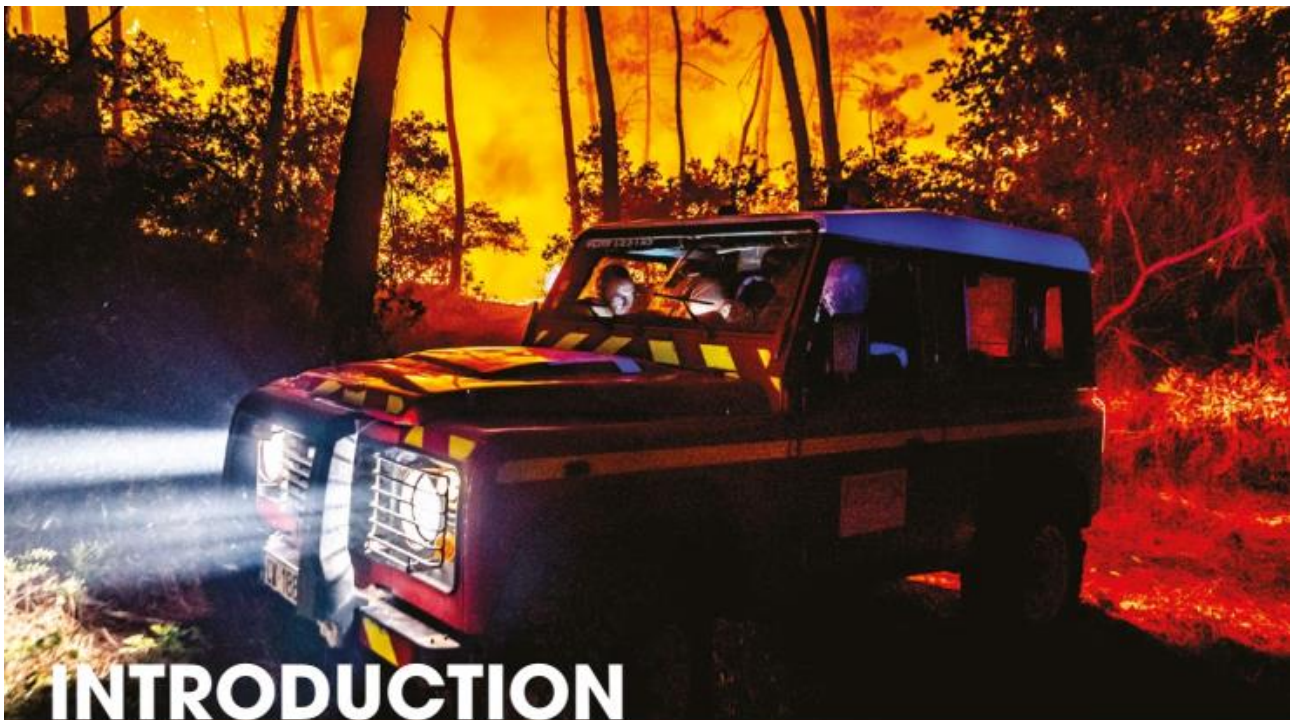


# CLIMATE CHANGE: FRANCE IN THE GRIP OF FLAMES

## A RESILIENT CIVIL PROTECTION MODEL BUT TO BE STRENGTHENED



**R**anked second among the hottest summers observed in France since 1900, the summer of 2022 saw an operational episode of unprecedented duration and intensity. In all defence zones, the fight against forest and natural or agricultural fires put the response of civil protection of the national community under tension to a point close to breaking: usually prompt to help European Union countries, France has requested and received their help to overcome fires of unusual extent and violence.

This tension highlighted the exceptional adaptability of the French civil protection model, but also its vulnerabilities in the face of the evolution of threats related to climate change and their change of scale.

Actors engaged in these episodes but also observers of a profound evolution, the Firefighters of France propose, through this feedback, a number of fields of study and perspectives specific to preparing the national community for this major challenge of the 21st century, of which this summer 2022 constitutes the prefiguration, to strengthen our civil protection model at human, material and financial levels, and to evolve our intervention methods.

### - 01 PREPARING THE NATION FOR THE CLIMATE CHALLENGE

#### A/ MAKING NATURAL AND AGRICULTURAL AREAS LESS VULNERABLE THROUGH A SUSTAINABLE LAND USE POLICY

*The vulnerable areas are increasing; the means of firefighting cannot follow the same slope indefinitely. Thus, it is a matter of making forests, moors and crops less sensitive, their margins and the urban interfaces.*

If the French **strategy of massive attack on nascent fires has proven itself** (extinction rate over 80%), and remains a model, the increase in natural space fire risk factors related to the increase in fuel in forests, agricultural decline and changing weather conditions requires action now on space planning.

