

Portuguese Wildfire Challenge & Landscape Fire Governance Framework

12 Nov 2024

Tiago Oliveira, PT/AGIF, Chairman of BoD



AGIF

AGÊNCIA PARA A
GESTÃO INTEGRADA
DE FOGOS RURAIS



https://www.researchgate.net/profile/Tiago_Oliveira17



- *PhD and Forest Engineer*
- *Operations and research experience grounded on 25 wildfire seasons as risk manager, incident commander, aerial coordinator, hotshot crew or regular wildland firefighter*
- *Worked in Academia as Researcher, in private companies as Risk Manager and now as a Public Servant*
- *Specialized in the topics of wildland fire risk management and governance.*
- *Appointed by the Prime-Minister, in the aftermath of the 2017 wildfire season, to lead the creation of the Integrated Rural Fire Management System in Portugal. Chairman of the Board of the Portuguese Agency for Integrated Rural Fire Management since January 2019.*
- *Chair of the 8th International Wildland Fire Congress (wildfire2023.pt) and is, since September, a member of the BoD of the International Association of Wildland Fire (www.iawfonline.org).*

Agenda

1. The Portuguese Challenge > Outcomes > urgent actions ahead
2. The Landscape Fire Governance Framework

“We should stop striving for simple answers to solve complex problems”

In A diagnostic approach for going beyond panaceas, Ostrom (2007:1, Axelrod (2001))

The context in snapshot



Wildland fires in Portugal are common, but 2017 took a heavy toll, with over 100 fatalities and more than 500 thousand burnt hectares (6% of country)

Two independent technical commissions at the Parliament were brought in to look at what had happened and help define the path forward.

6,5 Mha (2/3 of country area) can sustain fire

One of the warmest in Europe, with an average high of 29°C.

16% d/yr with high fire danger
FWI > 38 (temp > 35, RH < 30% and wind, but usually moisture recover during night)

Mediterranean climate

Primary productivity is high

Large areas with **Urban Interface** | **Intermix**

97% of the Forest is **private owned**

Our 2017 pain points were

Lack of Prevention

- Agriculture abandonment leads to forest transition
- Ineffective fuel management
- Reduced management on forested areas
- No national risk awareness campaign

Poor Surveillance, Detection and Inspection

- Incapability for all year resource adjustment
- Disproportionately high number of yearly ignitions
- Limited inspection of plan enforcement
- Lack of wildfire meteorology experts

Ineffective Suppression, Mop Up and Post Fire Vigilance

- Communications network out-of-date
- Population unaware of best practices in case of wildfire
- Operatives have no knowledge of the staging area
- Difficulties in having a full picture of wildfire potential
- Lack of standard procedures for ICP location and access

Qualification and Op Standards

- Different organizations in the system have diverse qualifications
- Deterioration of the volunteering regime
- Limited number of professional operatives

Knowledge Gaps

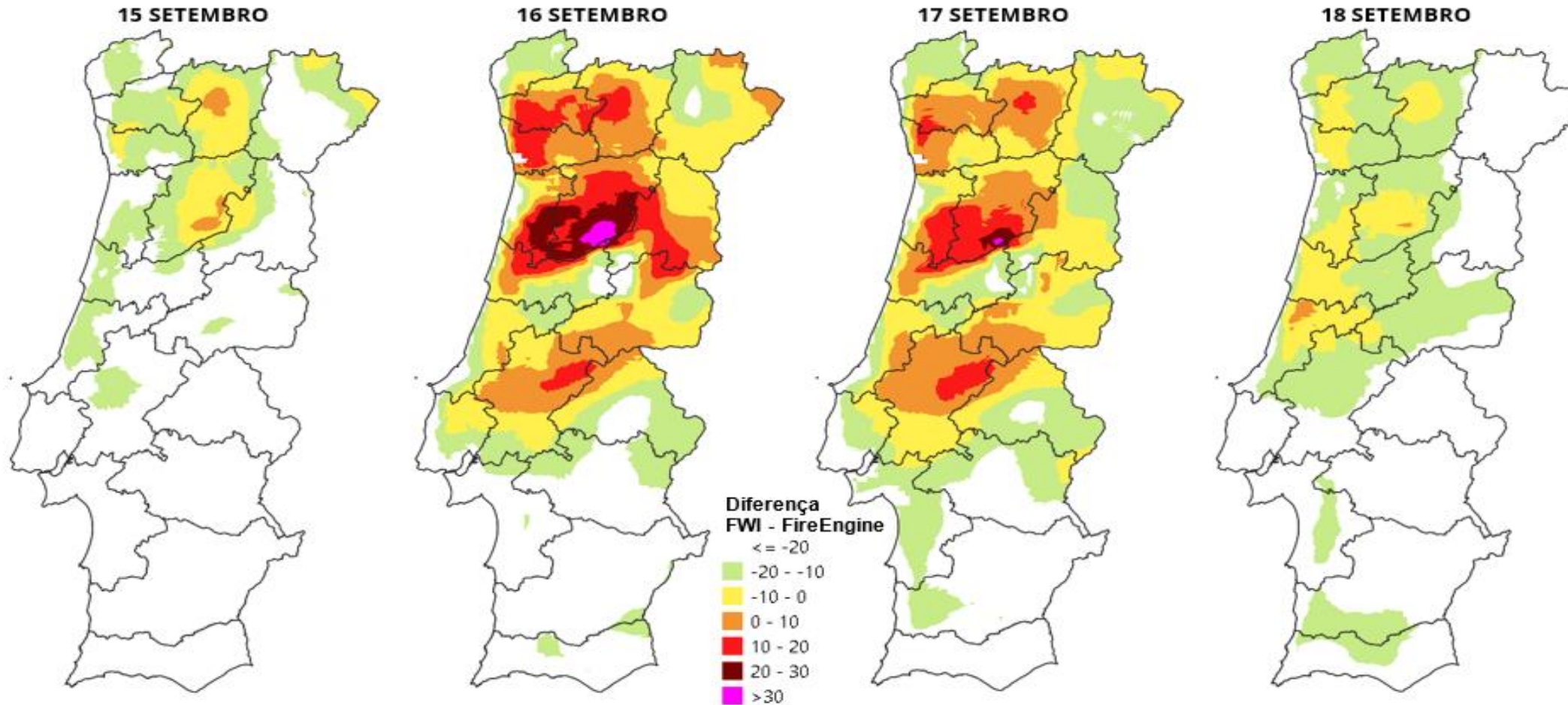
- Lack of a lessons learned process
- Decision making supported in individual experience
- Certification of professional skills to allow sharing of resources

Weak Governance

- Leadership instability of the national forest authority
- Gap between prevention and suppression
- Lack of a specialized command
- Hierarchical top-down vs polycentric governance
- Authority vs responsibility and networking of actors

2024 – Pyro-meteorology was available for early warning

Accumulated Daily Probability from a fire start to burn above > 500ha



2024

Multiple fires and smoke plumes in Portugal - September 17th, 2024 - Enhanced natural colors with IR overlay
Contains modified Copernicus Sentinel data [2024], processed by Pierre Markuse - Image is about 210 kilometers wide



People leave their houses as a wildfire approaches in Veiga, in the Águeda district, on Tuesday
Photograph: Pedro Nunes/Reuters



Firefighters work to extinguish a blaze outside Sever do Vouga, a town in northern Portugal that has been surrounded by fire for several days
Photograph: Bruno Fonseca/AP

Challenges ahead

Strategic

- Steering to keep direction, untangling complexity, uncertainty and ambiguity
- Institutional thrust and political culture
- Governance and political bodies

Political

- Aligning department goals and budgeting
- Fiscal, energy, agriculture and environmental policies cohesiveness
- Strategic leadership for endurance

Managerial

- Engagement and commitment to adjust procedures
- Flexible use of resource using best available knowledge vs empirical
- Accountability, monitoring and communication

And in UK...? How is wildfire problem framed?

