



Union Civil Protection Mechanism -
Peer Review Programme
for disaster risk management

European Union
Civil Protection



Wildfire Peer Review report Italy 2024

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Figure 1 - The Peer Review team, representatives from the NCP team and representatives from key institutions at the operational headquarters of the Italian Civil Protection Department in Rome. From left to right: Angelica Marengo (CMCC), Veronica Casartelli (CMCC), Dana Salpina (CMCC), Gabriele Spitoni (DG ECHO), Cristina Brăilescu (DG ECHO), Erwan Marteil (DG ECHO), Judith Sørensen (DG ECHO), Jorge Suárez Torres (peer), Richard Marques (peer), João Carlos Verde (peer), Richard Franc (peer), Eric Flores (peer), Fabrizio Curcio (NCP/DPC), Luigi D'Angelo (NCP/DPC), Paola Pagliara (DPC), Nazzareno Santilli (NCP/DPC), Enrico Pompei (MASAF), Marina Vecchio (MASAF), Michele Buccolo (DPC), Davide Pontani (CNVVF), Carmelo Picone (MASE), Fabiana Baffo (MASE), Irene Davi (CUFAA), Maria Agostiano (MIC), and Dario Negro (NCP/DPC). Source: Presidenza del Consiglio dei Ministri - Dipartimento della Protezione Civile.



Figure 2 - The peers, the NCP, and representatives from the CNVVF. From left to right: Jorge Suárez Torres (peer), Richard Marques (peer), João Carlos Verde (peer), Luigi D'Angelo (NCP/DPC), Dario Negro (NCP/DPC), Richard Franc (peer), Eric Flores (peer), Davide Pontani (CNVVF), and Gianfilippo Micillo (CNVVF). Source: Presidenza del Consiglio dei Ministri - Dipartimento della Protezione Civile.

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Executive Summary

The Italian civil protection is a well-structured and integrated service that effectively manages disaster risk using a comprehensive approach that involves key stakeholders across different territorial levels. In recent years, the country's effort towards a whole-of-society and a whole-of-government approach has greatly improved the effectiveness of disaster and forest fire risk management. Regarding the latter, Italy has made significant strides by moving from a suppression-focused approach to integrated risk management, promoting a cross-sectoral and holistic approach.

In view of current and future climate, socio-economic, and environmental changes, vertical and horizontal coordination and collaboration among key actors involved in the overall wildfire risk management cycle is constantly improving, thanks to the efforts of the Italian Civil Protection Department (DPC) in close cooperation with Regions, Autonomous Provinces and all relevant actors.

The report details existing strengths and recommendations of the Italian wildfire risk management system for the key focus areas covered within this peer review: **governance of wildfire risk management, wildfire preparedness, and wildfire emergency response**. The strengths and recommendations regarding wildfire risk assessment, wildfire risk management planning, wildfire prevention, and recovery and lessons learned are not exhaustive, as they are exclusively related to the legislative and institutional frameworks.

Key strengths identified

GOVERNANCE OF WILDFIRE RISK MANAGEMENT

Governance framework

- **Civil protection is the function assigned to a well-structured integrated system**, the National Civil Protection Service (SNPC), that has been demonstrating its capacities across the entire disaster risk management cycle. Its ability to integrate and deploy a wide range of public and private resources has proven effective, especially in the response phase.
- **A whole-of-society and a whole-of-government** approach is ensured in disaster risk management, with all key actors at the different territorial scales contributing according to their roles and responsibilities.
- The **National Civil Protection Department (DPC)**, belonging to the Presidency of the Council of Ministers and directly reporting to the Prime Minister, ensures effective and timely coordination, especially in the response phase.
- The **Civil Protection Code** (Legislative Decree 01/2018) is a solid legislative act that successfully consolidates and streamlines all civil protection provisions into a single text, clarifying roles and responsibilities in the field of disaster risk management.
- Italy has already shifted towards **an integrated wildfire risk management system**, moving on from a suppression-focused approach and accepting planned and controlled fire as a landscape modelling mechanism, in line with the latest international developments.
- Although a revision is necessary, the **Framework Law 353/2000 on forest fires** established a sound and forward-looking legal framework for forest fire risk management that ensures the effectiveness of the overall system.

Institutional framework

- Despite forest fire risk management being primarily the responsibility of Regions and Autonomous Provinces, the Italian approach towards wildfires **effectively engages all key stakeholders** at different levels.
- The **Forest Fire Risk Unit (AIB Unit) at the DPC** plays a key role in coordinating the entire system and establishing good relationships with relevant actors at different territorial levels, which is an enabling condition for effective risk management.

Wildfire risk management strategy

- A **National Forest Strategy** has been developed with a 10-year funding commitment. Its effective joint implementation by key stakeholders under the leadership of a responsible authority/overarching structure will be key to increase resilience against wildfire risk.

Coordination and partnership

- A good **horizontal and vertical cooperation and collaboration** among key stakeholders is in place, which is the result of DPC's continuous efforts to establish effective relationships. Plenary meetings periodically held at national level to share experiences and collect needs, along with fact-finding visits to the Regions and Autonomous Provinces are examples of successful initiatives that help to establish a good wildfire risk management system.
- The establishment of the **Inter-Institutional Technical Board** to discuss key issues on wildfire risk management and reach consensus on consistent approaches and objectives to be achieved has proven effective in strengthening the system and increasing resilience.
- Establishing a **Coordination Committee** is a valuable solution to keep stakeholders engaged throughout the summer forest fire season. This flexible committee is able to adapt to the current conditions, ensuring situation awareness and a gradual and coordinated response.
- Adapting the general concept of the **National Platform for Disaster Risk Reduction (NPDRR)** to the national context is an effective approach to bring together all key stakeholders and gather information about disaster risk management-related activities that go beyond the scope of the SNPC.
- The effective collaboration between the Italian Civil Protection Department, Regions, Autonomous Provinces, and the Ministry of Culture (MIC) demonstrates the huge effort devoted to **protect movable and immovable cultural heritage and landscapes** against disaster risk. The integration of cultural heritage safeguarding procedures into emergency management plans is an excellent practice that should be disseminated to other European countries for inspiration.

Wildfire risk financing

- Various **European funds** are used to support the implementation of wildfire risk management activities at the different territorial levels. The very successful absorption of the Rural Development Funding programme for the period 2014-2022 is an example of efficient exploitation of EU resources.

Systemic resilience

- **There are synergies between wildfires and other areas**, such as climate change, forest management, disaster risk reduction and rural development, which demonstrate the ongoing effort towards a cross-sectoral and multi-risk approach.

WILDFIRE RISK ASSESSMENT

- **Good risk assessment and mapping** are used for forest fire risk management planning at regional level, and are updated on a regular basis using new tools and models.

WILDFIRE RISK MANAGEMENT PLANNING

- **Regional plans** (AIB Plans) were introduced in 1975 by Law 47/75. Since 2001, according to the Framework Law 353/2000, these plans cover all stages of the forest fire risk management cycle at both strategic and operational levels.

WILDFIRE PREVENTION

- **Risk awareness campaigns** focused on wildfire risk have been implemented throughout the country, addressing different target groups with different technologies and approaches. General messages are tailored to the specific contexts, according to main causes of fires and territorial characteristics. Special attention is devoted to the most vulnerable groups, such as people with disabilities.
- **Different channels** are used to disseminate messages to citizens on risks and appropriate behaviours, with a view to raising awareness and increasing resilience against wildfire risk (e.g. website, social-media, radio, TV, SMS).
- The **criminal justice system** severely punishes arson, serving as a strong deterrent.
- **Innovative tools and platforms** are used in wildfire risk management. The SIM project, currently being implemented, is a valuable initiative and a great opportunity to enhance collaboration, knowledge and data sharing, and interoperability across various sectors, levels and components.

