

# **INTEGRATED RURAL FIRE MANAGEMENT SYSTEM**

**2019**

## **ACTIVITY REPORT**

JULY 2020

## IN A NUTSHELL

An integrated vision of wildland fire risk management is now available in Portugal for the first time ever. It reflects that Portugal invested 264 M€ in 2019, of which 50% in prevention, reversing the pathway of decades where more than 80% of the expenditure was consumed in suppression, such as in 2017. This effort, translated into more resources, legislation and specific technical improvements, contributed to reduce in the short term the population vulnerability to the current context (territory, climate, economy, and people). As a consequence, the number of ignitions was cut by half and the number of major fires, burnt area, and wildfire damages were substantially reduced. However, it is critical to persevere, ground new processes into practice and accelerate the transformation of the context (landscape and behaviours) in the coming years, empowering organizations with the human and management skills to carry out work on the ground, effectively and efficiently managing projects and resources to attain relevant results.



# EXECUTIVE SUMMARY

The 2019 year saw a continued implementation of the measures that have been defined since 2017 to design a new Integrated Wildland Fire Management System and in line with the strategic guidelines contained in the National Plan:



Given the size and complexity of the programmes needed to set up this system, and because immediate results are required in the wake of the devastating wildfires of 2017, priority action areas were defined so as to produce results in the very short term, thus minimising the impact of damage caused, in particular, on human lives.

To this end, the main priorities identified were 1) the need to protect populations, 2) manage fuels around houses and critical infrastructures, and 3) reduce ignitions.

Notwithstanding these action areas, we continued to implement and launch structural initiatives with medium and long-term impacts, namely in the areas of governance, organisation, qualification, and expertise.

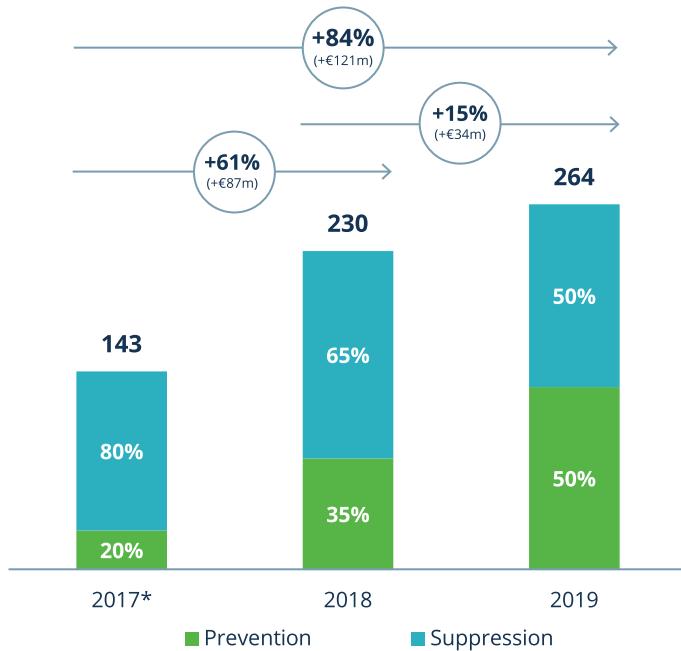
To implement this ambitious Transformation Programme, we also identified the need to immediately allocate the necessary human, financial, and logistics resources to the institutions and stakeholders.

It is therefore based on this framework and the goals set that we hereby present the report on operations carried out and outcomes achieved.

## KEY ACHIEVEMENTS

### **Financial resources were made available, primarily dedicated towards prevention**

In order to boost operational capacity and allocate resources, the budget for the system grew, reflected in an increase in expenditure of €121 million (+84%) since 2017, and a rebalancing between fire prevention and suppression processes which, in 2019, was 50-50%.

**Chart1.** Change in IWFMS expenditure (€m)

### Preparedness was improved with more boots on the ground and more eyes in the sky

The investment in human resources and ground and aerial support vehicles and equipment contributed significantly to the 2019 expenditure, as did the funding of the operation of private organizations, such as Volunteer Firefighter's crews (Bombeiros) or the forester-firefighter brigades and teams (Sapadores Florestais). Vegetation management projects carried out by the different organizations also significantly contributed to the year's expenditure.