Several measures must be implemented by local authorities responsible for urban planning: it is thus necessary to impose accurate developments in wild/urban interfaces providing precise plantations, circulations, Forest Defence Against Fire (FADF) and clearing in all metropolitan departments. We note that **drought now affects nearly 15% of the national territory**. It is essential to **extend legal clearing obligations** to the entire national territory under the coordination of the Departmental Prefect who will define sensitive areas with the relevant services. This provision will **guarantee passive protection of buildings** and facilitate rescue operations.

**15% of the territory affected by drought**

While generating a large number of fire outbreaks due to their high public attendance, it is necessary to impose **increased control by major road or rail network operators** on compliance with legal clearing obligations.

Agricultural decline, even if this trend is poorly quantified. This observed in many territories and these phenomena is linked to an evolution of pastoralism and livestock farming practices, which result in the abandonment of agricultural land in favour of fallow land increasing the risk of fire.

In this context, it is necessary to **encourage the maintenance of fallow land** or forest growth by their owners through tax tools (tax deductions). Similarly, proactive local authorities wish to **strengthen their fire prevention action**. Helping local authorities to acquire private areas that are not maintained through specific pre-emption rights to ensure public management becomes a necessity.

Finally, strengthening aid from the common agricultural policy for pastoralism in forest areas will make it possible to maintain regular maintenance of the space, thus reducing the mechanisms of fire propagation

## **B/ SIMPLIFY LEGISLATIVE AND REGULATORY FRAMEWORKS FOR THE DEFENCE OF FORESTS AND NATURAL AREAS AGAINST FIRE**

*France has a very comprehensive set of provisions that have been amended over time, but the time has come for simplification in order to make it operational throughout the country.*

**T**he unfavourable evolution of the fire risk is also due to the growth of fuel in the forest. Over the past 30 years, forest biomass has increased from 1.8 to 2.8 billion cubic meters. These changes, due in part to inadequate management of forests without economic or tourist exploitation objectives now require improvements in forest management provisions.

That is why it is recommended, as for departments in the south, to create a Departmental **Plan for Forest Fire Protection** in all departments of France with the aim of organizing nationally standardized "Forest Fire Defence" arrangements and simplifying administrative development procedures.

In addition, the state will have to subsidize **investment in “Forest Fire Defence” equipment** and facilities for local authorities. An essential tool for fire prevention is to reform Forest Fire Risk Prevention Plans so that, throughout the national territory, arrangements for wild/urban interfaces,

By 2050, nearly **50%** of metropolitan heaths and forests will be affected by a high level of natural space fire hazard.

support zones for fighting fires, and water reservoirs out of urbanized areas are strengthened. Each municipality will carry out a **prevention plan of the wild fire risk** of natural spaces. In areas subject to high risk, all development decisions must take into account issues related to natural space fires, as well as contingencies related to the Natura 2000 network

Although for over 40 years, management plans for private forests over 25 hectares have been an effective analyse tool, it must be acknowledged that they remain insufficient. That is why it is desirable **to impose simple management plans on all forest areas** by integrating elements of “Forest Fire Defence” adapted to the temporality of risk, compartmentalization of massifs, maintenance of structures and organization of preventive and operational response in exploited and non-exploited massifs.

Finally, as an essential actor whose knowledge is unanimously recognized and with more than 8200 employees, it is necessary to give the National Forestry Office the means to ensure the management and protection missions of public forests against fire and to maintain armed patrols.

In the same vein, studies by the Intergovernmental Panel on Climate Change (IPCC) tend to show that the fire risk will intensify by resulting in an increase in the number of fires as well as burned areas. By 2050, burned areas could increase by 80%, and nearly 50% of metropolitan heaths and forests will be affected by a high level of natural space fire hazard, compared to one-third in 2010. These data require quickly considering the following reforms:

- ▶ **Create a Forest Protection Directorate in each defence zone (similar to the Mediterranean Forest Protection Directorate) responsible for implementing the State’s fire prevention policy;**
- ▶ **Strengthen the role of “Forest Fire Defence” Aquitaine, and draw inspiration from it in other territories, given its cartographic expertise, monitoring of developments in exploited massifs, its role in prevention and application of rules;**
- ▶ **Make the presence of a fire extinguisher in vehicles mandatory;**
- ▶ **Simplify and group together the role of the departmental commission on major natural risks and the departmental advisory commission on safety and accessibility, which will be periodically consulted on natural space fire risks.**