Record number of serious outdoor fires tackled in England in summer 2022

Soaring temperatures meant number of naturally occurring wildfires was also highest on record



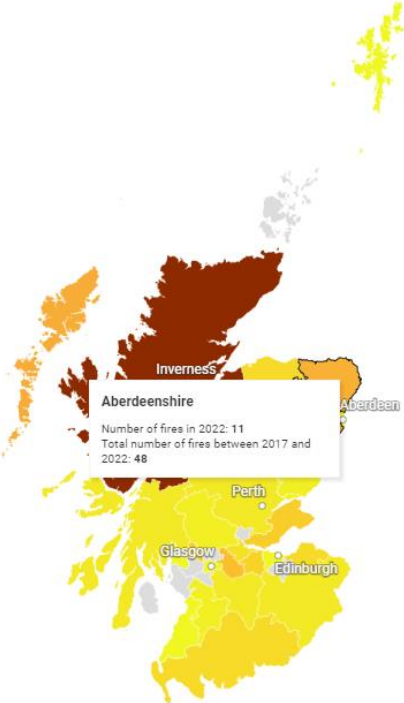
Gutted homes after a wildfire in July 2022 in Wennington, east London. Photograph: Dan Kitwood/Getty Images

Fire crews attended a record number of serious outdoor blazes in England in summer 2022 as scorching temperatures caused the number of naturally occurring wildfires to soar.

According to data obtained by PA Media under freedom of information requests, fire services recorded at least 24,316 wildfires in England from June to August. This is almost four times the 6,213 in the equivalent period in 2021, and about two and a half times the 9,369 for June to August 2020.



Wildfires over 1000 square metres in 2022



@ tiago oliveira 22/8/2022

Key concepts

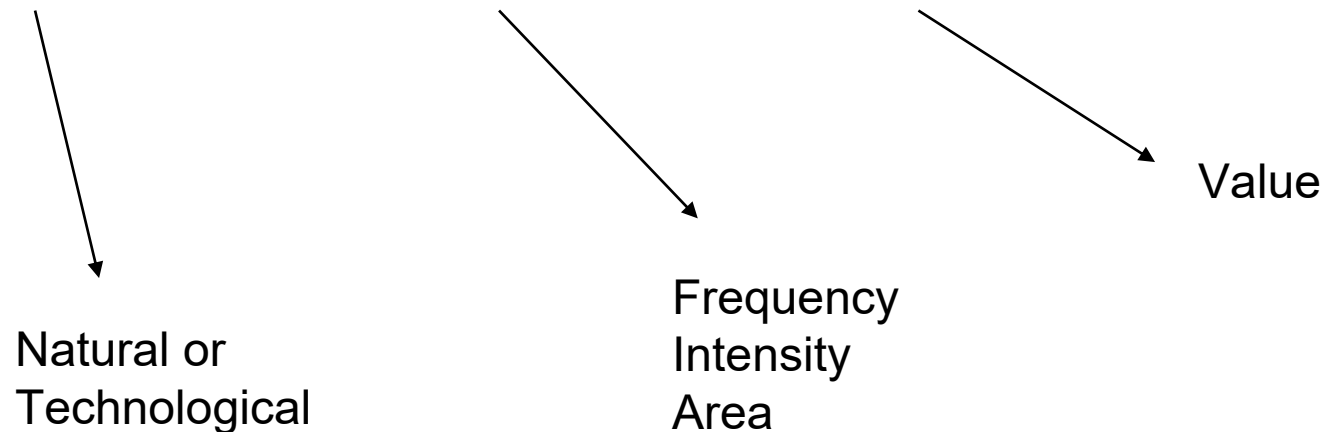
The terms **Hazard** and **Risk** are often used interchangeably, however, in terms of risk assessment, these are two very distinct terms.

Hazard is any biological, chemical, mechanical, or physical agent that is reasonably likely to cause harm or damage.

Risk is defined as the probability that exposure to a hazard will lead to a negative consequence

Risk = P (Hazard) x Dose (Exposure) x Damage

Thus, a hazard poses no risk if there is not exposure to that hazard

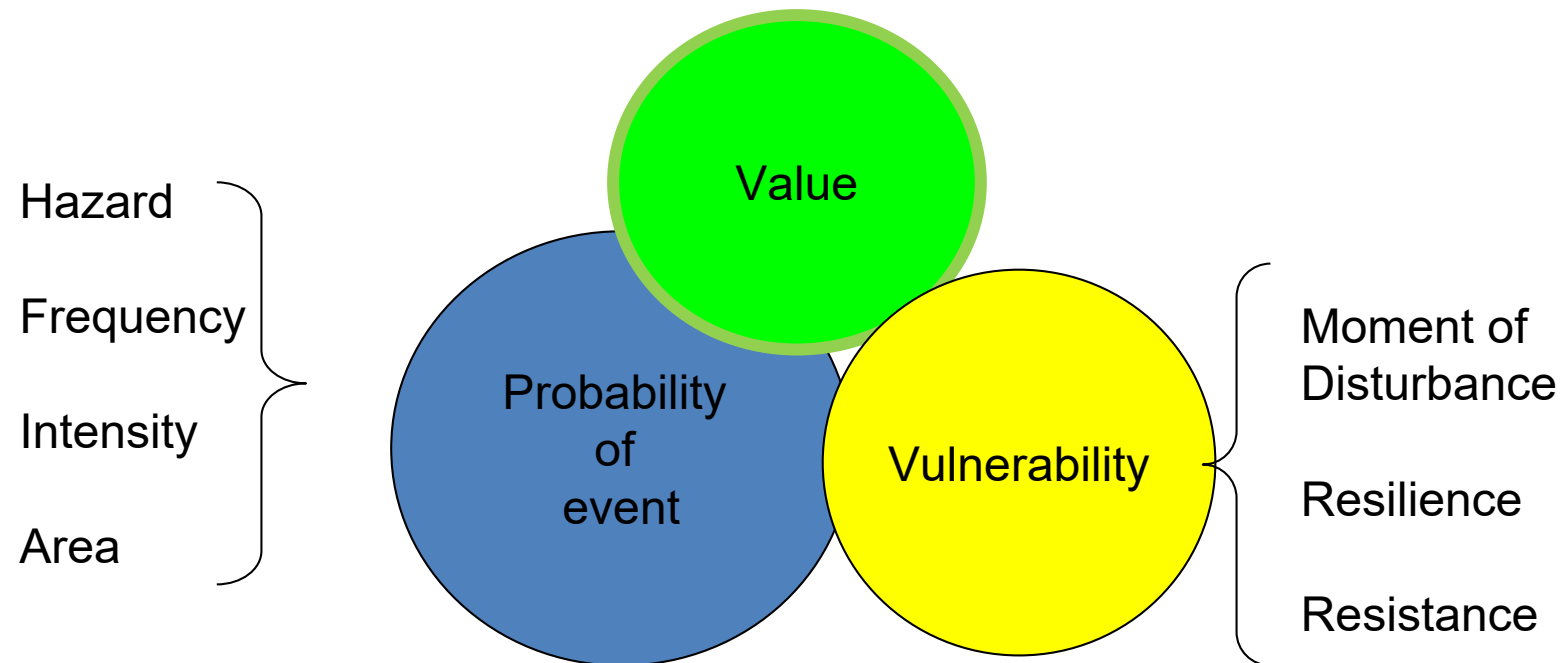


$$\text{Risk} = \text{Probability fire to start} \times \text{Fuel Load} \times \text{Value} \times \text{Vulnerability}$$

Hazard

Potential loss

$$\text{Risk} = \text{Probability (hazard)} \times \text{Value} \times \text{Vulnerability}$$