WILDFIRE PREPAREDNESS

- **Twinning initiatives** between Regions and Autonomous Provinces are organised during the summer forest fire season to check and improve interoperability among first-responder teams.
- A large and well-organised **volunteering system** is in place, which demonstrates the **strong sense of solidarity** of the Italian population. A huge number of trained volunteers with specific skills and profiles belong to volunteer organisations listed in the National Register of Voluntary Work Organisations. Clear Standard Operating Procedures (SOPs) are in place to regulate the activation, participation, and reimbursement of volunteers.
- Ahead of summer forest fire seasons, DPC promotes and organises **preparatory meetings** with Regions and Autonomous Provinces to assess and check the forest fire response capacities, so as to identify and address critical issues that might emerge in advance.
- **Training** to Regions and Autonomous Provinces are continuously offered by DPC on different topics, such as SOPs to request the intervention of the state forest fire air fleet.

- **A national IT web-platform** (website and app) is being developed to collect civil protection plans, early warning system and alert messages, and awareness raising documents to provide targeted information and messages based on the geo-localisation of the individual.
- All the firefighters involved in response operations are **trained at tactical level** based on common approaches.
- Each region has structured its own **early warning system** for forest fire risk, using innovative tools and models. DPC, during the forest fire season, holds daily briefings to discuss the ongoing situation all over Italy. Based on the **National forest fire forecast bulletin** issued daily by the National Functional Centre and information from the ground, the positioning of the state aerial fleet is decided.
- A common curriculum for the **training of Directors of Suppression Operations (DOS)** is established by law, clearly describing topics to be addressed, activities to carry out, and time to dedicate.
- Guidelines for drafting **civil protection plans** at the sub-national level are in place to ensure common minimum standards and consistency across the country. Regions and Autonomous Provinces usually help municipalities by providing technical support.

WILDFIRE EMERGENCY RESPONSE

- The **National Fire and Rescue Service** plays a pivotal role and ensures common procedures in the response phase, both vertically and horizontally, operating from the national to the local level. Thus, this service has full responsibility in managing the efforts and coordinating different agents in the initial stages of a wildfire, taking the lead in command and control in the event of imminent danger to urban/rural areas.
- The country's **state aerial forest fire capacity** proved to be well-structured, effectively managed and coordinated by the Unified Air Operations Centre of DPC (COAU), and adaptable to different conditions, being strategically positioned across the country based on current needs and predicted fire risk.

RECOVERY AND LESSONS LEARNED

- **Forest fire investigation** capacities, both technical and administrative, exist within an efficient, up-to-date, procedural framework following international standards. Nearly all forest fire investigations reach a successful conclusion, with only a few undetermined causes.
- **Carabinieri Forestali** (CUFAA) are responsible for collecting, verifying and validating data through the C-SIFA portal and sending statistical data to the European Forest Fire Information System (EFFIS). This well-established procedure ensures evidence-informed decision making and has important legal consequences, given the restrictions imposed on the mapped burned areas delineated in the Fire Cadastre also through this procedure.
- **Debriefing meetings** are organised by the DPC after each forest fire season to discuss with the Regions, Autonomous Provinces and all relevant stakeholders the strengths and areas for improvement. This forms the basis for identifying and disseminating recommendations for subsequent seasons.

Key recommendations

GOVERNANCE OF WILDFIRE RISK MANAGEMENT

Governance framework

- Since civil protection is by Constitution a concurrent (shared) competence between the State and the Regions, each Region and Autonomous Province has established its own civil protection system based on its specific territorial and socio-economic characteristics. While this diversity is an invaluable strength, the fragmentation poses significant challenges in terms of coordination and consistency. **Common minimum standards, capacities, terminology and processes** need to be agreed, established and implemented. This would also ensure efficiency and consistency across the country, and give fair rights and services to all citizens.
- In view of the fast-changing risk landscape, there is an urgent need **to revise and update the Framework Law 353/2000** on forest fire risk to clarify roles, responsibilities and processes. To achieve this goal, clarifications on the terminology (e.g. forest fire vs wildfire) are also needed to avoid 'grey areas' in defining the roles and responsibilities of key actors, which could cause major problems (especially in response phase).
- **Governance mechanisms** should be revisited, adopting a model that guarantees permanent, multi-level dialogue, negotiation and problem-solving, with fora for stakeholders to engage in policy and decision making.
- It is recommended to consider the opportunity to **adapt the concept of the fixed fire season**, so as to apply a more flexible approach that could increase the effectiveness of the system, taking into account climate and environmental changes predicted to occur in the near future.

Institutional framework

- Given their key role, there is a need to improve the **technical, administrative and financial capabilities** of national, regional and local civil protection systems to boost resilience across the entire country and ensure the implementation of common minimum standards. Exchange of expertise, joint training, and additional twinning programmes should be promoted at the national level.

Wildfire risk management strategy

- A **National wildfire risk management strategy** should be developed, with cross-sectoral strategic objectives, and clear responsibilities among the various actors and territorial levels. This would help to foster the already existing synergies between forest fire risk management and other areas (such as climate change, disaster risk reduction and rural development), considering trade-offs, promoting policy coherence and aligning national strategies (e.g., the National Forest Strategy and National Adaptation Strategy).
- All governance levels and stakeholders should be involved in pursuing the goals established for Italy. To this end, a **wide public consultation**, from national to local level, as far as the individual citizen, is needed with a view to achieving a better understanding of the gaps and strengths, and allow for the definition of a set of strategic actions and a monitoring framework (i.e. key performance indicators).
- Since the effective implementation of the **National Forest Strategy** is key to increasing resilience in the near future, the responsible authorities should ensure full commitment, dedicating appropriate technical and administrative capacities. Close cooperation between civil protection and forest management authorities will be needed for effective implementation.

Coordination and partnership

- The **Forest Fire Risk Unit (AIB Unit) at the DPC** would benefit from reinforcement with additional qualified staff and technical/administrative capacities, thus improving the whole system, while strengthening its pivotal role in ensuring good vertical and horizontal coordination, and collaboration among key stakeholders.
- Negotiations between State and Regions/Autonomous Provinces sometimes create delays and difficulties in reaching consensus within a suitable time frame and increase the lack of homogeneity across the national territory. Considering that the State does not have the mandate to legislate directly on issues related to civil protection, it is of paramount importance that all authorities involved at different territorial levels under the guidance of the DPC **strive to reach consensus in a timely manner for the benefit of the entire national system.**

Wildfire risk financing

- The development of a **national investment programme** for integrated wildfire risk management would help support the implementation of a consistent and comprehensive approach throughout the country.
- Several European funds support the implementation of wildfire risk management activities at different territorial levels. To ensure that all available opportunities are fully exploited, it is recommended that **capacity be developed at national level to achieve a better overview of the various** risk management investment opportunities and to **provide technical assistance to Regions and Autonomous Provinces** in preparing projects, developing the necessary studies for large investments, or other capacity building needs.
- It is recommended to increase the **exchange of good practices** among Regions and Autonomous Provinces in the use of national and/or European funds for disaster risk management through a **dedicated network** (similar to the network of environmental authorities in Italy).
- A **tender system for citizens** to apply for, e.g., wildfire fuel management could promote the implementation of prevention activities by the general public and improve territorial resilience.

Systemic resilience

- Promote closer mechanisms for cross-sectoral dialogue, fostering and improving upon already existing synergies between wildfire risk management and related topics, such as climate change, disaster risk reduction and rural development, thus improving resilience and reducing vulnerability.

WILDFIRE RISK ASSESSMENT

- **Common minimum standards** in conducting forest fire risk assessment should be included in the national guidelines for drafting AIB Plans. A list of must have/could have elements in risk assessment should be recommended to Regions and Autonomous Provinces.

WILDFIRE RISK MANAGEMENT PLANNING

- Since AIB Plans are currently the primary process for planning forest fire risk management and no specific national strategy/plan exists, it is pivotal to set **common minimum standards, ensure coherence and consistency** among Regions and Autonomous Provinces, and guarantee that **national objectives are also achieved through the implementation of local action plans.** To this end and to improve the ove-

rall forest fire management system, the ongoing revision and update of the guidelines on drafting AIB Plans would be an excellent opportunity. To improve the efficacy of AIB Plans, key indications should be provided in the Guidelines, both in relation to the process and the content.