## **C/ PROMOTE JOINT WORK BETWEEN FIREFIGHTERS AND RURAL AND FORESTRY ACTORS**

*The contribution of those who live off agriculture, forestry or rural areas is essential so that lasting and accepted actions ensure part of the protection of these areas.*

**E**ven if the socio-economic damage is relatively contained in France, it has now become essential to:

- ▶ **Integrate “Forest Fire Defence” into forest management policy;**
- ▶ **Regulate reforestation and plantations near access roads;**
- ▶ **Raise awareness of risk acceptance and the role of fire during joint exercises between forest owners.**

As the summer, 2022 demonstrated, productive areas are not spared. The development of fires threatens actors in the wood, agricultural and tourist sectors, this observation is reinforced by the migration of fires to the North. Thus, it is recommended to:

- ▶ **Strengthen the use of controlled burning as a land management tool;**
- ▶ **Generalize the closure of massifs and the prohibition of agricultural work on risky days;**
- ▶ **Regulate reforestation and plantations near access roads to massifs.**

Finally, farmers and foresters demonstrated during the summer of 2022 a strong capacity for mobilization to support public services in the fight against fires. In order to strengthen these collaborations, it will be necessary to **enter into agreements with farmers and foresters to organize and coordinate the use of private resources** (water supply, forestry, earthworks).

These agreements will provide for compensation for this recourse and will be taken into account in municipal safeguard plans. Strengthening ties with entrepreneurs who live in natural areas will ensure effective interactions between actors for the implementation of risk mitigation measures, ranging from prevention to forest management.

## **D/ A STRONG AND INNOVATIVE CIVIL PROTECTION POLICY**

*Even if its robustness and resilience have made it possible to overcome this period of trial, our model, adapted to calm times, must be reformed to face the times to come and their lot of challenges.*

**T**he uncertainty generated by new crises and their dimensioning that impacts the environment, the economy, transportation and all human activities requires:

Evolving the governance of forest fire and natural areas risk in its entirety both in management by drawing inspiration from the Anglo-Saxon “Incident Command System”, and in prevention as for other civil protection risks;

- ▶ **Defining the Forest Fire and Natural Areas Risk as a common risk in all French departments. This paradigm shift will be based on organizational reforms aimed at:**
- ▶ **Strengthening the state structure of Civil Protection by creating an inter-ministerial government structure;**
- ▶ **Taking into account the legally recognized skills of firefighters regarding coordination;**
- ▶ **Strengthening the training and practice of Rescue Operations Directors in situations related to forest fires and natural areas.**

## F/ A FINANCING RADICALLY MODERNIZED BY FINANCING AID AND INVESTMENT

The Departmental Fire and Rescue Services, created by law n° 96-369 of May 3, 1996, are today experiencing an extension of their field of action and a significant increase in their solicitation. **Their economic model of financing, unchanged for 20 years, no longer allows them to sustainably face** the repeated frequency and increasing intensity of crises periods, particularly those related to health or climate change.

In this context, several financial measures for the benefit of the Departmental Fire and Rescue Services, exclusive beneficiaries of the fight against fire, must be put in place by the State as a guarantee of national solidarity and coherence of civil protection:

- ▶ **Relaunch and significantly increase the aid fund for investment in the fight against forest fires and natural areas;**
- ▶ **Pay directly to fire and rescue services and increase the share of the Special Tax on Insurance Contracts (TSCA) allocated by the State to Departments, taking into account the savings generated by the increasingly efficient commitment of fire and rescue services, measured by the generalized evaluation of saved values on each disaster;**
- ▶ **Establish a specific tax for FIRE AND RESCUE SERVICES on firefighting devices (fuel, environmental taxes);**
- ▶ **Align compliance with environmental standards (European emission standards) for firefighting vehicles with that of the armed forces;**
- ▶ **Allow Fire and Rescue Services to benefit from State investment aid (France Relance, energy savings plans), or generate devices so that Fire and Rescue Services are eligible for funds or other grants.**

Several billion euros saved by firefighters for a cost of **€86 per inhabitant**

The adaptation strategy to the evolution of forest fire and natural areas risks will be a success if the allocated resources are commensurate with the identified issues. In addition to the endowments that can be implemented, exemptions may also be granted to fire and rescue services:

- ▶ **Exempt fire and rescue services from the ecological penalty for intervention and transport vehicle purchases;**
- ▶ **Partially exempt fire and rescue services from the domestic consumption tax on energy products (TICPE) for firefighting, like petroleum products used as fuel or fuel for goods transport on inland waterways;**
- ▶ **Partially exempt fire and rescue services from the contribution to public electricity service charges (CSPE) in that they participate by nature in ecological transition.**

Finally, if the rise of firefighting devices relies on the commitment of human forces of firefighters **and in particular volunteer firefighters**, several devices must now be implemented to ensure increased presence of personnel during fires:

- ▶ Supplement by State funding the payment of the amount of subrogation paid to the employer up to the actual salary of volunteer firefighters;
- ▶ Have State subsidies for the development of volunteering to fulfil staffing objectives

## - 02 WOMEN AND MEN TO SERVE

There is no efficient Civil Protection without enough women and men to face challenges on a national scale: ordinary time staff can no longer cover troubled times of climate change.

### A/ A MULTI-YEAR HUMAN CAPACITY STRENGTHENING

**V**olunteering makes up 80% of the staff of firefighters in France. With its contingent of 197,000 committed citizens, it constitutes an essential resource, particularly when mobilization requires a large number of participants over long periods, a characteristic of commitments to natural space fires.

With 41,800 professional firefighters and 13,000 military personnel, Civil Protection has a backbone guaranteeing an immediate and certain response, which can also provide it with a panel of specialists and executives. Faced with situations that require a number of trained and available personnel, it is necessary to strengthen volunteer firefighters and recruit professional firefighters to cope with the increasing risks.

With 6,154 fire stations (2,544 less than 20 years ago), the territorial network is dwindling. **It is a guarantee of equity in rescue operations**, capacity for long-term escalation in crises, and ensures local recruitment. Forest areas must rediscover the territorial network. It is necessary to encourage the reopening, if necessary, of Rescue Centres where the risk has evolved, to strengthen, reinforce and create First Intervention Centres in massifs with a specific response to natural space fires and forests while allowing a first aid response for the local population.

Objective:

**250,000 volunteer**

firefighters,

**50,000 professional**

firefighters

According to official figures from December 2015<sup>1</sup>, there were 246,900 firefighters in France at that time. Of these firefighters, 78% were voluntary/call firefighters while 22% were career firefighters including 17% civilian and 5% military firefighters (the Paris Fire Brigade and Marseille Naval Fire Battalion). In addition, they employed 11,910 medical responders and 10,900 administrative and support personnel.

**Therefore, action against natural space and forest fires must be considered an ecological priority requiring the mobilization of as many people as possible, as soon as the crisis is triggered. Faced with a climate threat, it is time to consider the principle of general mobilization as a citizen response to the climate emergency.**

**The mobilization of firefighter personnel is a priority** for acting quickly and strongly, so when circumstances require it, volunteer firefighters must benefit from automatic leave authorizations.

When they are mobilized during their working hours, employers of volunteer firefighters must benefit from attractive devices with simplified procedures. These employers should be recognized for their civic action.

The National Universal Service (NUS) is a project for the emancipation of youth, based on the transmission of a republican foundation, strengthening national cohesion, experiencing social and territorial diversity. It forms a vector for valuing territories, developing a culture of commitment and supporting social and professional integration.

Therefore, the development by the State of a National Universal Service adapted to civil protection would make it possible to strengthen prevention actions and encourage subsequent commitment as a firefighter, especially as a volunteer. This adapted NUS would not deviate from the desired objectives: thus, younger generations, already sensitive to climate change, sustainable development and environmental preservation, could commit themselves to this cause.

## **B/ TRAINED AND PREPARED ACTORS FOR TOMORROW'S CRISES**

Faced with powerful fires covering several thousand hectares, it is necessary to have stakeholders with specific skills and knowledge.

**R**anked as a specialty for departments with less sensitivity to risk, **training in the fight against natural space and forest fires must now be integrated into the basic training of firefighters.**

The management of these fires requires trained and prepared firefighter managers. Thus, the training offer in the natural space and forest fire sector must be able to be increased without accepting a decrease in training requirements. **It is necessary to be able to have more site and column leaders. The consideration of aerial means and the coordination of land and air combat also requires more aero executives.**

To this end, it is necessary to **strengthen training capacities and collaboration between firefighter officer training schools** (ENSOSP<sup>1</sup> and ECASC<sup>2</sup>).