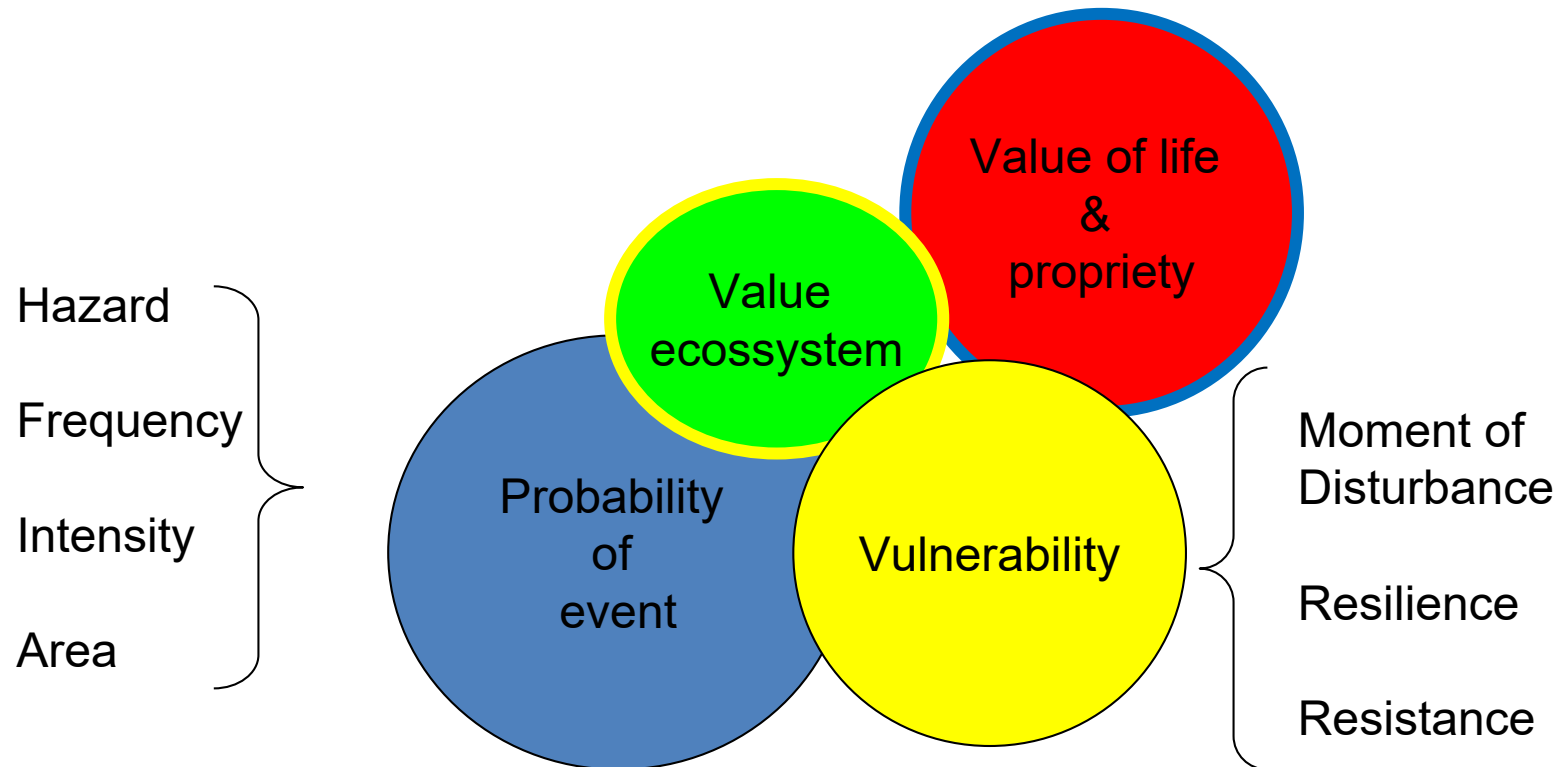


$$\text{Risk} = \text{Probability fire to start} \times \text{Fuel Load} \times \text{Value} \times \text{Vulnerability}$$

Hazard

Potential loss

$$\text{Risk} = \text{Probability (hazard)} \times \text{Value} \times \text{Vulnerability}$$



Value at risk



What we know

- **Governments are under pressure** as GW + WUI expose people + season losses grows
- Simple solutions, quick fixes and just fire suppression **do not work**
- Uncertainty, complexity, ambivalence, stakeholder asymmetric power and agendas puzzles agencies with **very diverse** operating scales, priorities and goals
- Facts and evidence do not necessarily conquer over **beliefs, perceptions and political agendas**

What we need to do

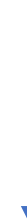
- We need to **reach policy makers and stakeholders** with clear and coherent language to keep heading
- We must **reach outwards**, opening channels with other areas of knowledge
 - Anthropology / Sociology / Economy
 - Landuse and agro-forestry / agriculture
 - Health and Insurance
 - Scenario Planning
- **Improve quality of decision making**
- **Strengthen wildfire risk governance and > 2 σ Integrated Wildfire Management System**

2017 Strategy: short term and long-term prioritization

1. Quick-fix: **Stop the bleeding & fix the bottlenecks**



- I. Protecting people (ensure evacuation)
- II. Reduce ignitions
- III. Manage fuel in high-risk areas
- IV. Reinforce and pre-deploy resources
- V. Knowledge in operational decision