- A yearly **in-depth analysis of all AIB Plans** by the DPC, resulting in a comprehensive assessment and list of lessons learned that are made publicly available, would be key to achieving a common understanding and knowledge of forest fire risk and risk management approaches.
- The successful implementation of the **integrated IT platform** currently under construction (SIM project) will be beneficial to informing planning and decision-making processes.
- Ensuring coherence between civil protection plans at the different territorial levels and AIB Plans is crucial in order to identify and implement successfully **appropriate measures** to cover the whole risk management cycle.

WILDFIRE PREVENTION

- Consider adopting **partial bans and/or exceptions** instead of totally forbidding any kind of fire activities during the forest fire season, as blanket bans could increase the number of negligent practices.
- Consider introducing legislation to allow State, Regions, or Municipalities to take **fuel management** actions on public or private lands that are inadequately managed. National fuel management guidelines with investment decision-support tools would help regional and local authorities – as well as landowners – to prioritise wildfire prevention investments among the various options.
- **Prescribed burning** should be further encouraged, alongside other landscape and fuel management practices, such as grazing and other agricultural fire-compatible activities, in close dialogue with environmental authorities.
- **Guidelines for prescribed fire** should be developed, including weather and landscape criteria, as well as coordination and operational responsibilities, to increase the efficiency of the system. In addition to prevention, these guidelines would also contribute to firefighter's training programmes in the use of fire.
- An **in-depth analysis** of existing risk communication and awareness raising initiatives, resulting in a comprehensive final report, would help further enhance their quality and effectiveness. Also, it would help to systematise and align existing activities carried out by various stakeholders at the different levels.

WILDFIRE PREPAREDNESS

- Given the paramount importance of their role in the response phase, a **national certification for DOS** personnel would help ensure common standards in terms of skills and interoperability across the country. Also, common operating procedures for DOS would ensure better interoperability and homogeneity across the country.
- Common training courses and national certification for **volunteers engaged in forest firefighting** activities would help overcome the interoperability challenges and disparities highlighted during past twinning

initiatives. Advanced training could also be tailored to the specific characteristics of the territories in which the teams operate.

- Consider developing mechanisms for **procuring aerial means** for regions at an earlier stage and in a coordinated manner, to reach the market under better negotiating conditions.

WILDFIRE EMERGENCY RESPONSE

- To address the complexities of simultaneous requests for the state aerial fleet during the summer forest fire season, it is essential that all the actors involved apply the **specific procedures**, annually reviewed by COAU.
- Ensuring that the COAU have an **overview of all the events** on the ground would significantly increase situational awareness, thereby enhancing the overall effectiveness of operations.
- Although difficult to identify and develop, **standardised requirements** at national level for regional fleets would help ensure common minimum aerial capacities across the country and prevent the COAU being overwhelmed by requests for the state fleet.
- In addition to standardised requirements, implementing **minimum operating procedures** is essential when multiple aircraft are working simultaneously on the same fire. These procedures should cover aspects such as radio communications (both air-to-air and air-to-ground), standardised aircraft nomenclature (regardless of affiliation), and airspace coordination within the incident area.
- Involving **fire analysts** in field response operations would increase the efficiency of the system by informing and influencing decision making directly from the ground.
- It is highly recommended that Regions and Autonomous Provinces have a **single operations coordination room** (meaning the Permanent Unified Operations Room –SOUP– integrated into the regional operations room) to facilitate horizontal and vertical response coordination and maximise available resources.
- Developing common **key performance indicators** to evaluate properly national and regional responses would help identify strengths and opportunities for improvement.
- A **joint communication and information sharing system** would be key in ensuring interoperability and better coordination of response actions, at both tactical and operational levels.

RECOVERY AND LESSONS LEARNED

- Centralisation – in a **joint repository** open to all key stakeholders (such as the SIM platform being implemented) – of all data and information on forest fires/wildfires collected by different authorities at the different territorial levels (with the exception of those related to crimes and investigations), would be useful to inform planning processes and thus identify appropriate measures to be implemented within the entire risk management cycle.

- Identifying the reasons why the **Fire Cadastre** is not being implemented by various municipalities and working to enforce its implementation would help ensure that land use restrictions are applied in burnt areas.
- A **performance assessment** of the overall forest fire risk management system using appropriate indicators would ensure that strengths and weaknesses are identified and addressed in a timely manner, with a view to continuous improvement. This process could involve Competence Centres or universities/research institutes, and employ various tools (e.g. surveys, public debates, statistical data).
- Understanding the **underlying structural/social causes of fires**, which may involve conflicts over land use, for example for the establishment of pastures and hunting areas, could help to identify alternative approaches, raise awareness and increase community engagement, and establish constructive dialogue at the local level by involving all stakeholders (including volunteers and academia).

Sintesi

La protezione civile italiana è un servizio ben strutturato e integrato che gestisce efficacemente il rischio da disastri utilizzando un approccio globale che coinvolge i principali attori a diversi livelli territoriali. Negli ultimi anni, lo sforzo del Paese verso un approccio che includa l'intera società e l'intero apparato governativo ai diversi livelli ha notevolmente migliorato l'efficacia nella gestione del rischio da disastri e incendi boschivi. In riferimento a quest'ultimo, l'Italia ha compiuto significativi progressi passando da una prospettiva incentrata sulla soppressione a una basata sulla gestione integrata del rischio, promuovendo un approccio trasversale e olistico.

In considerazione dei cambiamenti climatici, socio-economici e ambientali, attuali e futuri, il coordinamento e la collaborazione verticale e orizzontale tra i principali attori coinvolti nel ciclo di gestione del rischio incendi boschivi, sono in costante miglioramento. Questo grazie agli sforzi del Dipartimento della Protezione Civile (DPC) in stretta cooperazione con le Regioni, le Province Autonome e tutti gli attori rilevanti.

Il rapporto presenta i punti di forza e le raccomandazioni esistenti nel sistema di gestione del rischio incendi boschivi in Italia per le principali aree di interesse trattate in questa revisione tra pari: **governance della gestione del rischio incendi boschivi, preparazione e risposta agli incendi boschivi**. I punti di forza e le raccomandazioni riguardanti la valutazione del rischio incendi boschivi, la pianificazione della gestione del rischio incendi boschivi, la prevenzione degli incendi e il superamento delle emergenze e le lezioni apprese non sono esaustivi, in quanto in tale area l'analisi si è focalizzata esclusivamente sui quadri legislativi e istituzionali.

Punti di forza identificati

GOVERNANCE DELLA GESTIONE DEL RISCHIO INCENDI BOSCHIVI

Quadro di governance

- **La protezione civile è una funzione assegnata a un sistema integrato ben strutturato**, il Servizio Nazionale della Protezione Civile (SNPC), che ha dimostrato le proprie capacità sull'intero ciclo di gestione del rischio da disastri. La sua abilità di integrare e utilizzare una vasta gamma di risorse pubbliche e private si è dimostrata efficace, soprattutto nella fase di risposta.
- Un approccio che **include l'intera società e l'intero apparato governativo ai diversi livelli** è garantito nella gestione del rischio da disastri, con tutti gli attori chiave che contribuiscono secondo i propri ruoli e responsabilità alle varie scale territoriali.
- Il **Dipartimento della Protezione Civile (DPC)**, essendo una struttura incardinata nella Presidenza del Consiglio dei Ministri e, dunque, direttamente collegata al Presidente del Consiglio, garantisce un coordinamento efficace e tempestivo, soprattutto nella fase di risposta.
- Il **Codice della Protezione Civile** (Decreto Legislativo 01/2018 e ss.mm.ii.) è un buon atto legislativo che consolida in maniera organica tutte le disposizioni in materia di protezione civile in un unico testo, chiarendo ruoli e responsabilità nel campo della gestione del rischio da disastri.
- L'Italia ha già adottato **un sistema integrato di gestione del rischio incendi boschivi**, abbandonando un approccio focalizzato solo sulla soppressione e accettando il fuoco pianificato e controllato come meccanismo di modellazione del paesaggio, in linea con gli sviluppi internazionali più recenti.