In fact, human resources amounted to 12,432 personnel in 2019, an increase of 2,263 (+22%) when compared to 2017, corresponding to a variation of 7% between 2018 and 2019. This increase redistributed the weight of stakeholders, particularly of the GNR and ICNF<sup>1</sup>, against that of the resources coordinated by ANEPC, which represents about half, associated mainly with firefighters.

This redistribution also led to an increase of 8 percentage points in the weight of professional resources, a trend that the Transformation Programme also aims to implement.

An additional 1,300 military personnel, compared to the previous year, helped increase the time commitment of the Armed Forces, which totalled 26,400 military personnel, an increase of 3,700 since 2017. Prevention activities accounted for 91% of this commitment, whereas it previously stood at 40%<sup>2</sup>.

Investments were also made in other important resources. In 2019, the fleet comprised 2,614 vehicles (command and tankers), 574 (+28%) more than in 2017. The system now includes 59 aerial resources, 11 more aircraft than in 2017 (+23%), of which 3 are for aerial coordination and additional 4 fixed wing tankers in 2019, compared to 2018. The continued purchase of bulldozers and tractors reflects the investment made in these resources, which are considered important especially in rural fire management for fire prevention and suppression activities.

<sup>1</sup> GNR: National Guard; ICNF: Nature Conservation and Forest Institute and ANEPC: Civil Protection National Authority.

<sup>2</sup> The count corresponds to the total number of committed military personnel in all occurrences.

## **Operation systems able to communicate and manage information and support decision**

Regarding telecommunications, an investment was made to improve the Integrated System for Portugal's Security and Emergency Network (SIRESP network) and its redundancy systems, and management of the company was taken over by the State following the purchase of the shareholdings of private entities. The model and future features of the system will be reviewed.

Decision support systems have also been updated, in particular the ANEPC decision support cell, which saw its information integration, resource georeferencing and incident monitoring capabilities increased, although not all SGIRF information has been integrated and the necessary interoperability between the different systems is not yet ensured. To this end, AGIF has awarded a project for the first development stage of an interoperability platform, which is expected to start at the beginning of 2020 and to be completed by 2022.

In suppression, there will be quick wins for 2020-2021 as fuel management information must be part of the decision support platforms, in addition to other improvements indicated in the suppression campaign monitoring report, which is included herein.

## **Increase the area under active management**

The above mentioned increase in resources translates into a greater capacity for operational activities, in particular vegetation management, with interventions on 49,000 hectares of the linear fuel break system<sup>3</sup>. Of note is the creation of 4,900 hectares of fuel breaks (up to 125-m width) as part of the Primary Fuel Break network and 44,000 hectares of fuel management 10-m buffer aside rail and road network and utilities infrastructures, where, in addition to the public authorities, the role of private organizations such as energy companies REN and EDP is relevant.

Besides the direct interventions described above, ICNF also created 7,900 hectares of mosaics<sup>4</sup> through mechanical fuel treatments plus 6,400 hectares of areas grazed by goats, sheep and cattle, or prescribed burnt. The intervention programmes carried out in natural parks and the expansion thereof since 2018 are also of note, with an excess of 1,000 hectares treated in 2019.

## **... but much, much more is needed**

However, area-based fuel treatments are still scarce for the scale of required landscape change, essential to effectively reduce the risk. Nonetheless, we are aware that a significant portion of the fuel management carried out by private landowners is not quantified and, therefore, the figures underestimate current effort.

A perfect example of the difficulties faced by the up-scaling of interventions is the emergency stabilisation and burned area rehabilitation process, in which the actions carried out by ICNF encompass 18,500 hectares of national forests and common lands, but the intervention on 446,500 hectares of mostly privately owned lands identified

<sup>3</sup> Does not include vegetation management around buildings, for which there still is no reliable, global reporting mechanism.