National solidarity expressed through the commitment of reinforcement columns from all metropolitan France and overseas, requires perfect interoperability of men and equipment. **Thus, from the group leader level, officers must be acculturated to different techniques, the use and engagement of equipment with different intervention capabilities.**

In this spirit, **knowledge of the different massifs should be encouraged and interdepartmental exchanges should be encouraged.**

Finally, it will be necessary **to confirm, as a priority in human commitment, the safety of populations and interveners as a major issue.**

**Wild fires bring together many stakeholders** (elected officials, law enforcement, forest owners, industrialists...) around the Director of Rescue Operations (DOS). In the face of the threat, it is necessary for everyone to find their place and practice their functions. Good preparation is generally synonymous with cohesion and good organization of the hierarchical chain. **It will be useful to increase the number and level of exercises in connection with the Directors of Rescue Operations.**

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<sup>1</sup> National Academy of Fire Officers (École Nationale Supérieure des Officiers de Sapeurs-Pompiers)

<sup>2</sup> National School of Civil Protection (Ecole d'Application de la Sécurité Civile)

The latter will have to face “Operational Impossible”, the conditions announced will one day lead us to have to face a “megafire”, like those that ravaged the United States and Australia. It is therefore more necessary than ever to work on this scenario.

For this, it seems useful to develop a level of training in avoidance and crisis management in continuity with the “Major Forest Fire incident commander” training.

Everyone can be confronted, sooner or later, with a complex situation. Experience and experiences are sources of knowledge and experience rich in lessons. Therefore, care must be taken **to develop and disseminate, in a spirit of sharing good practices, inter-service feedback for all fires over 100 ha**

## **B/ CITIZENS AS ACTOR OF THEIR OWN CIVIL PROTECTION**

The extent, volume of population affected and synergy of threats can no longer accommodate a population that expects everything from its public rescue services.

**A**n active part must be taken by better prepared French people: indeed, “everyone is responsible for everyone” (Saint-Exupéry).

Fire follows man. Nine out of ten fires are of human origin. It is therefore necessary to develop awareness that when living or travelling in or near a massif, this environment is fragile and must be protected.

This is how **citizens should be educated**, especially young people, to:

- ▶ **know the risk,**
- ▶ **know how to identify it,**
- ▶ **accept its presence,**
- ▶ **know how to protect oneself.**

This education can be done through **public communication campaigns, but also with schoolchildren and middle school students**, by contributing to their ecological and civic awareness. Like the “Road Safety Days”, it can be envisaged that citizen days will be held to raise awareness of natural risks.

“Stay and fight, or fly!” Living, exploiting, and having fun near natural and forest areas most of the time involves lifestyle choices. These choices impose obligations. Those of protecting natural spaces from the risk that one induces but also being aware of the need to protect oneself in case of threat. This necessary awareness must **evolve institutional communication** on the imperative respect for legal obligations to clear brush (90% of fires are of human origin) and encouragement for self-defence equipment, indirect protection of the forest.

**90%** of  
forest fires are of  
human origin

The obligations that arise from this choice must be strengthened and taken into account in the prerequisites of insurance companies, and encouraged by local authorities (quality of buildings and structures, mandatory brush clearing, means of first intervention (water reserve, thermal or electric motor pump on photovoltaic battery, small hoses and lance).”



## - 03 ARMED TO FIGHT

A prepared population and better-trained firefighters demand to be armed to face the climate challenge: sized for years and a small part of the territory, our systems of peaceful weapons must be diversified and modernized.

### A/ A BETTER KNOWLEDGE OF RISKS

Knowing the causes of fire allows for the implementation of prevention and communication actions and thus to limit the risks of ignition.

**T**hus, it will be necessary to **generalize and strengthen multidisciplinary teams for Research on Causes and Circumstances of Fires in natural environments**, in order to have reliable data. The conclusions of the investigations can target malicious acts and allow for legal proceedings.

Beyond the visual observations of the responders, scientific analysis of ongoing fires will make it possible to better understand phenomena and be able to oppose operational paradises.

Thus, **developing research, metrology and qualified observation of fires in natural areas and forests** (velocity, fire behaviour, impact of soil, subsoil and relief) will allow sharing and analysis of conclusions, in order to draw lessons from them and feed experience sharing with different actors.

The generalization of phenomena across the entire territory requires an unambiguous understanding and qualification of observed phenomena and actions taken. **Clarifying and homogenizing at the national level the operational communication** vocabulary will allow everyone to understand the course of events and display coherence of devices, regardless of the impacted region.