- Sebbene sia necessaria una revisione, la **Legge 353/2000, Legge Quadro sugli incendi boschivi**, ha istituito un quadro giuridico solido e lungimirante per la gestione del rischio incendi boschivi, garantendo l'efficacia complessiva del sistema.

Quadro istituzionale

- Nonostante la gestione del rischio da incendi boschivi sia principalmente responsabilità delle Regioni e delle Province Autonome, l'approccio italiano **coinvolge efficacemente tutti gli attori chiave** a diversi livelli.
- L'unità AIB del **Servizio rischi ambientali, antropici e da incendi boschivi** presso il DPC svolge un ruolo chiave nel coordinare l'intero sistema e nel creare buone relazioni con gli attori rilevanti a diversi livelli territoriali, prerogativa per una gestione efficace del rischio.

Strategia di gestione del rischio incendi boschivi

- È stata sviluppata una **Strategia Forestale Nazionale** supportata da un impegno di finanziamento decennale. Per aumentare la resilienza al rischio incendi boschivi, sarà cruciale che tutti gli attori chiave concorrano a garantire un'attuazione congiunta ed efficace della strategia, sotto la guida di un'autorità responsabile o di una struttura sovraordinata.

Coordinamento e partenariato

- È in atto una **buona collaborazione e cooperazione orizzontale e verticale** tra gli attori chiave, frutto degli sforzi continui del DPC per stabilire relazioni efficaci. Incontri plenari tenuti periodicamente a livello nazionale per condividere esperienze e raccogliere esigenze, insieme a visite conoscitive nelle Regioni e Province Autonome, sono esempi di iniziative di successo che contribuiscono a creare un buon sistema di gestione del rischio incendi boschivi.
- L'istituzione del **Comitato tecnico interistituzionale** per discutere questioni chiave sulla gestione del rischio incendi boschivi e per raggiungere un consenso su approcci e obiettivi coerenti, si è rivelata efficace nel rafforzare il sistema e aumentare la resilienza.
- L'istituzione di una **Cabina di regia** è una soluzione valida per mantenere coinvolti gli attori durante la campagna estiva antincendi boschivi. Grazie alla sua natura flessibile, il Comitato è in grado di adattarsi allo scenario in corso, garantendo una costante consapevolezza della situazione in atto e una risposta graduale e coordinata.
- Adattare il concetto generale della **Piattaforma Nazionale per la Riduzione del Rischio da Disastri (PNRRD)** al contesto nazionale è un approccio efficace per riunire tutti gli attori chiave e raccogliere informazioni sulle attività legate alla gestione del rischio da disastri che vanno oltre il campo d'azione del SNPC.
- La collaborazione efficace tra DPC, Regioni, Province Autonome e il Ministero della Cultura (MIC), dimostra l'enorme impegno dedicato alla **protezione del patrimonio culturale mobile e immobile e paesaggistico** dal rischio da disastri. L'integrazione delle procedure di salvaguardia del patrimonio culturale nei piani di emergenza è un'eccellente pratica che dovrebbe essere diffusa anche in altri paesi europei come fonte d'ispirazione.

Finanziamento del rischio incendi boschivi

- Diversi **fondi europei** sono utilizzati per supportare l'attuazione delle attività di gestione del rischio incendi boschivi ai diversi livelli territoriali. L'ottima capacità di assorbimento del programma di finanziamento per lo Sviluppo Rurale per il periodo 2014-2022 è un esempio di utilizzo efficiente delle risorse dell'UE.

Resilienza sistemica

- **Esistono sinergie tra gli incendi boschivi e altri argomenti ad esso collegati**, quali il cambiamento climatico, la gestione forestale, la riduzione del rischio da disastri e lo sviluppo rurale, che dimostrano lo sforzo in corso verso un approccio multisettoriale e multi-rischio.

VALUTAZIONE DEL RISCHIO INCENDI BOSCHIVI

- Una **buona valutazione e mappatura del rischio** viene utilizzata per la pianificazione della gestione del rischio incendi boschivi a livello regionale, ed è regolarmente aggiornata utilizzando nuovi strumenti e modelli.

PIANIFICAZIONE DELLA GESTIONE DEL RISCHIO INCENDI BOSCHIVI

- **I piani regionali di previsione, prevenzione e lotta attiva agli incendi boschivi (piani AIB)** sono stati introdotti nel 1975 dalla Legge 47/75. Dal 2001, secondo la Legge Quadro L.353/2000, questi piani coprono tutte le fasi del ciclo di gestione del rischio incendi boschivi sia a livello strategico che operativo.

PREVENZIONE DEGLI INCENDI BOSCHIVI

- **Campagne di sensibilizzazione sul rischio incendi boschivi** sono state implementate in tutto il Paese, rivolgendosi a diversi gruppi target con tecnologie e approcci differenti. I messaggi generali sono adattati ai diversi contesti in cui le campagne vengono svolte, considerando le principali cause degli incendi e le caratteristiche territoriali. Particolare attenzione è dedicata ai gruppi più vulnerabili, come le persone con disabilità.
- Vengono utilizzati **diversi canali** per diffondere messaggi ai cittadini sui rischi e sui comportamenti appropriati da adottare, con l'obiettivo di sensibilizzare e aumentare la resilienza nei confronti del rischio incendi boschivi (ad esempio, siti web, social media, radio, TV, SMS).
- Il **codice penale** considera l'incendio boschivo, sia doloso che colposo, come reato e punisce severamente chiunque lo causi, fungendo da forte deterrente.
- **Strumenti e piattaforme innovative** vengono utilizzati nella gestione del rischio incendi boschivi. Il progetto SIM, attualmente in fase di attuazione, è un'iniziativa preziosa e rappresenta una grande opportunità per migliorare la collaborazione, la condivisione delle conoscenze e dei dati, e l'interoperabilità tra i vari settori, livelli e componenti.

PREPARAZIONE AGLI INCENDI BOSCHIVI

- **Iniziative di gemellaggio tra Regioni e Province Autonome** vengono organizzate durante la campagna estiva contro gli incendi boschivi per verificare e migliorare l'interoperabilità tra le squadre di risposta.
- È presente **un esteso e ben organizzato sistema di volontariato**, che dimostra il **forte senso di solidarietà della popolazione italiana**. Un gran numero di volontari specializzati e adeguatamente formati fa capo a organizzazioni di volontariato iscritte al Registro Nazionale delle Organizzazioni di Volontariato. Procedure Operative Standard (SOP) chiare regolano l'attivazione, la partecipazione e il rimborso dei volontari.

- Prima dell'inizio di ciascuna campagna antincendio boschivo estiva, il DPC promuove e organizza **incontri preparatori** con le Regioni e le Province Autonome per valutare e verificare le capacità di risposta, così da identificare e affrontare in anticipo eventuali criticità che potrebbero insorgere.
- Il **DPC offre continuamente corsi di formazione** alle Regioni e alle Province Autonome su diversi argomenti inerenti la gestione del rischio incendi boschivi, come, ad esempio, le procedure per richiedere l'intervento della flotta aerea statale.
- Allo scopo di fornire informazioni e messaggi mirati basati sulla geolocalizzazione dell'individuo, è in fase di sviluppo **una piattaforma informatica nazionale** (sito web e app) per raccogliere piani di protezione civile, messaggi di allerta, e documenti di sensibilizzazione al rischio incendi.
- Tutti i vigili del fuoco coinvolti nelle operazioni di risposta sono **formati a livello tattico** sulla base di approcci comuni.
- Ogni regione ha strutturato il proprio sistema di allertamento per il rischio incendi boschivi, utilizzando strumenti e modelli innovativi. Durante la campagna antincendio estiva, il DPC organizza briefing giornalieri per discutere la situazione in corso in tutta Italia. Sulla base del **Bollettino di previsione nazionale incendi boschivi** emesso quotidianamente dal Centro Funzionale Centrale, e delle informazioni provenienti dal territorio, viene deciso il posizionamento della flotta aerea statale.
- Un programma comune per **la formazione dei Direttori delle Operazioni di Spegnimento (DOS)** è stabilito per legge e descrive chiaramente gli argomenti da trattare, le attività da svolgere e le tempistiche della formazione stessa.
- Sono in vigore linee guida per la redazione di **piani di protezione civile** a livello sub-nazionale per garantire standard minimi comuni e coerenza in tutto il Paese. Le Regioni e le Province Autonome solitamente supportano i comuni fornendo assistenza tecnica.