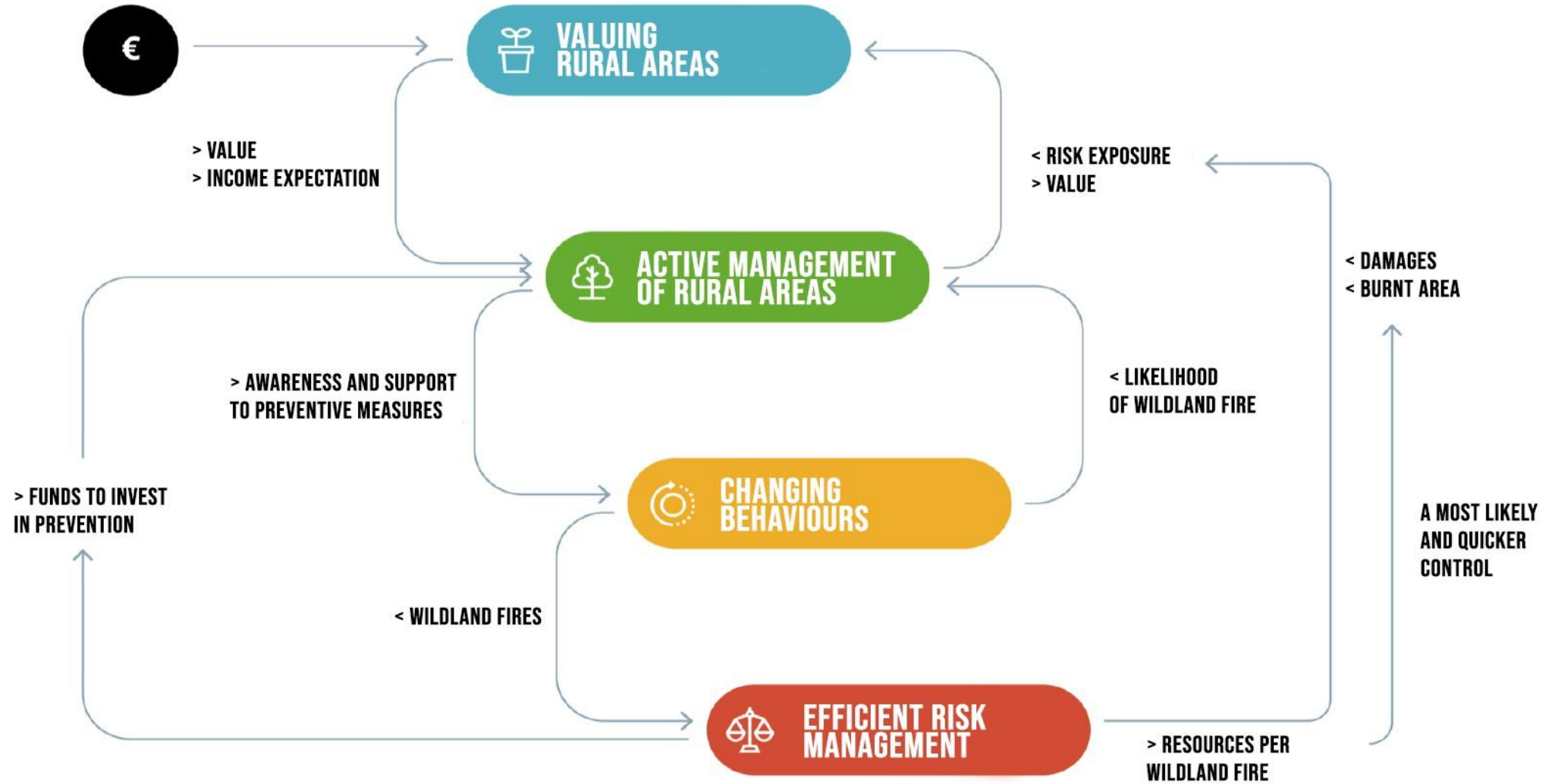


Risk
Communication

2. Design a National Cohesive Rural Fire **Strategy, Procedures** and **Projects**⁶

<https://www.agif.pt/en/planning-instruments-national-plan-for-integrated-rural-fire-management>

Theory of Change – National Rural fire Plan 2020-2030



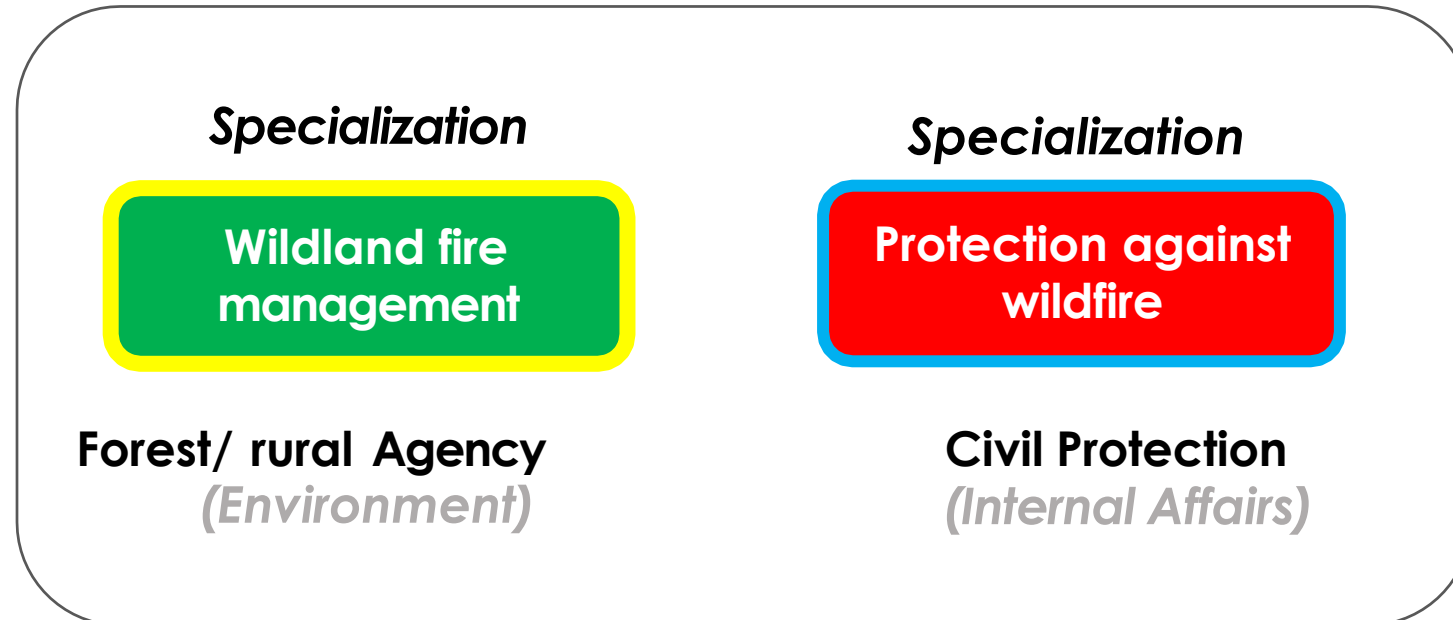
Building up an Integrated System of Fire Management

Growing Challenge between **Wildland Urban Interface & Forest Management**

Different problems demands the use of different approaches and tools

Clarified responsibilities and recognized the need for a professional and specialized workforce, and operational integration

Integration



The Planning | Architecture and Dynamics

Rejection of static planning in favour of annual review

- Planning is an interactive process that provides for communication at all levels of governance, incorporating all elements

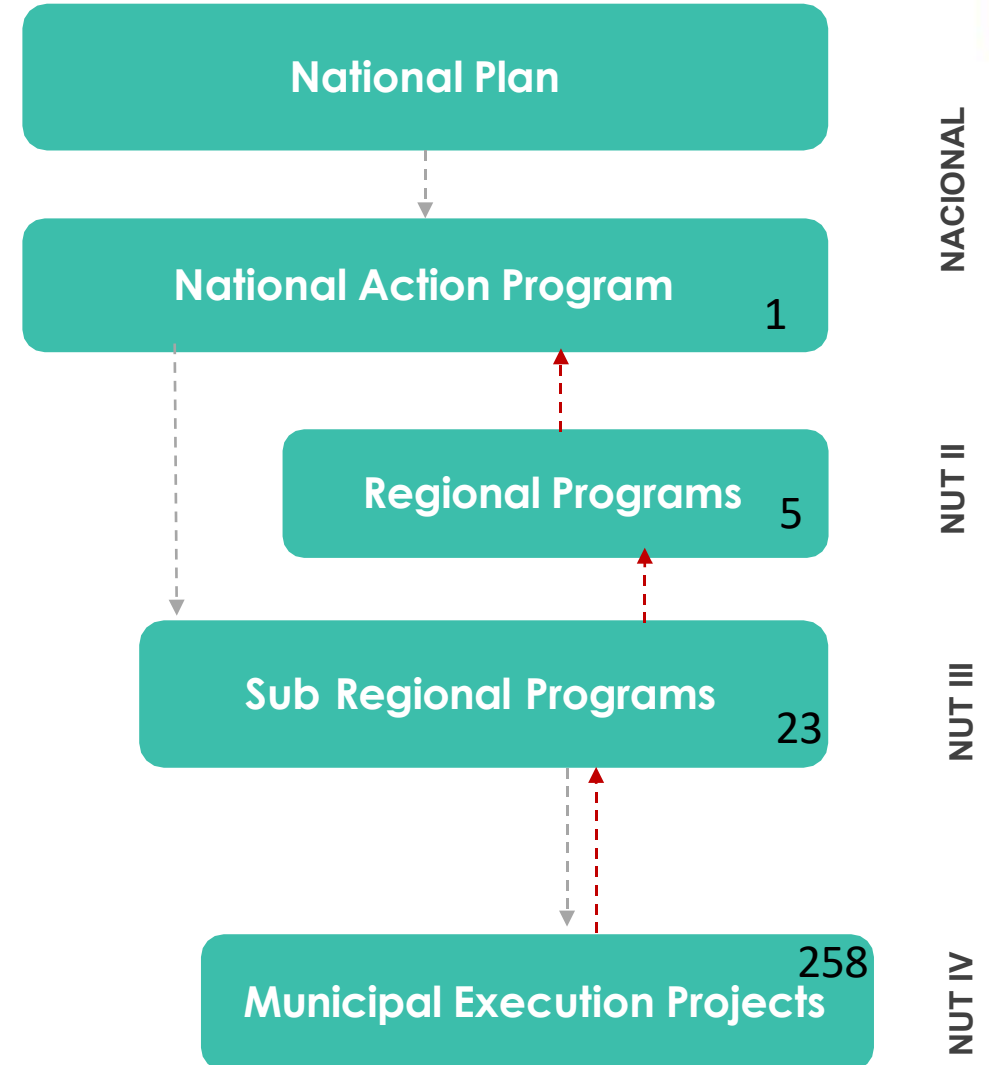
National Strategy with local execution, aggregated at intermediate levels