<sup>4</sup> Treated patches of dense afforested or tall shrubland to decrease the continuity and amount of fuel.

in the ICNF emergency stabilisation reports goes unrecorded and mostly unmanaged. The scale required and the urgency to quickly trigger these processes must be addressed by making funding available, essentially through applications for European funds, under mechanisms for mobilising rural landowners or the tools for the State's direct intervention on privately owned land, when required.

## **Reduce the hazard around small villages and improve community preparedness**

In this chapter on vegetation management, it is important to note that the public is aware of the need to reduce fuel hazard around their homes and population clusters. The programmes<sup>5</sup> 'Aldeia Segura' (Safe Village) and 'Pessoas Seguras' (Safe People) certainly contributed to this awareness, which included 1,963 clusters at the end of 2019, 168 of which fully carried out the respective basic activities<sup>6</sup>. These figures refer mainly to 2018, with a significant downturn in the trend recorded in 2019, which saw only 170 new villages included, demonstrating the need for local authorities and stakeholders to once again implement the programme, promoted by ANEPC.

## **More inspection, surveillance and law enforcement**

The GNR inspected more than just the 1,142 flagged parishes for a more widespread implementation of vegetation management practices in the vicinity of buildings, which resulted in the identification of 31,600 irregularities. Of these, 27,000 were later followed up on. Only half had been resolved.

Indeed, it is essential that the population adopts the most appropriate risk behaviours, not only for self-protection, but also to reduce the number of fires, of which 98% are caused by people, with 40% of fires being caused by the improper use of fire. Surveillance and patrols are therefore decisive deterrents, particularly on high fire danger days. The GNR carried out 55,600 patrols, resulting in 8,000 notices of violation and 58 arrests. The Armed Forces provided additional support in this process, carrying out 6,400 patrols.

## **Communicate risk and public engagement**

A communication campaign was held addressing these main risk factors. National and integrated campaign is called 'Portugal Chama, Por Si, Por Todos' (Portugal is calling for you, for everyone; the name in Portuguese is a pun given that 'chama' means both 'call' and 'flame') and was disseminated through the main national and local media, with the active participation of private landowners. Proximity initiatives carried out by the GNR, local authorities, fire departments, and forest growers' organisations were key to disseminate the proposed measures directly among the public.

<sup>5</sup> Designed in 2018, these programs were inspired in the Canadian FireSmart, and the USA and SouthAfrican FireWise initiatives.

<sup>6</sup> Appointment of a Security Officer, identification of places of refuge or shelter, the drawing up of an evacuation plan and performing drills.

It should also be noted that a SOS environment helpline phone (808 200 520) and a web support platform was launched for citizens and local authorities for authorising the use of fire, which resulted in 64,000 registered users and a total of approximately 546,600 requests, and the dedicated helpline received 69,800 calls.

## **Improve qualification and training**

Qualification is a fundamental enabler for organisations and the system. In addition to the training initiatives focusing on what are deemed relevant topics, the National Qualification Programme was launched and, in the first phase, established 20 skill profiles – higher and lower level – to begin the certification processes. Given the programme's cross-over between sectors, we believe that it is essential and urgent to create a dedicated forum to manage the implementation thereof. Such a forum would also ensure, specifically with regard to protection and relief operations, that all functions provided for are performed by human resources with the required profile and skills, irrespective of the originating organisation and of their status, in accordance with international practices. Only thus, in fact, can the proper integration and performance of the various organisations be ensured when in the same operational scenario.

In this context, the incorporation of technical knowledge was also encouraged through technical and professional collaboration between countries, organisations, and persons with experience in rural fire management by hosting and sending aboard technicians under the International Expert Exchange programme. In 2018, through this program Portuguese institutions received experts from US, Canada, South Africa, Spain, Australia, Finland, and Chile. In 2019, the program explored links established with Finland, Spain, and Chile, focused on forest resources governance, coordination, management, and lease of aerial support equipment, support in slash burning and traditional rural burns, and the use of hand tools by brigades in rural fire prevention and suppression.