RISPOSTA AGLI INCENDI BOSCHIVI

- Il **Corpo Nazionale dei Vigili del Fuoco** svolge un ruolo centrale e garantisce procedure comuni nella fase di risposta, sia a livello verticale che orizzontale, grazie a una struttura nazionale che si estende dal livello nazionale a quello locale. Questo servizio ha piena responsabilità nella gestione degli sforzi e nel coordinamento dei diversi soggetti nella fase iniziale di un incendio boschivo, assumendo il comando e il controllo quando l'impatto sulle aree urbane/rurali è imminente.
- La **capacità aerea nazionale** per la lotta agli incendi boschivi ha dimostrato di essere ben strutturata, oltre che gestita e coordinata in modo efficace dal Centro Operativo Aereo Unificato del DPC (COAU). La flotta statale è adattabile a diverse condizioni, posizionandosi strategicamente in tutto il paese in base alle necessità attuali e alla previsione della suscettibilità agli incendi.

SUPERAMENTO DELLE EMERGENZE E LEZIONI APPRESE

- Esistono capacità tecniche e amministrative per condurre **indagini sulle cause e sulle caratteristiche degli incendi boschivi**, incardinate in un quadro procedurale efficiente e aggiornato secondo gli standard

internazionali. Gli incendi boschivi vengono investigati quasi nella loro totalità, e solo in pochissimi casi le cause rimangono non determinate.

- I **Carabinieri Forestali** (CUFAA) sono responsabili della raccolta, verifica e validazione dei dati attraverso il portale C-SIFA e dell'invio dei dati statistici al Sistema Europeo d'Informazione sugli Incendi Forestali (EFFIS). Questa consolidata procedura garantisce decisioni basate sulle evidenze e ha importanti conseguenze legali, dato che, attraverso di essa, vengono imposte restrizioni sulle aree bruciate mappate nel Catasto Incendi.
- Dopo ogni campagna estiva, il DPC organizza **riunioni di debriefing** con Regioni, Province Autonome e tutti gli attori coinvolti per discutere punti di forza e aree di miglioramento. Sulla base dei risultati di questo processo, vengono identificate e diffuse raccomandazioni per la campagna successiva.

Raccomandazioni chiave

GOVERNANCE DELLA GESTIONE DEL RISCHIO INCENDI BOSCHIVI

Quadro di governance

- Poiché la protezione civile è, per Costituzione, una materia concorrente tra Stato e Regioni, ciascuna Regione e Provincia Autonoma ha istituito il proprio sistema di protezione civile basato sulle proprie specifiche caratteristiche territoriali e socioeconomiche. Sebbene questa diversità rappresenti una forza inestimabile, tale frammentazione pone sfide significative in termini di coordinamento e coerenza. È necessario concordare **standard minimi di capacità**, stabilire **terminologie comuni** e implementare **processi condivisi**. Questo garantirebbe anche efficienza e coerenza in tutto il Paese e offrirebbe pari diritti e servizi a tutti i cittadini.
- In considerazione del rapido cambiamento nel panorama dei rischi, è urgente **rivedere e aggiornare la Legge Quadro L.353/2000** sul rischio incendi boschivi per chiarire ruoli, responsabilità e processi. A tal fine, si rende anche necessario chiarire la terminologia relativa alle diverse tipologie di incendi di vegetazione per evitare "zone grigie" in ruoli e responsabilità degli attori chiave, che potrebbero causare gravi problemi (specialmente nella fase di risposta).
- I **meccanismi di governance** dovrebbero essere revisionati, adottando un modello che garantisca un dialogo permanente a più livelli da dedicare a negoziazioni e risoluzioni di problemi, e che preveda un forum per coinvolgere le parti interessate nel processo decisionale e politico.
- Si raccomanda di considerare l'opportunità di **adattare il concetto di campagna antincendio fissa** a favore di un approccio più flessibile, che potrebbe aumentare l'efficacia del sistema, anche in considerazione dei cambiamenti climatici e ambientali che si verificheranno nel prossimo futuro.

Quadro istituzionale

- Data la loro importanza, è necessario aumentare **le capacità tecniche, amministrative e finanziarie** dei sistemi di protezione civile nazionale, regionali e locali per rafforzare la resilienza in tutto il Paese e garantire l'applicazione di standard minimi comuni. Lo scambio di competenze, la formazione congiunta e programmi di gemellaggio dovrebbero essere ulteriormente promossi a livello nazionale.

Strategia di gestione del rischio incendi boschivi

- Dovrebbe essere sviluppata una **Strategia Nazionale di gestione del rischio incendi boschivi**, con obiettivi strategici intersettoriali e responsabilità chiare tra i vari attori e livelli territoriali. Ciò aiuterebbe a promuovere le sinergie già esistenti tra la gestione del rischio incendi boschivi e altri temi (come il cambiamento climatico, la riduzione del rischio da disastri e lo sviluppo rurale), considerare le sinergie, promuovere la coerenza delle politiche e allineare le strategie nazionali (ad esempio, la Strategia Forestale Nazionale e la Strategia Nazionale di Adattamento ai cambiamenti climatici).
- Tutti i livelli di governance e le parti interessate dovrebbero essere coinvolti nel raggiungimento di obiettivi comuni stabiliti per tutta Italia. A tal fine, è necessaria un'ampia **consultazione pubblica**, che si estenda dal livello nazionale fino al livello locale, finalizzata a comprendere meglio le aree di miglioramento e i punti di forza, e a consentire la definizione di un insieme di azioni strategiche e di un quadro di monitoraggio del raggiungimento degli obiettivi (ad esempio, attraverso l'adozione di indicatori di performance).

Coordinamento e partenariato

- L'unità AIB del **Servizio rischi ambientali, antropici e da incendi boschivi** del DPC trarrebbe beneficio da un aumento di personale qualificato aggiuntivo e ulteriori capacità tecniche/amministrative. Ciò migliorerebbe l'intero sistema e rafforzerebbe il ruolo centrale di tale Servizio nel garantire un buon coordinamento verticale e orizzontale e la collaborazione tra i principali attori coinvolti.
- Le negoziazioni tra Stato e Regioni/Province Autonome a volte creano ritardi e difficoltà nel raggiungere un consenso in tempi adeguati, aumentando il livello di disomogeneità nel territorio nazionale. Considerando che la protezione civile è materia concorrente tra Stato e Regioni/Province Autonome, è di fondamentale importanza che tutte le autorità coinvolte a vari livelli territoriali, con il coordinamento del DPC, si impegnino a **raggiungere un consenso tempestivo a beneficio dell'intero sistema nazionale**.

Finanziamento del rischio incendi boschivi

- Lo sviluppo di un **programma nazionale di investimenti** per la gestione integrata del rischio incendi boschivi aiuterebbe a sostenere l'implementazione di un approccio coerente e completo in tutto il paese.
- Molteplici fondi europei supportano l'implementazione di attività di gestione del rischio incendi boschivi a diversi livelli territoriali. Per garantire che tutte le opportunità disponibili siano pienamente sfruttate, si raccomanda di **sviluppare capacità a livello nazionale per avere una panoramica migliore delle opportunità di investimento** nella gestione del rischio e **fornire assistenza tecnica a Regioni e Province Autonome** nella preparazione di progetti, nello sviluppo degli studi necessari per grandi investimenti o in altre necessità di sviluppo delle capacità.
- Si raccomanda di aumentare **lo scambio di buone pratiche** tra Regioni e Province Autonome nell'uso di fondi nazionali e/o europei per la gestione del rischio da disastri attraverso una rete dedicata (simile alla rete delle autorità ambientali in Italia).
- Un sistema di **incentivi per i cittadini**, ad esempio inerente la gestione del combustibile vegetale, potrebbe promuovere l'implementazione di attività di prevenzione da parte del pubblico e aumentare la resilienza territoriale.