- The Plan defines the strategy, but execution is local and the measurement of impacts conditions the review processes, with these impacts being aggregated at sub-regional and regional levels

Cross Sectorial engagement

- Agendas and policies
- Institutional capabilities (skills and staff)

<https://www.agif.pt/en/national-action-plan>

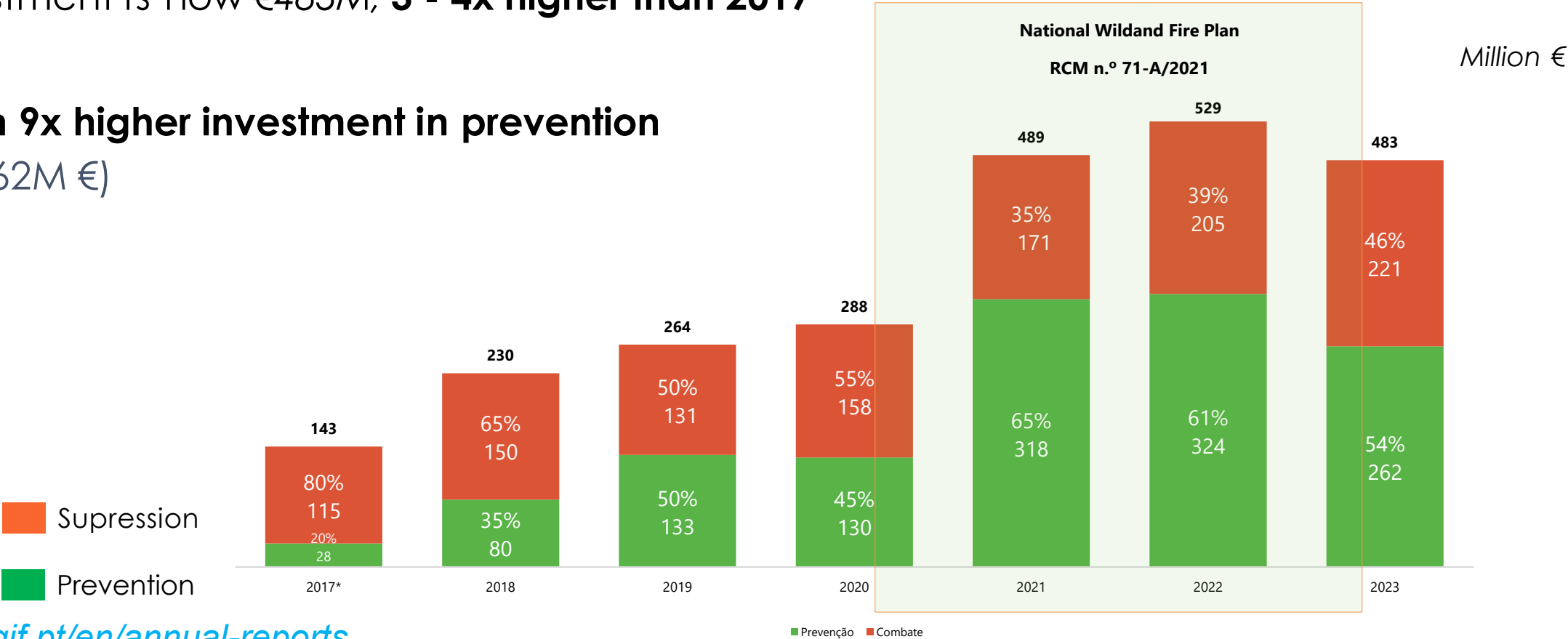


Paradigm Shift | Balancing investment

Investment in prevention is now higher, solving prior imbalances between prevention and suppression

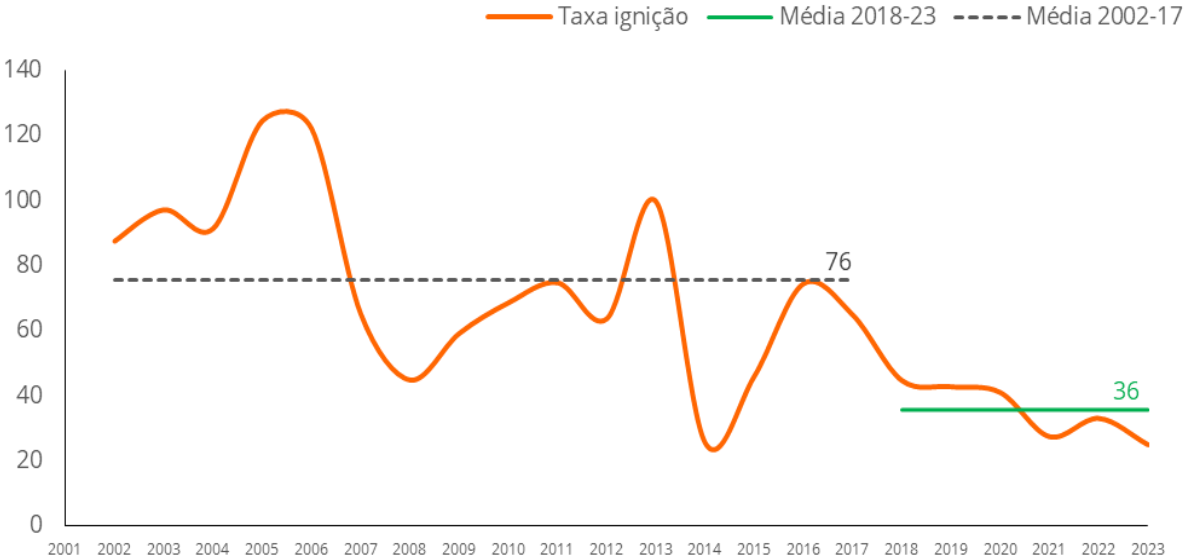
Total investment is now €483M, 3 - 4x higher than 2017

More than 9x higher investment in prevention
(28M to 262M €)



Between 2018 and 2024

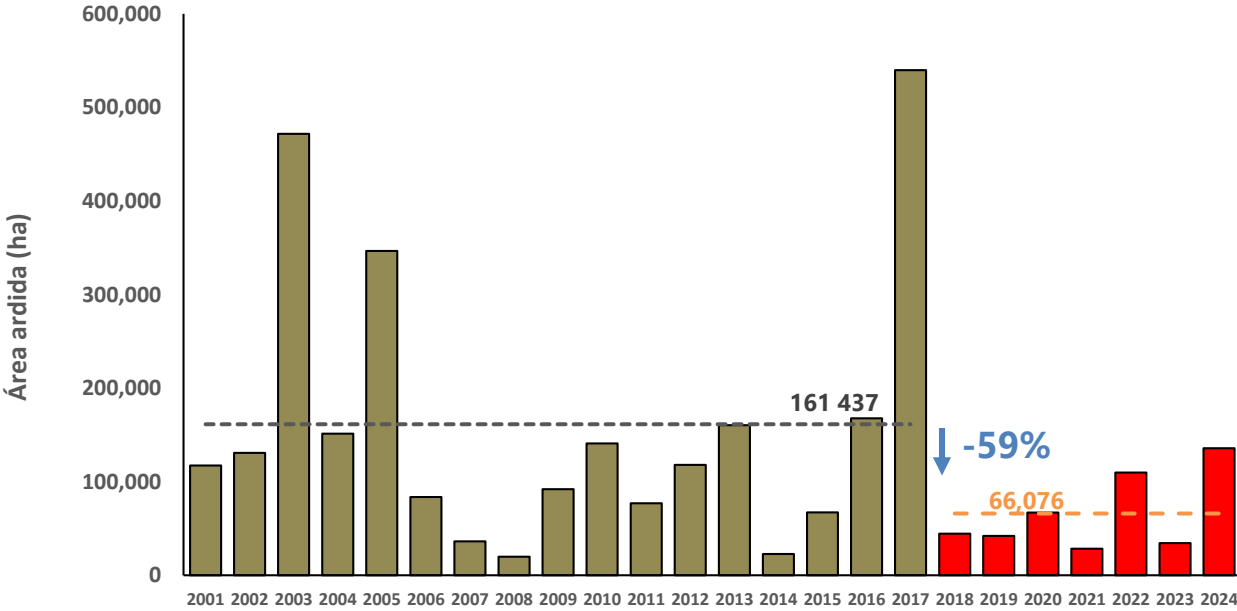
Halved the # wildland fires, including the days of severe fire weather