Regarding knowledge and innovation, two initiatives are of particular note. The first involves the R&D Programme through which the Portuguese Foundation for Science and Technology (FCT) supports scientific research and technological development related to rural fire prevention and suppression, which saw the setting up of the ForestWISE Collaborative Laboratory with the approval of its innovation agenda and the hiring of personnel. The second and also most important initiative, given its impact on system development, was the start of the IRFMS multi-annual interoperability platform project, recognised as an innovative tool for the system. The primary goal of this project is to modernise current systems and provide access to relevant information in the different stages - planning, preparation, prevention, suppression, post fire emergency and rehabilitation - to everyone involved.

## **Improve the risk governance framework**

At the organisational level, management of the aerial support contracts is now carried out by the Air Force and the organic laws of ICNF and ANEPC have been reviewed, in particular with regard to their competences and territorial organisation incorporating NUTS II and NUTS III, although resources were not actually allocated in 2019. The required coordination between the various entities at this territorial level, including the Regional Development and Coordination Committees (CCDR) and the Intermunicipal Committees (CIM), therefore, has not yet been put into practice.

This aspect is particularly relevant within the framework of the action programme resulting from the National Plan for Integrated Wildland Fire Management, a document that was made public in 2019 and has now been approved by the Government<sup>7</sup> recommending a coordinated planning and monitoring methodology designed for the different territorial levels and in line with the respective budget. In this regard, the review of the decree-law that governs the current DFCI<sup>8</sup> system – Decree-Law No. 124/2006, of 28 June, must be discussed and renewed such that all components can enable the effective implementation of the IRFMS.

Besides developing the skills of human resources, another key factor for achieving results is the continuous improvement of work processes which requires solid monitoring and analysis mechanisms to be implemented. Building on what had already been done in 2018, work carried out in 2019 enabled the monitoring of the different initiatives carried out by IRFMS entities of the Portuguese central government and the discussion of improvements, which is the central focus of this report. However, consensus was not reached on the required performance and implementation indicators, including those related with the appraisement of losses and damages, and the financial dimension, which allow the cost of each activity to be optimised and ensure financial availability to meet targets. A cross-cutting budgetary measure for the IRFMS would be an important enabler in this regard.

A noteworthy monitoring-related project was the analysis of the 2019 suppression campaign, included in this report, and which saw the active participation of the main stakeholders of the process, which we hope will be carried out on a regular basis.

A general constraint when it comes to monitoring is the lack of adequate reporting platforms and mechanisms, as demonstrated by the difficulty in obtaining indicators from the various stakeholders, including local authorities and private landowners.

The foregoing aspects are, in fact, the cornerstone not only of the performance monitoring that drives the development of procedural improvement measures, but also of the assessment of the potential impact of such performance, in particular, on minimising damage.

## As changes occurs, results showed up

The projects implemented in this area undoubtedly helped contribute to a decrease in the number of fires recorded in 2019. In total, 10,900 fires were recorded, half (-50%) of the average number of fires that occurred in the past ten years and 1,300 less than in 2018 (-11%).

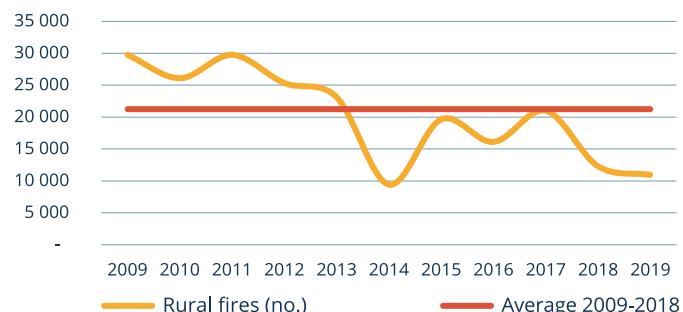
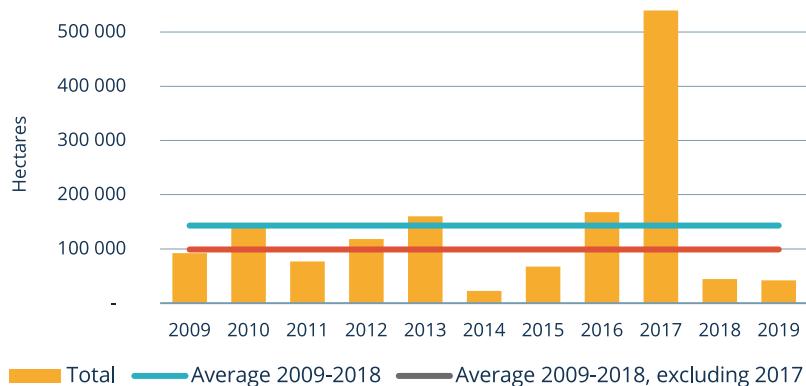