Resilienza sistemica

- Si raccomanda di **promuovere meccanismi più stretti di dialogo intersettoriale**, favorendo e migliorando le sinergie già esistenti tra incendi boschivi e temi correlati, come il cambiamento climatico, la riduzione del rischio di catastrofi e lo sviluppo rurale, aumentando così la resilienza e riducendo la vulnerabilità.

VALUTAZIONE DEL RISCHIO INCENDI BOSCHIVI

- **Standard minimi comuni** per condurre la valutazione del rischio incendi boschivi dovrebbero essere inclusi nelle linee guida nazionali per la redazione dei piani AIB. Una lista di elementi obbligatori e opzionali dovrebbe essere raccomandata a Regioni e Province Autonome.

PIANIFICAZIONE DELLA GESTIONE DEL RISCHIO INCENDI BOSCHIVI

- Poiché i piani AIB rappresentano attualmente il principale processo di pianificazione per la gestione del rischio incendi boschivi e non esiste una strategia/piano nazionale specifico, è fondamentale stabilire **standard minimi comuni**, garantire coerenza e uniformità tra Regioni e Province Autonome e assicurare che gli **obiettivi nazionali siano raggiunti anche attraverso l'implementazione di piani d'azione locali**. A tal fine la revisione e l'aggiornamento in corso delle linee guida per la redazione dei piani AIB rappresenta un'eccellente opportunità per migliorare l'intero sistema di gestione degli incendi boschivi. Per aumentare l'efficacia dei piani AIB, dovrebbero essere fornite indicazioni chiave nelle linee guida, sia in relazione al processo che ai contenuti.
- Un'**analisi annuale approfondita di tutti i piani AIB** da parte del DPC, il cui risultato comprenda una valutazione completa e un elenco delle lezioni apprese disponibile pubblicamente, sarebbe fondamentale per avere una comprensione comune e una conoscenza condivisa del rischio incendi boschivi e degli approcci di gestione del rischio.
- Un'efficace implementazione della **piattaforma informatica integrata** attualmente in costruzione (progetto SIM) sarà vantaggiosa per migliorare i processi decisionali e di pianificazione.
- Garantire coerenza tra i piani di protezione civile ai diversi livelli territoriali e i piani AIB è di fondamentale importanza per identificare e implementare con successo **misure appropriate** che coprano l'intero ciclo di gestione del rischio.

PREVENZIONE DEGLI INCENDI BOSCHIVI

- Considerare l'adozione di **divieti parziali e/o eccezioni** anziché vietare totalmente qualsiasi tipo di fuoco durante la campagna contro gli incendi boschivi, poiché i divieti generali potrebbero aumentare il numero di pratiche negligenti.
- Considerare l'introduzione di leggi che permettano alle autorità statali, regionali o comunali di intraprendere azioni di **gestione del combustibile** su terreni pubblici o privati gestiti in modo inadeguato. Linee guida nazionali per la gestione del combustibile, con strumenti di supporto alle decisioni di investimento, aiuterebbero le autorità regionali e locali, così come i proprietari terrieri, a dare priorità agli investimenti contro gli incendi boschivi tra varie opzioni.
- Il **fuoco prescritto** dovrebbe essere ulteriormente promosso, insieme ad altre pratiche di gestione del paesaggio e del combustibile, come il pascolo e attività agricole compatibili con il fuoco, in stretto dialogo con le autorità ambientali.

- Dovrebbero essere sviluppate **linee guida per il fuoco prescritto**, che includano criteri climatici e paesaggistici, così come responsabilità di coordinamento e operative, per aumentare l'efficienza del sistema. Oltre alla prevenzione, queste linee guida contribuirebbero anche ai programmi di formazione per i vigili del fuoco sull'uso del fuoco.
- Un'**analisi approfondita** delle iniziative esistenti di comunicazione del rischio e di sensibilizzazione, con un rapporto finale completo, aiuterebbe a migliorare ulteriormente la qualità e l'efficacia. Inoltre, contribuirebbe a sistematizzare e allineare le attività esistenti svolte da vari attori a diversi livelli.

PREPARAZIONE AGLI INCENDI BOSCHIVI

- Data la fondamentale importanza del loro ruolo nella fase di risposta, **una certificazione nazionale per il personale DOS** aiuterebbe a garantire standard comuni in termini di competenze e interoperabilità in tutto il paese. Inoltre, procedure operative comuni per i DOS garantirebbero una migliore interoperabilità e omogeneità in tutto il paese.
- Corsi di formazione comuni e una certificazione nazionale per i **volontari impegnati nelle attività di lotta agli incendi boschivi** aiuterebbero a superare le sfide di interoperabilità e le disparità evidenziate durante le passate iniziative di gemellaggio. La formazione avanzata potrebbe essere adattata per tenere conto delle specifiche caratteristiche dei territori in cui operano le squadre.
- Considerare l'opportunità di sviluppare meccanismi per condurre anticipatamente e in modo coordinato **acquisizioni di mezzi aerei** per le regioni al fine di approcciare il mercato con migliori condizioni di negoziazione.

RISPOSTA AGLI INCENDI BOSCHIVI

- Per far fronte alla complessità delle richieste simultanee di attivazione della flotta aerea statale durante la campagna antincendio estiva è essenziale che tutti gli attori coinvolti applichino le **procedure specifiche** redatte e riesaminate annualmente dal COAU.
- Assicurarsi che il COAU possa avere una **panoramica di tutti gli eventi** sul campo aumenterebbe significativamente la consapevolezza della situazione in corso, migliorando così l'efficacia complessiva delle operazioni.
- Sebbene difficili da identificare e sviluppare, stabilire **requisiti standardizzati** a livello nazionale per le flotte regionali aiuterebbe a garantire capacità aeree minime comuni in tutto il paese e prevenire una richiesta massiva al COAU di attivazione della flotta statale.
- Oltre ai requisiti standardizzati, è essenziale implementare **procedure operative minime** quando più aerei lavorano simultaneamente sullo stesso incendio. Queste procedure dovrebbero coprire aspetti come le comunicazioni radio (sia aeree che a terra), la nomenclatura standardizzata degli aerei (indipendentemente dall'affiliazione) e il coordinamento dello spazio aereo all'interno dell'area dell'incidente.
- Coinvolgere **analisti degli incendi** nelle operazioni di risposta sul campo aumenterebbe l'efficienza del sistema informando e influenzando le decisioni direttamente dal terreno.

- È altamente raccomandato che Regioni e Province Autonome si dotino di una **sala operativa unica di coordinamento delle operazioni** (vale a dire integrare la SOUP nella sala operativa regionale) per facilitare il coordinamento della risposta orizzontale e verticale e massimizzare le risorse disponibili.
- Sviluppare **indicatori di performance (Key Performance Indicators, KPIs)** comuni per valutare correttamente gli interventi di risposta nazionali e regionali aiuterebbe a identificare punti di forza e rivelare opportunità di miglioramento.
- Un **sistema unificato di comunicazione** e condivisione delle informazioni sarebbe fondamentale per garantire l'interoperabilità e un migliore coordinamento delle azioni di risposta sia a livello tattico che operativo.

