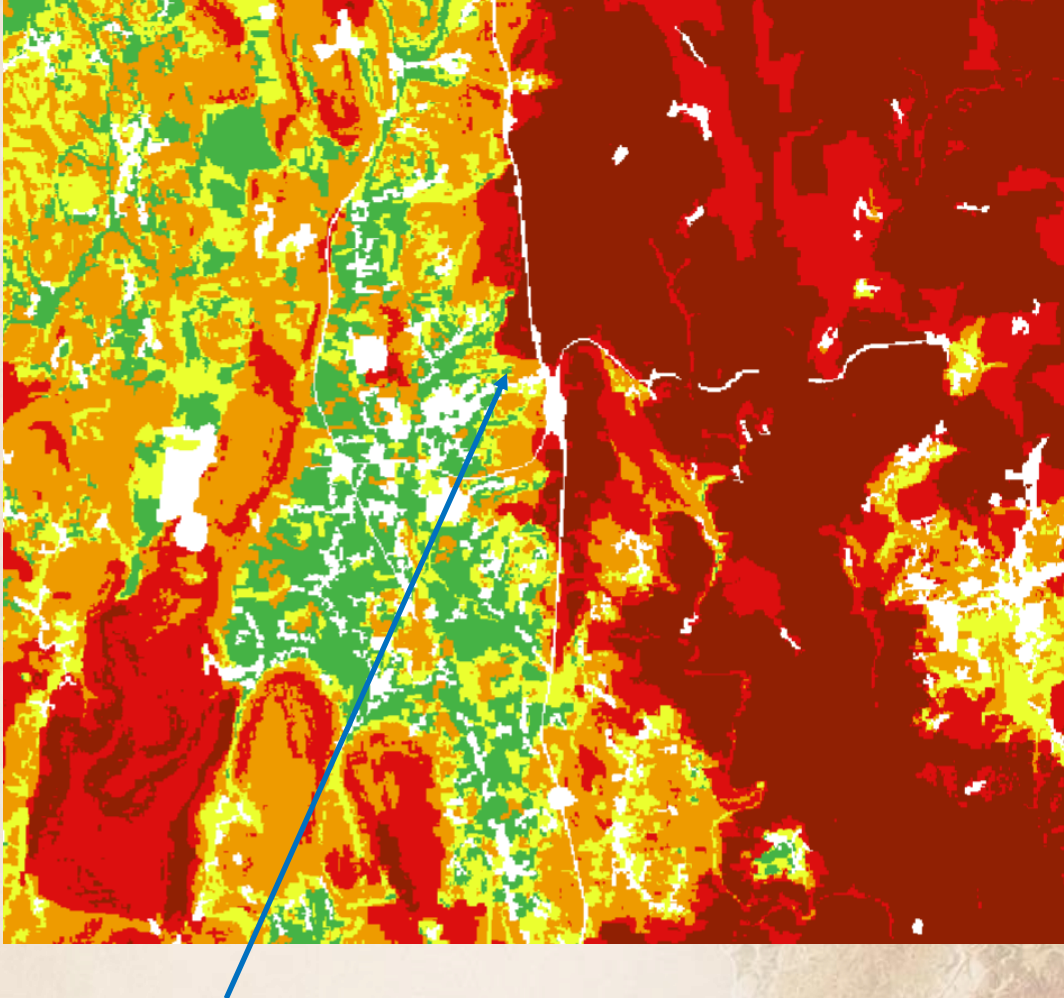
Situational awareness isn't just checking apps. It's understanding the landscape around you and recognising how conditions may change rapidly.



Scan this code and get the IPMA daily wildfire danger forecast for Portugal. The map combines temperature, humidity, wind, recent dryness, vegetation conditions and weather forecasts to estimate how easily fires could start and spread.

## Part 3.2 Weather and Wind

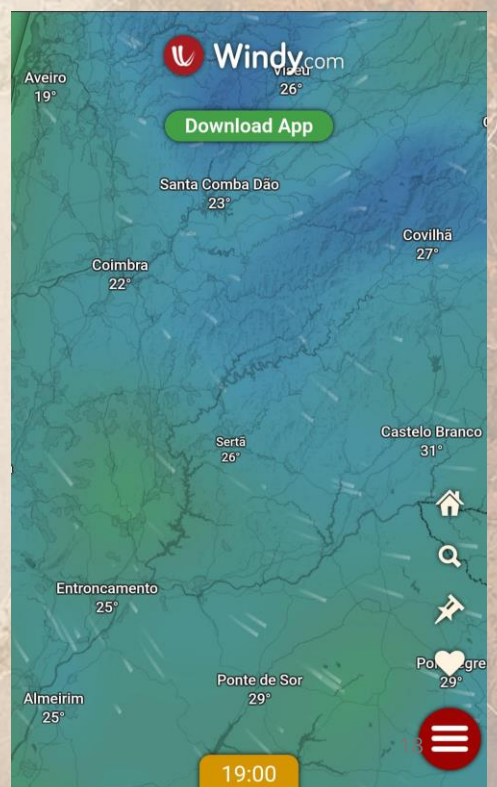
A property that is relatively safe on one day may be highly exposed on another. Wind, temperature and humidity can dramatically influence fire behaviour.