### B/ A MULTI-YEAR TRAJECTORY FOR STRENGTHENING GROUND RESOURCES

*The reinforcement of our resources has fallen behind due to lack of anticipation: it must be filled by a continuous and long-term effort that is not just an immediate reaction.*

**T**he war of fire is won through coordinated action of ground and air resources. **Adaptation of operational response to the challenge of climate change** must involve encouragement and support for investment by Departmental Fire and Rescue Services to acquire ground-based means of fighting fires in natural areas and forests.

In addition to acquisition, support must also be devoted to renewing a fleet of vehicles, which, during interventions, are subject to strong mechanical and thermal constraints. Forest Fire Tank Trucks can be defined as the nominal vector for fighting climate change. The evolution capabilities of these vehicles allow them to be engaged when traffic routes are degraded (floods, storms, landslides...).

Current standards must evolve to provide more versatility to these vehicles without compromising their evolution capabilities in massifs and without reducing, even strengthening, the safety requirements of responders (self-protection, breathable air in the cabin...). The ambition to reach a

Objective: **10,000 off-road forest fire fighting trucks**, distributed throughout the country

fleet of 7,000 vehicles distributed throughout the territory in the next 5 to 7 years (compared to 3,700 currently) must be displayed and subsidized (50% of vehicle cost).

This fleet will have to be adapted to the massifs to be protected, but also to the strategies to be put in place (groups of heavy tanker trucks, detachments for retardant implementation). Thus will be built a national capacity pact capable of responding to crises.

## C/ A MULTI-YEAR TRAJECTORY FOR STRENGTHENING AERIAL MEANS:

*The French aerial fleet, which has counted up to 26 water bomber planes, was designed around the South zone.*

**ts size, composition and maintenance must be reviewed in light of a potential massive commitment throughout the territory.**

The massive ground and air attack of nascent fires is the foundation of the French doctrine for fighting natural spaces and forest fires.

The sizing and diversification of the national fleet of aerial means must meet the following objectives:

- ▶ **Simultaneously fight against 5 major wild fires by engaging 5 water bomber airplanes fleets, each armed by 4 heavy amphibious water bombers;**
- ▶ **Cover the national territory by making five armed aerial watch circuits using two heavy water bombers;**
- ▶ **Intervene in accident-prone geographical areas using ten pre-positioned heavy water bomber helicopters (Corsica, South zone, Southeast zone).**

With these objectives set, they will make it **possible to establish the optimal format of the national fleet**, composed of light planes (SEAT), amphibious planes, heavy planes (LAT), super heavy planes (VLAT) and heavy water bomber helicopters.

In addition, it will be useful to establish a local fleet with departmental or interdepartmental vocation by encouraging massive rental of pairs of light aircraft or water bomber helicopters by local or regional governments.

Finally, **the implementation of coordination and aerial investigation vectors different from water bomber helicopters and distinct from civil protection helicopters (Dragon), whose missions are diversified without certainty of availability, and in which AERO3 executives will have to take place, will complement attack fleets to optimize use of means and allow command a better vision of its intervention zone**

## D/ AN ADAPTED AND RESILIENT ALERT SYSTEM

*Also created, adapted and sized around the South zone only, the alert system must be extended to all vulnerable areas, forested or cultivated.*

**R**isk forecasting involves a good understanding of the phenomena present, their interaction and their consequences.

**Work related to climate change and its impact on civil protection** (evolution of forest firefighting risk, lengthening of seasons, evolution of fire dynamics) must be developed and financed. They will make it possible to establish a method of analysis of danger specific to the massif, as well as taking into account populations, relief, anthropic activity, fire pressure and meteorological conditions favourable to fire development.

**The current support of Météo-France must be extended** to all departments; the models used must be adapted to the massifs considered to create a “Forest Fire” risk scale. This “Forest Fire” risk scale, which will be widely publicized, will serve as a warning to populations about the evolution of risk.

These studies will aim to strengthen synergy between scientific technical and operational approaches and will allow the development of digital modelling tools that can be used in anticipation on the ground or in decision-making centres.

Historically, massifs subject to fire risk had developed a human surveillance network. Gradually video surveillance took over. **Early detection** proves to be a major asset in fighting fires. **The installation of these devices must be eligible for state financial support.**

## - 04 EVOLVING STRATEGIES AND TACTICS

Resulting from the reflection conducted during the “Vulcain mission” 30 years ago, French doctrine demands a radical re-examination, adapted to new challenges: the time has come for a profound overhaul of the strategy for fighting forest and natural space fires.