Number of fire in critical extreme fire danger days (fwi > 38)

1/3 of historical burnt area

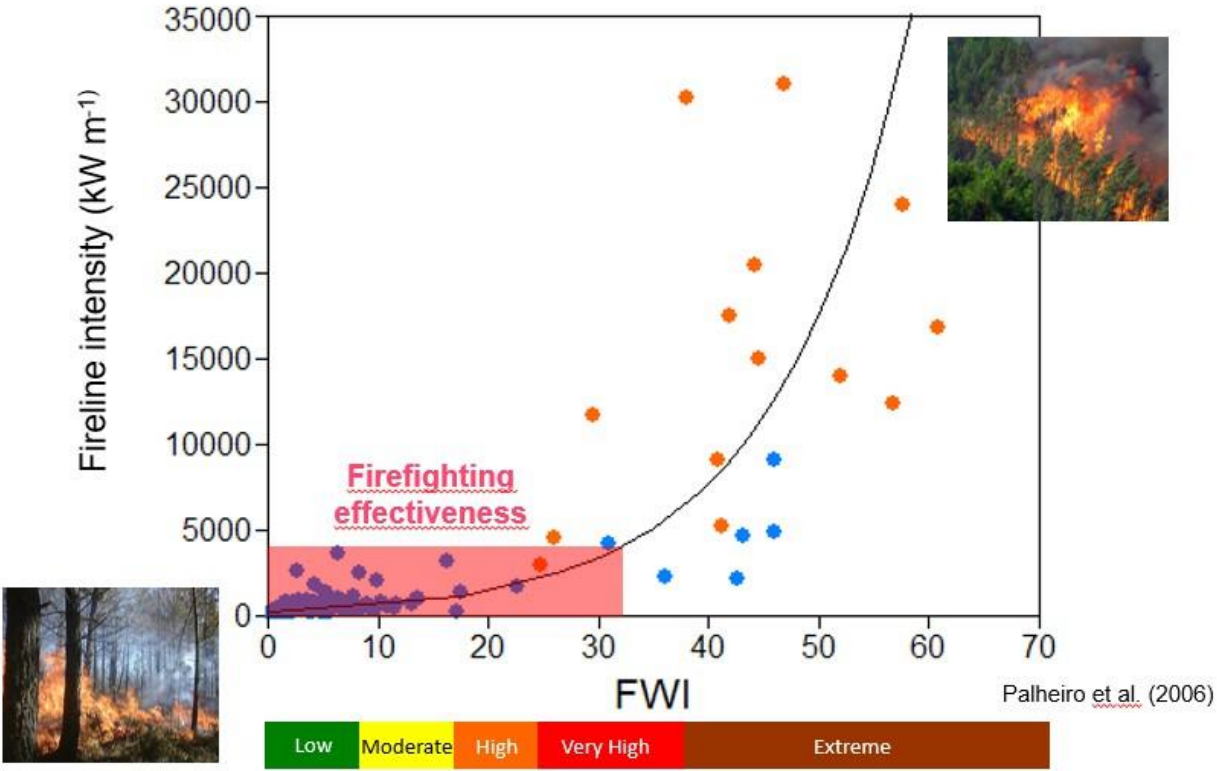
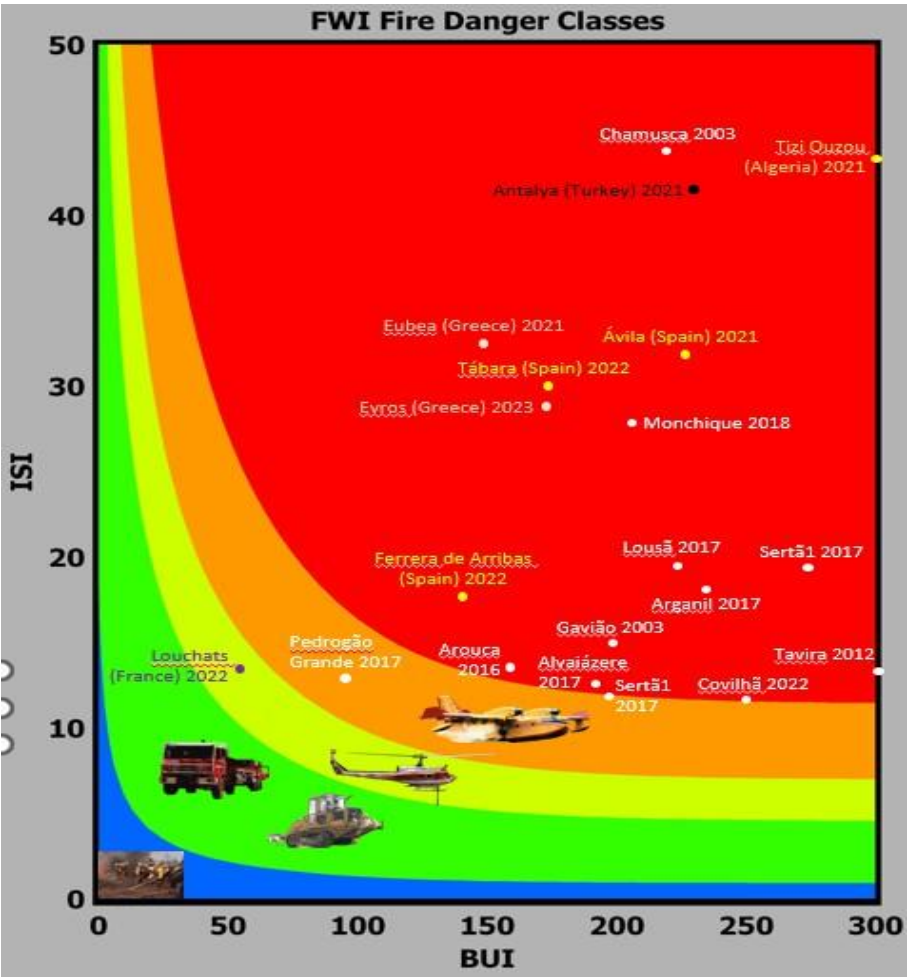
3%/yr (2001-2017) vs 1%/yr (2018-2024)



Burnt area

Recognized limits of suppression effectiveness

Powered by Paulo Fernandes (UTAD)



Fire danger and wildfires >20,000 ha in Portugal (since 2003) and in the Mediterranean Basin (2021-2023)

Fire danger, fire intensity and firefighting effectiveness in pine forest

Annual reporting to MP and Gov stress > urgent action towards

More action and assertiveness:

State, Private and Population

Guarantee political commitment and pluri-annual and sustainable financial availability, for the SGIFR's Action Programmes at different territorial scales.