If you lived here a southerly wind would present very little threat. A hot, dry north-easterly wind could allow a large fire to approach through continuous vegetation and bombard your property with embers



Understanding the prevailing wind can help you identify the most likely direction of approach. The free Windy app provides real-time wind forecasts and is a useful tool for situational awareness during periods of elevated fire risk



## Part 3.3. Preparing for a High Risk Day

The best time to prepare is before smoke appears on the horizon.



- Have Phones fully charged
- Power bank charged
- Important documents gathered
- Medications packed
- Vehicle fuelled and facing outwards
- Wind and fire conditions checked
- Emergency alerts enabled
- Pet carriers and food ready

Know where you will go. Leave early. Have two or more evacuation routes planned. Don't wait until conditions worsen, smoke reduces visibility or roads become congested.



There is no single evacuation trigger that suits everyone. Deciding when to leave depends on factors such as age, fitness, mobility, local knowledge, weather conditions and your confidence in the available escape routes. Whatever you decide, avoid leaving the decision until the last minute

## Part 3.4. Animals

Many people say they would leave immediately if wildfire threatened their property. The reality is often more complicated when animals are involved.



- Identify transport options before fire season.
- Practice loading large animals
- Keep leads, carriers and halters accessible.
- Have a destination in mind.
- Don't wait until smoke is visible to load animals.



**The harder an animal is to move, the earlier you should start planning.**

If evacuation is not possible

- Identify the safest paddock or enclosure available.
- Remove unnecessary fuel around gates and fences.
- Ensure animals can access water
- A pre-identified community refuge, village centre or safer, open area may offer a better option than attempting a last minute escape

## Part 3.5. After the Fire front passes

The fire may have passed, but the job is not over.



The greatest danger may have passed, but your property may not yet be safe.

- Do not return until authorities advise it is safe to do so.
- Continue checking weather conditions. Wind can reignite smouldering vegetation and carry embers into previously unaffected areas.
- Inspect roofs, gutters, decks, sheds, fences and wood piles for hidden embers.
- Walk the property carefully, looking for smoke, heat or small spot fires.
- Pay particular attention to vegetation close to buildings and along fence lines.
- Continue monitoring throughout the evening and into the following day.

**Many houses survive the fire front, only to be lost to embers afterwards.**

## Part 4. Building Long term Resilience



**The goal is not to eliminate risk, but to create a landscape that can survive it**

## Part 4.1 What does Resilience Look Like?

Wildfire resilience is not built in a single day. It develops gradually through land management decisions made over months and years. The goal is not to eliminate risk, but to create a landscape that can survive it.

Every property is different, but the principles remain remarkably consistent: reduce fuel, improve access, retain moisture and avoid creating continuous pathways for fire. The most resilient landscapes are often productive landscapes, where vegetation is actively managed, water is valued and the land is regularly used.



## Part 4.2. Practical Steps towards building Resilience

Long-term resilience is built through repeated small improvements. The aim is to reduce fuel, retain moisture, improve access and create a landscape that is actively managed rather than left to become a continuous fire path.

### Reduce fuel

Thin dense vegetation, remove ladder fuels and keep grass, scrub and brambles under control. Focus especially on slopes below buildings, tracks, gates, fences and areas close to the house.

### Retain moisture

Healthy soil and green ground cover can help slow fire behaviour. Use ponds, tanks, swales, mulch, compost and deep-rooted planting where appropriate to hold more water in the landscape.

### Create productive landscapes

Olive groves, orchards, vegetable gardens, grazed areas and well-managed meadows can all help break up continuous vegetation.

Productive land is often watched, maintained and improved.

### Use animals where appropriate

Grazing can reduce fine fuels and keep vegetation under control whilst building soil fertility. Start small and build your skills and confidence.

### Improve access

Keep tracks clear, gates usable and turning areas available. Good access helps you, your neighbours and emergency services.

### Keep improving

Resilience is not one big job. It is an ongoing process of observation, maintenance and adjustment.

### Community

Some wildfire risks cannot be addressed by a single landowner.

Unmanaged vegetation, abandoned properties and fuel accumulation on neighbouring land may increase local risk. Where possible, work with neighbours, local communities and land management initiatives to build resilience at a wider scale.

**Small improvements made consistently over time can do more than rushed action when fire is already approaching.**

# References and Sources

## Primary Sources

- ICNF
- IPMA
- ANEPC
- Safe Communities Portugal
- Fogos.pt

## Scientific Literature

- Peer-reviewed wildfire research from Portuguese and international journals including MDPI and ScienceDirect.

## Mapping and Terrain Analysis

- Direção-Geral do Território (LiDAR, MDT and MDS data)
- [SNIG – Sistema Nacional de Informação Geográfica](#)
- QGIS
- OpenStreetMap Foundation



IPMA Live Weather Map



ICNF Risk Map



Fogos Live Fire Map



Safe Communities Portugal

# Acknowledgements

Wildfire resilience is not just about individual properties. It is built through communities sharing knowledge, experience and support. Thanks to the members of Off Grid Portugal and others who contributed ideas, feedback and real-world experience during the development of this guide.

## Feedback and Corrections

Wildfire science, land management practices and official guidance continue to evolve over time. Every effort has been made to ensure the accuracy of the information contained in this guide, but errors, omissions and differing local circumstances are always possible. Feedback, suggested corrections, additional resources and practical experiences from landowners are welcome and will help improve future editions. Information and links correct as of May 2026

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