## A/ RECLAIMING FRENCH EXCELLENCE: AN ADAPTABLE DOCTRINE

*Long inspiring and at the forefront of reflection with its doctrine of operational command and coordination, France must question its habits, explore proven methods elsewhere without prejudice, and regain a preponderant place in European civil protection.*

**O**n the strategic level first of all, several actions must now be taken:  
Establish a **preventive task force in departments that are not equipped** with one: this action must make it possible to reinforce the notion of massive attack on nascent fires and make it possible to maintain 80% of fire starts before they exceed 10 hectares.

Objective: By preventive operations: **80% of wild fires** maintained below 10 hectares

Faced with a strong evolution of fire characteristics, it is proposed to re-examine the doctrine of command of rescue operations by moving towards the establishment of an Assistant Commander of Rescue Operations (operations chief). In charge of conducting the operation, the Assistant Commander of Rescue Operations must allow the Commander of Rescue Operations to devote himself to the evolution of crisis management strategy with the Operations Director.

In this logic, it becomes desirable **to integrate elements of the Incident Command System into the management of large or long-lasting fires**. The evolution from anticipation to analysis and taking into account aspects related to finance, legal or economic (pre-litigation, value of saved) has become necessary to ensure a globalized management of an intervention against fire.

In the same spirit and given the speed of fires propagation, the importance of issues and the risks of social rupture that they can generate (mega fires), it becomes essential to strengthen the "Anticipation" and "Intelligence" sectors, with the aim of evolving towards an "Analysis" function to allow it levels of perspectives ranging from 5 hours to 24 hours.

The rise in power of devices set up on heavy operations, which often exceed a thousand firefighters, requires redefining the "Support" function towards different logistical management from the "Means" function in order to organize mechanical, logistical, food and health support.

Finally, the mobility of vehicles and their commitment throughout the national territory implies ensuring interoperability of firefighting doctrines at the national level while preserving the specificities induced in each defence zone or department."

In light of the 2022 fires and European feedback, it will also be necessary to:

- ▶ **Work on extended capacity rupture assumptions and degraded situation schemes in several areas;**
- ▶ **Create teams at the national or zonal level composed of analysts and experts in fire, meteorologists and cartographers, capable of using remote tools, as well as data that can be transmitted in real time by drones or planes, interpret them and share them with the COS. These teams will have the capacity if necessary to reinforce the command of operations and will be systematically proposed to any department. They can advantageously be labelled by the European Civil Protection Mechanism (ECPM);**
- ▶ **Establish a clear doctrine for protecting inhabited areas: legal obligations for clearing brush are a particularly effective passive protection method; they make it possible to consider confinement and self-defence. Otherwise, early evacuation, organized and coordinated with the Commander of Rescue Operations can be recommended to the Operations Director and Rescue Operations Director. The question of confinement or evacuation must be well measured, vulnerability during travel, management of victims, self-defence of property and preparation of people are all factors to be analysed.**

With regard to firefighting tactics, firefighting actors must adapt to longer, deeper, faster and more spacious fires. These changes require questioning the practices of firefighters. It is therefore necessary to:

- ▶ **Extend and systematize Armed Aerial Watch, which has already demonstrated, like terrestrial preventive devices, incomparable effectiveness in fighting nascent fires.**

Existing since time immemorial, and recognized by the law on modernization of civil protection of August 13, 2004, it is necessary to disseminate tactical fire training and systematize its integration into a firefighting device. It is indeed **a set of tools that the Commander of Rescue Operations must have at his disposal** to carry out his extinguishing mission. In addition, in order to conceive multiple manoeuvre ideas, it is useful to consider the creation of heavy units for treating edges or creating access based on the use of civil engineering equipment. Similarly, systematizing drowning treatment of edges or pioneer work to ensure the extinction of a disaster is a necessity.

In terms of human resources' ability to carry out their mission, it is appropriate to formalize the operating modes of Sanitary Support in Operation for long and complex operations, to anticipate systematic reliefs or rest phases after 12 hours of fighting and, to meet European standards and ensure optimal working conditions, to make security function mandatory during large-scale operations.