SUPERAMENTO DELLE EMERGENZE E LEZIONI APPRESE

- La centralizzazione in un **catalogo unificato** aperto a tutti i principali attori (come la piattaforma SIM in fase di implementazione) di tutti i dati e le informazioni sugli incendi boschivi raccolti da diverse autorità ai diversi livelli territoriali (ad eccezione di quelli legati a crimini e indagini) sarebbe utile per informare meglio i processi di pianificazione e, quindi, per identificare misure appropriate da implementare nell'intero ciclo di gestione del rischio.
- Identificare le cause strutturali per cui il **Catasto degli Incendi** non viene implementato da molteplici comuni e garantire un'adeguata applicazione aiuterebbe a garantire che le restrizioni all'uso del suolo siano in atto nelle aree bruciate.
- Una **valutazione delle performance** dell'intero sistema di gestione del rischio incendi boschivi per mezzo di indicatori appropriati garantirebbe che i punti di forza e le debolezze siano identificati e affrontati in modo tempestivo, con l'obiettivo di un miglioramento continuo. Questo processo potrebbe coinvolgere centri di competenza o altre università/istituti di ricerca e impiegare vari strumenti (ad es. sondaggi, dibattiti pubblici, dati statistici).
- Comprendere le **cause strutturali degli incendi**, che possono derivare da conflitti sull'uso del suolo, ad esempio per l'istituzione di pascoli e aree di caccia, potrebbe aiutare a trovare approcci alternativi, aumentare la consapevolezza e il coinvolgimento della comunità e stabilire un dialogo costruttivo a livello locale coinvolgendo tutti gli attori (inclusi i volontari e il mondo della ricerca).

1 - Introduction

1.1 - Peer review of disaster risk management capabilities

Peer review is a common working method for assessing policy performance and implementation. The EU Civil Protection Mechanism (UCPM) introduced peer review as a means for improving risk management capabilities, stimulating exchange of knowledge, identifying good practices of policy and operations, and fostering integration of risk prevention, preparedness and response. The EC General Directorate for Civil Protection and Humanitarian Aid Operations (ECHO) operates the UCPM Peer Review Programme. Since 2013, seventeen countries have completed the voluntary peer review.

Wildfire peer review is a strategic tool for strengthening resilience against wildfires at the European, national, and sub-national level, with the primary objective of exchanging knowledge through independent analyses conducted by experts ('peers') from UCPM countries.

In September 2023, the Italian Civil Protection Department (DPC) requested a thematic peer review of the wildfire risk management capabilities within the UCPM Peer Review Programme 2020-2024.

- A first online meeting between representatives from DPC, DG ECHO, and CMCC was held in December 2023 to agree upon the key focus areas to cover, expected outcomes, main objectives, and timing of the entire process.
- From January to April 2024, four online meetings were organised to define the peer profiles needed to support the review, arrange the on-site mission agenda, discuss the desk research, support local stakeholder engagement, and finalise all technical and logistical arrangements to implement the review.
- Two preparatory meetings were held with the peers, the Italian National Contact Point (NCP) team, DG ECHO, and CMCC to present to the peers the key aspects of the UCPM Peer Review Programme, the specific needs and objectives of the Italian wildfire peer review, the key characteristics of the Italian forest fire risk management system, the tools available to carry out the review, the daily agenda, the list of stakeholders engaged, and logistical aspects of the mission.
- The on-site mission took place in Rome from 20 to 24 May 2024 at the DPC operational headquarters, where the Peer Review team (peers, DG ECHO, and CMCC) had the opportunity to meet and talk with key stakeholders.

Based on the key insights gathered in Rome, the report was drafted by CMCC and approved among the peers, DG ECHO, and CMCC, and then reviewed by the NCP team and the stakeholders, before being finalised.

It is worth noting that, in 2010, Italy already underwent a peer review, when a revision of the overall national civil protection system was conducted by the Organisation for Economic Co-operation and Development (OECD)¹.

¹ OECD, 'OECD Reviews of Risk Management Policies: Italy 2010 Review of the Italian National Civil Protection System', 2010.

1.2 - Scope of the review in Italy

Italy – represented by the Italian Civil Protection Department (DPC) – submitted a request for a UCPM peer review of wildfire risk management capabilities in September 2023. The scope of the assessment was co-established through dialogue and consultations with the DPC. DG ECHO appointed five peers through a call for expressions of interest circulated among the UCPM countries. During a field visit organised by DPC in May 2024, the peers engaged in discussions with representatives of key institutions in charge of forest fire risk management (see Figure 3).



Figure 3 - The Peer Review team (peers, DG ECHO, CMCC), the NCP team, and representatives from DPC and key institutions attending the official opening of the peer review at the DPC operational headquarters. Source: Presidenza del Consiglio dei Ministri - Dipartimento della Protezione Civile.

The 2023 Wildfire Peer Review Assessment Framework (Wildfire PRAF) elaborates on the thematic areas and topics pertaining to wildfire risk management capabilities. Countries may choose between a comprehensive review of all areas or a tailored thematic review focusing on a selection of these areas. Italy chose a tailored thematic review focused on the following key areas of the wildfire risk management cycle: governance of wildfire risk management (overall governance, legislative and institutional framework), wildfire preparedness, and wildfire emergency response (Figure 4). The key focus areas of wildfire risk assessment, wildfire prevention, wildfire risk management planning, and recovery and lessons learned are covered only in terms of legislative and institutional framework, as part of the overall governance of wildfire risk.

The infographic below highlights the thematic areas (hexagons) and topics (wedges) of the Wildfire Peer Review Assessment Framework (Wildfire PRAF) covered in this report².