Set economic and fiscal incentives that mobilize landowners and companies towards sustainable management.

Raise awareness among the youngest (5 as 12) and reduce the incendiary burning.

Qualify key decision- making positions in fire suppression operations.

Implement the Regional, Sub-regional and Municipal Programs of SGIFR.

Greater involvement of the private sector and municipalities.

Multiply the fuel management area by x3 with a target of 250 000 ha/year.

Agenda

1. The Portuguese Challenge > Outcomes > Urgent actions ahead
2. The Landscape Fire Governance Framework

Why do **we** need a framework?

Unplanned and **uncontrolled** landscape fires are increasing, creating social, economic, and ecological **impacts**. Knowledge and organizational **silos**, still exist, hampering dialogue and integration.

Better governance is needed to improve cooperation and risk management, while understanding the need for a whole value chain, going beyond the traditional prevention vs suppression, into fully **integrated fire management**.

Our 2024 pain points were (preliminary - under evaluation)

Lack of Prevention

- Urban expansion towards afforested areas
- Ineffective post harvesting fuel management
- Reduced management on forested areas
- ~~No national risk awareness campaign~~

Poor Surveillance, Detection and Inspection

- ~~Incapability for all year resource adjustment~~
- ~~Disproportionately high number of yearly ignitions~~
- In 3 days, highly concentrated number of fire starts
- Limited inspection of plan enforcement
- ~~Lack of of wildfire meteorology experts~~

Ineffective Suppression, Mop Up and Post Fire Vigilance

- ~~Communications network out of date~~
- ~~Population unaware of best practices in case of wildfire~~
- ~~Operatives have no knowledge of the staging area~~
- ~~Difficulties in having a full picture of wildfire potential~~
- Lack of standard procedures for Incident Command Post - location and access

Qualification and Op Standards

- Different organizations in the system have diverse qualifications
- Deterioration of the volunteering regime
- ~~Limited number of professional operatives~~

Knowledge Gaps

- ~~Lack of a lessons learned process~~
- Decision making supported in individual experience
- Certification of professional skills to allow sharing of resources
- Real Risk vs different perceived risk

Weak Governance

- ~~Leadership instability of the national forest authority~~
- ~~Gap between prevention and suppression~~
 - Lack of a specialized command
- ~~Hierarchical top-down vs polycentric governance~~
 - Authority vs responsibility and networking of actors

The challenges

Agencies are under pressure to maintain a semblance of **certainty**

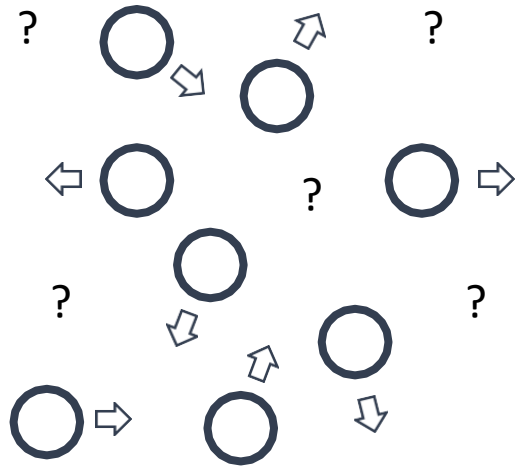
Predictive models that rely on **historic trends and patterns** will be “of limited use”

Critical differences in **power, authority, and capacity** within and between relevant institutions and actors

Addressing wildfire risk involves unavoidable **trade-offs** between competing values and interests

Wildfire risk should be viewed as **negotiated** rather than simply determined by quantitative models

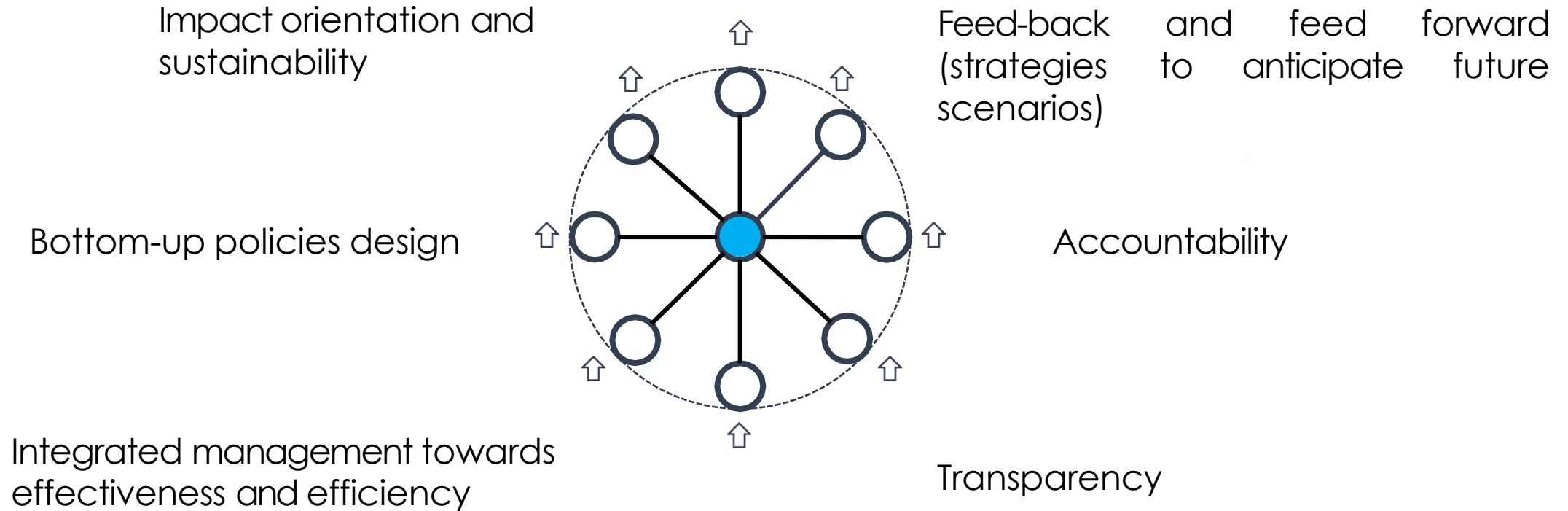
Communities, indigenous groups, and local governments with less financial or political power need to be given more consideration and authority in decision-making processes. **There is a need to respect heritage and traditional use of fire** (“living landscapes” now turned into preserved “lithic landscapes”)



Risk Governance

Focused on the institutional arrangements of how risk information is collected, analyzed and communicated and how risk management decisions are taken (IRGC 2005).

... framed by main governance principles

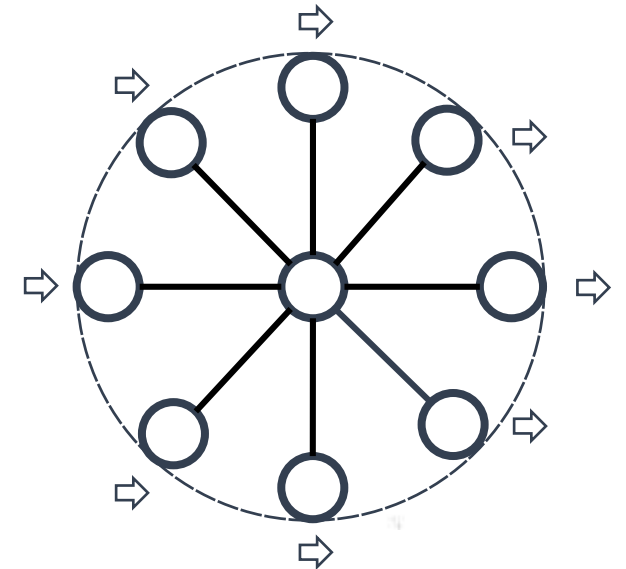
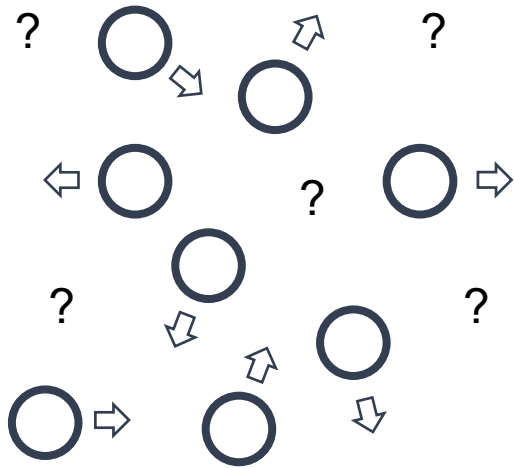


Who's we?