Finally, **the use of new technologies must be the subject of prospective work** by fire and rescue services, in order to remain capable of fighting larger and more frequent fires. From now on, several actions must be taken to facilitate the action of firefighters:

- ▶ **Reinforce the use of the European Copernicus program (European Forest Fire Information System EFFIS) in real time and develop common and interoperable mapping tools;**
- ▶ **Redefine forest fire intervention outfits towards an "augmented firefighter", better protected, better located and communicating;**
- ▶ **Develop digitization of the Intervention Zone using real-time drone data and mapping tools, in order to share enriched representations of the terrain;**
- ▶ **Reinforce the interoperability of ground (homogeneous capacity vehicles) and air means by securing digital and analogue radio communications.**

## **B/ OPTIMIZE THE USE OF TERRITORIAL, NATIONAL AND EUROPEAN MEANS**

*The mobilization, transit, massive employment and support of ground, air, French or European means is not self-evident; the massive support component for fighting must be a permanent subject of reflection.*

In the past French firefighters regularly went to reinforce their European counterparts, in 2022 firefighters from several countries intervened on national territory.

To ensure maximum efficiency it is desirable to:

- ▶ **Identify the national pool of Forest Firefighting/MPCU experts and valorise these career paths;**
- ▶ **Work on Host Nation Support (support from the host country) in order to facilitate interoperability of reinforcements**
- ▶ **Strengthen territorial, zonal and national operational rooms by sending experts in the use of air means, engagement of the Union Civil Protection Mechanism or Host Nation Support.**

Regularly, reinforcements are called upon to cross France to ensure an appropriate operational response in departments affected by major disasters. The following provisions will optimize the maintenance of this operational capacity:

- ▶ Set up means at the zone level, distributed among several fire and rescue services and financed by the State, which can compensate for the absence of air means during night periods (projectable DIR groups on territories, heavy penetration vehicles);
- ▶ Accelerate the provision of reinforcements by air travel, TGV for example;
- ▶ Use preventive columns by defence zones and twinned fire and rescue services, in order not to impair the capacity of a fire and rescue service to continue to provide its classic operational response.



## CONCLUSION

**R**ealized within a tight deadline, this feedback highlights the resilience of the French civil protection model, based on the combined intervention of the State and Regional authorities, on the complementary action between professional firefighters, volunteers, military and national means of the national Civil Protection, as well as on national and European solidarity.

These fundamental principles have demonstrated their relevance and effectiveness, allowing this summer to preserve human lives, property, and limit losses for the environment. They therefore deserve to be reaffirmed.

However, the magnitude of the challenge posed by climate change and the predictable inclusion of extreme climate events in 2022 in normality require a radical acceleration of our country's preparation for this transition. They also involve a thorough revision of our public civil protection policy as a whole and raising its level of ambition to develop prevention, education and resilience of populations facing risks, increasing and modernizing our human capacity means - particularly through increased support for citizen and voluntary civil protection engagement at national and European Union levels - and materials, and therefore deploying at the

**State level a financial trajectory allowing to support these investments on a national scale and over the next five years.**

**They must finally lead to questioning, adapting and disseminating our intervention doctrine at the national level, in order to optimize the use of territorial, national and European means.**

**This with the paper traces some tracks on this point, which will deserve to be deepened during the coming months. Field professionals intend it as a qualitative contribution to public debate**

## **SUMMARY OF PROPOSALS**

### **GROUP 1 - PREPARING THE COUNTRY FOR THE CLIMATE CHALLENGE**

**Proposal 1:**

Make natural and agricultural areas less vulnerable through a sustainable land development policy.

**Proposal 2:**

Simplify legislative and regulatory frameworks for the defence of forests and natural areas against fire.

**Proposal 3:**

Encourage joint work with the rural and forestry world.

**Proposal 4:**

A strong and innovative civil protection policy.

**Proposal 5:**

A radically modernized financing through financing aid and investment.

### **GROUP 2 - WOMEN AND MEN TO SERVE:**

**Proposal 6:**

A multi-year human capacity strengthening.

**Proposal 7:**

Actors trained and trained for tomorrow's crises.

**Proposal 8:**

A population actor in its civil protection.

### **GROUP 3 - ARMED TO FIGHT:**

**Proposal 9:**

Better knowledge of forest fire risks and fire behaviour.

**Proposal 10:**

Built a multi-year trajectory of strengthening land-based means.

**Proposal 11:**

A multi-year trajectory of strengthening air means.

**Proposal 12:**

An adapted and resilient alert system.

#### **GROUP 4 - EVOLVING STRATEGIES AND TACTICS:**

**Proposal 13:**

Reclaiming French excellence: a doctrine to be adapted.

**Proposal 14:**

To optimize the use of territorial, national and European means.

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