Chart2. Change in the number of fires (Source: ICNF)

<sup>7</sup> Resolution of the Council of Ministers 45A/2020, of 16 June.

<sup>8</sup> DFCI: Forest Defence against Fires.

Just as with ignitions, the extent of burned area also decreased to 42,000 hectares in 2019, three times less than the average burned area recorded over the past ten years.



**Chart3.** Change in burned area (Source: ICNF)

The decrease in the number of ignitions naturally increased the availability of resources for managing fires that, thanks to the additional resources, saw committed resources increasing by 23%.

This helped improve some of the fire occurrence management quality indicators, such as the decrease in rekindles, which stood at 9% in 2019, compared to the 18% recorded in the previous ten years. It is therefore important to maintain the number low by using specialised resources dedicated to mop-up operations and perimeter consolidation, concentrated mainly in the districts with a high number of fire occurrences.

Although the aforementioned aspects were essentially those that could more quickly address the priorities identified, a set of structured initiatives were launched, with the building of different components to help transition to the new integrated wildland fire management system.

## Takeaway messages

2019 centred around activities aimed at minimising the number of fires and the possible more harmful impacts thereof, according to the strategy defined in 2018.

The activities carried out for this purpose were coordinated between the different organisations and focused on building up resources, innovative communication with the public, fuel management in priority zones, and the ability to take more informed and qualified decisions in the context of fire occurrence management.

Despite the advances made, the initiatives aimed at introducing qualitative improvement across the system, such as the production of and access to reliable information on vegetation and interface with buildings, system interoperability capabilities, greater scrutiny in selection and recruitment, the qualification and application of knowledge must be fully implemented to ensure that the main outcomes are more apparent in 2020/21.

These initiatives, along with the public's increased awareness of the risk following the 2017 wildfires, should have contributed to reducing the number of fires by half compared to the past and to making the impact on the burned area three times less.

The measures with an impact on changing the characteristics of the territory and, consequently, the context in which rural fires are managed, are those whose intended outcomes are not yet visible, in particular regarding large-scale fuel management and the creation of discontinuity areas in forests. Despite the availability of credit lines or public grants and the establishment of ZIF and EGF<sup>9</sup>, there are no indicators that reflect dynamics of change to aggregate management at the scale and speed that the problem requires. Such inertia must be reflected upon by lawmakers such that they create instruments that encourage individual landowners to take advantage of associative management, in a context with more active regulation, less market failures, and more transparency. On the other hand, the organisation and capacity-building of stakeholders and the lack of government instruments to intervene if necessary are also issues that warrant the implementation of measures.

For this to happen, the mechanisms for coordination at the different territorial levels between organisations of the central government and local authorities, regarding planning and implementation, must be put in place, in line with the measures proposed in the government programme on the role of the CCDR and the CIM, and in the National Plan for Integrated Wildland Fire Management.

Finally, the report seeks to provide an integrated view of the system, which we believe is essential to understand the issue and elemental to improve efficiency and efficacy, just as it is critical to incorporate the identified opportunities for improvement in the national action plan.

<sup>9</sup> Forest Intervention Zones and Forest Management Entities.

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