Everyone.

However, it might be most appealing to policy makers, decision makers, risk managers and people dealing with fire as a new challenge.

Coordinated thinking / articulated action



What will this framework **help us** achieve?

Scope and Purpose

The framework applies to the whole process value chain of wildland fire management, regardless of causality and origin, aiming at a common understanding of good practices and processes that facilitate domestic handling of fire and international cooperation through well understood standards.

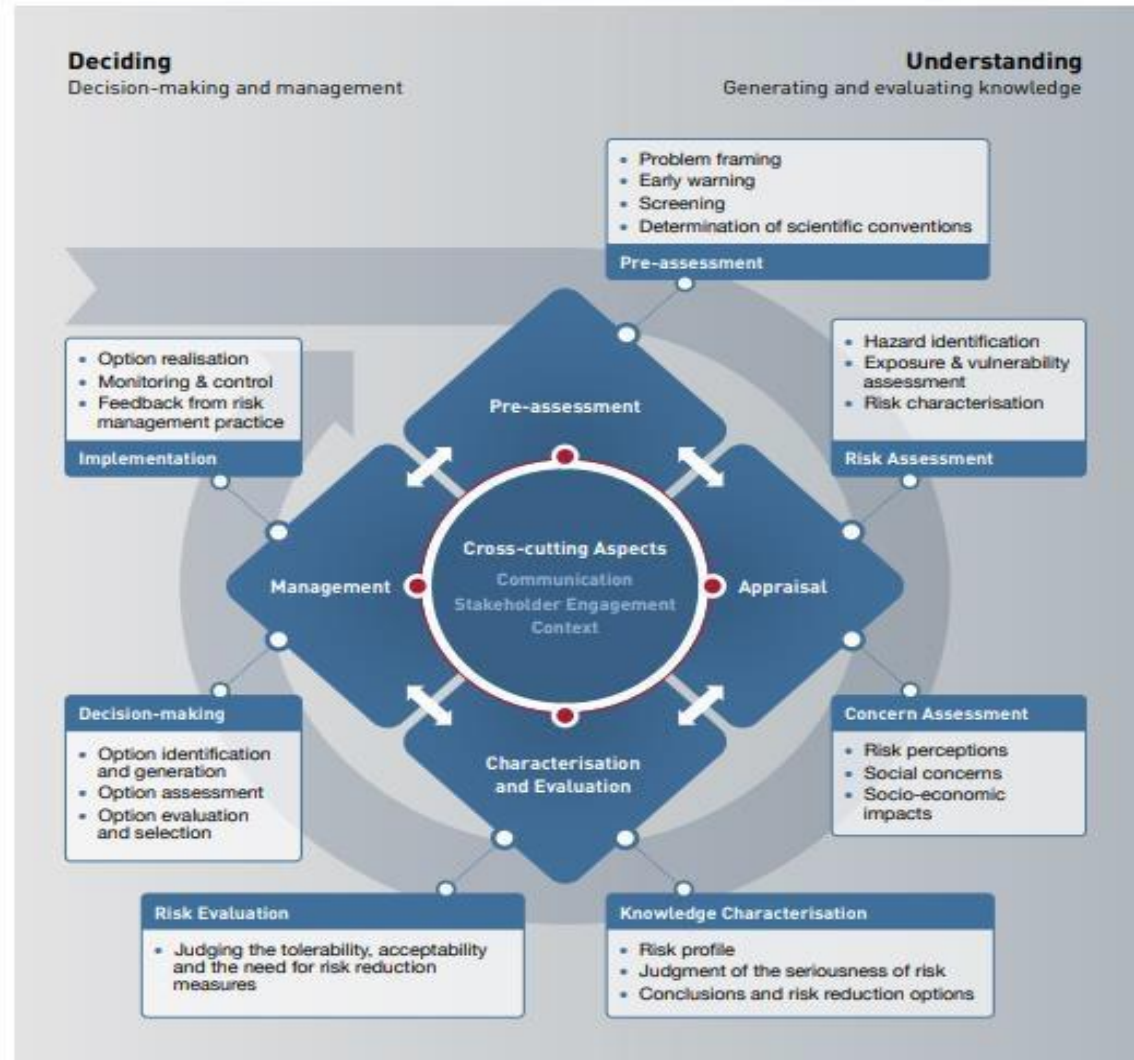
Outcome

A significant **reduction of losses** driven by added **expertise** on each component of the value chain, enhanced **risk management** incorporating the latest **research** and **knowledge**, and a defined set of **responsibilities** and **accountability** with each stakeholder having a clear view of their scope of action, under good **governance**, where institutional **cooperation** is agreed upon, **communities** are involved, and **communication** is clearer, objective, and transparent.

From Risk Management to Risk Governance...



South african IFM approach



Detailed visual representation of the IRGC Risk Governance Framework (IRGC, 2017)

Where do **you** want to be in the future?



1. Understand the drivers of your problem/risk
2. Strengthening disaster risk governance to manage disaster risk
3. Investing in disaster risk reduction for resilience
4. Enhancing disaster preparedness for effective response and to “Build Back Better”

Define and agree about **vision, mission, objectives** and **measure progress**

The call to **action**

- Break silos and strengthen governance
- Accept (good) fire on your landscapes
- Value rural areas
- Manage rural areas actively
- Change behaviours
- Invest and spend efficiently (know your risk)
- Invest in training and qualification
- Communicate and engage your stakeholders

(and this will be far easier)



The call to **action** - to protect Portugal from severe wildfires

- Break silos and strengthen governance
- Accept (good) fire on your landscapes
- Value rural areas
- Manage rural areas actively
- Change behaviours
- Invest and spend efficiently (know your risk)
- Invest in training and qualification
- Communicate and engage your stakeholders

In brief – Landscape Fire Governance Framework

Cross-border long-term commitments, bringing together the best expertise. International qualification and training programmes fostering effectiveness and efficiency of cross-border cooperation. Platforms aiming to share scientific developments and fire knowledge assuring the cross-sectoral approach for the wildfire risk management.

International Cooperation

Governance bodies

Facilitating bodies, overarching in scope and politically empowered, working with all stakeholders

Risk Assessment

Assessing environmental, social, and economic implications of wildfires, including asset value to better support planning, policy negotiation and decision-making.

Risk Evaluation

Wildfire risk tolerance is variable, depending on how it is perceived. Acceptance levels call for community-driven solutions, keeping risk as low as reasonably possible.

Risk Management

Continuously manage across the whole value chain

Plan

Prepare

Prevent

Pre-Suppress

Suppress

Work post-fire

Adaptive Management

Monitor, measure progress, adapt as needed

Stakeholder Engagement

Involve regulatory bodies, industry experts, scientists, researchers and communities in a trans-disciplinary model. Revive traditional uses of fire under safer conditions and foster benign land-use practices.

Systemic and Public Communication

Clear communication of what the challenges are and what deliberations are asked for and what their expected outcomes should be. Speaking clearly to the general public, so that they understand hazards and what to do to better protect themselves and others.

Q & A

Tiago.Oliveira@agif.pt

timol007x@gmail.com

www.agif.pt



@2022 By the RiverTay in Dunkeld Birnam oak trail