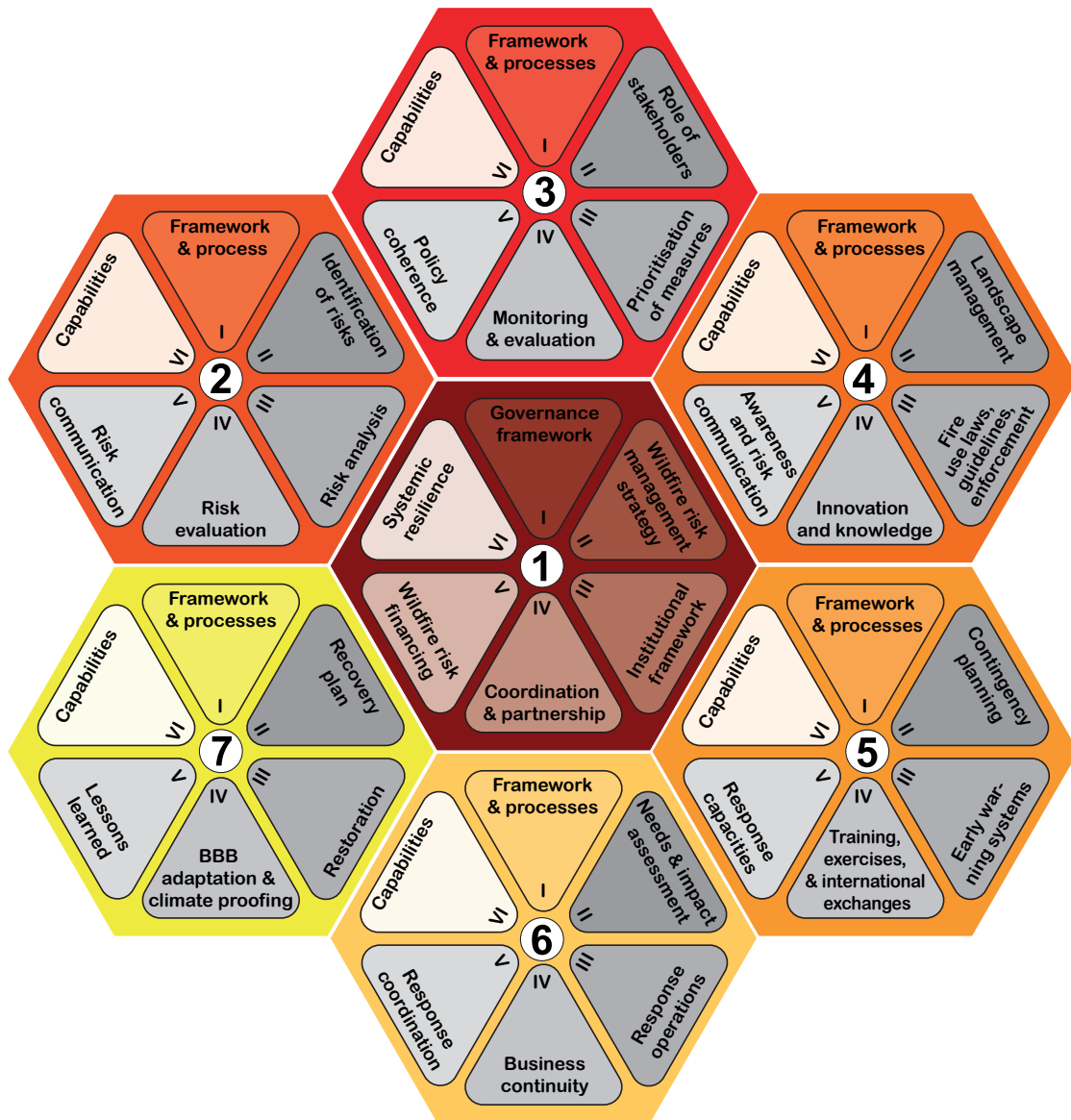


Figure 4 - Wildfire Peer Review Assessment Framework. The colored areas represent the thematic areas addressed in this peer review.

² Casartelli Veronica, and Jaroslav Mysiak. 'Union Civil Protection Mechanism - Peer Review Programme for Disaster Risk Management: Wildfire Peer Review Assessment Framework (Wildfire PRAF)', 2023.

2 - Governance of wildfire risk management

2.1 - Governance framework

- Civil protection is a **function** assigned to an integrated system, the **National Civil Protection Service**, first established by Law 225/1992 and now regulated by the Civil Protection Code.
- The direction and coordination of the civil protection service is entrusted to the President of the Council of Ministers, i.e., the Prime Minister, who exercises these functions through the **Civil Protection Department**.
- The **Framework Law on Forest Fires**, Law 353/2000, provides an overarching framework for forest fire forecasting, prevention and response. It establishes prevention measures, defines arrangements for response operations and outlines the roles and responsibilities of key authorities.

Italy is one of the countries most exposed to natural and human-induced hazards in the world (for further information, see also Annex 1). In Italy, **civil protection refers to all the activities implemented to protect lives, property, settlements, animals and the environment from disasters and their damaging effects; these include risk forecasting, prevention and mitigation as well as disaster management and post-emergency recovery operations**. Civil protection is a function assigned to an integrated system, the National Civil Protection Service (SNPC), first established by Law 225/1992 and composed of public and private, central and local structures that cooperate and collaborate to manage disaster risk (see also Section 2.2, Institutional framework). The direction and coordination of this system are entrusted to the President of the Council of Ministers, i.e., the Prime Minister, who exercises these functions through the Civil Protection Department. On 2 November 2022, the President of the Council of Ministers delegated certain functions in the field of civil protection to the Minister for Civil Protection and Maritime Policies.

The SNPC is now regulated by the Civil Protection Code (Legislative Decree 01/2018, hereinafter "Civil Protection Code"), which repealed Law 225/1992 and is currently the main legislative instrument on civil protection in Italy. The Civil Protection Code was introduced to simplify and streamline civil protection provisions by bringing them together in one, easy-to-read text. Among other things, it specifies the types of risks that civil protection primarily deals with: seismic, volcanic, tsunamis, hydraulic, hydrogeological, adverse weather conditions, water deficit, and forest fires. It also specifies the risks on which the SNPC may be called to cooperate: chemical, nuclear, radiological, technological, industrial, transport, environmental, health, uncontrolled re-entry of satellites, and space debris risk.

In 1998, there was a significant change in Italian legislation that had implications in civil protection, when the administrative responsibilities at the national, regional and local levels were reorganised by the 112/1998 Legislative Decree, following the introduction of decentralised government, the previous year, with Law 59/1997. Regional and local bodies were assigned all the duties not specifically allocated to central government or other levels of competence. Specifically, **in the area of civil protection, most of the tasks were decentralised and assigned to regional and local authorities**, while the main functions of direction, promotion and coordination, as well as urgent technical assistance and the use of the state air fleet to extinguish forest fires, remained the responsibility of the State.

The path towards decentralisation ended with the reform of Title V of the Constitution (Constitutional Law No 3/2001), in which for the first time the Constitutional Charter expressly addressed civil protection, including it among

the subjects of concurrent³ legislation, and therefore also under regional responsibility. Regions have the power to establish and regulate their own regional civil protection systems, although within a general framework of guidelines set by the State. Decentralisation represented a turning point in the civil protection system. The fact that the regions began to have authority over policy areas such as transport, education, environment, etc., also helped them organise civil protection activities and structures according to their specific territorial and risk characteristics.

It is worth noting that Italian regions vary greatly in size, population, culture and language, productive capacity of their economic activities and the types of natural hazards to which they are exposed⁴. Most importantly, regions are even different in terms of their degree of autonomy and power to legislate: five Regions (Friuli-Venezia Giulia, Sardinia, Aosta Valley, Trentino Alto Adige and Sicily) have a special autonomous status that enables them to enact legislation on some local matters; however, their own legislation does not prevail over national legislation. The Autonomous Region of Trentino Alto Adige is divided into two Autonomous Provinces: the Province of Trento and the Province of Bolzano. Regional differences in climate, topography, socio-economic characteristics and risk profiles are reflected in their different civil protection systems and capacities. Regions coordinate with provinces and often delegate some tasks to them.

The SNPC operates according to the principle of subsidiarity at central, regional and local level through the civil protection authorities (the President of the Council of Ministers as a national authority, the Presidents of the Regions and the Autonomous Provinces of Trento and Bolzano, the Mayors and Metropolitan Mayors as local authorities). When the Municipality cannot cope with the emergency, the Province, the Prefecture and the Region provide their support. In case of a national-scale emergency, the State is called upon to intervene. The principle of vertical subsidiarity within the institutional levels of powers is regulated by the Italian Constitution (Constitutional Law No 3/2001).

Wildfire governance framework

The main legislative instruments governing wildfire risk management are the Framework Law on Forest Fires (Law 353/2000), Legislative Decree 177/2016, and Decree Law 120/2021.

The Framework Law on Forest Fires, Law 353/2000⁵, provides an overarching framework for forest fire forecasting, prevention and response. It establishes prevention measures, defines arrangements for response operations and outlines the roles and responsibilities of key authorities. Specifically, it entrusts the Regions and the Autonomous Provinces of Trento and Bolzano with the responsibility of forecasting, preventing and actively fighting forest fires, and the State with the responsibility of supporting extinguishing activities through the state aerial fire-fighting fleet, as well as forecasting and prevention in state-protected areas, through careful planning. Wildfire risk management activities on a regional level are based on the "Regional Plans for Forecasting, Preventing and Actively Fighting Forest Fires" – commonly referred to as "AIB⁶ Plans", in accordance with Art. 4 of Law 353/2000 (see Section 4.1 Wildfire risk management planning).

Framework Law 353/2000 also provides a specific definition of forest fires, which is "*a fire with the susceptibility to spreading over wooded, shrub or bushy areas, including any man-made structures and infrastructures located within the aforementioned areas, or over cultivated or uncultivated land and pastureland next to these areas*". It is important to note that Italian legislative instruments only use the term "forest fire" and do not include "wildfire".

3 Between the national and regional levels.

4 OECD, OECD Reviews of Risk Management Policies: Italy 2010 Review of the Italian National Civil Protection System, 2010.

5 Presidente del Consiglio dei Ministri, Legge-quadro in materia di incendi boschivi, 353 § (2000), <https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:2000:353>.

6 "AIB" stands for '*Antincendi Boschivi*', a term used in the area of civil protection to denote activities and measures related to the management of forest fire risk. It is used when referring to, for instance, forest fires plans, services, campaigns, equipment, etc. – e.g AIB Plan, AIB Service, AIB campaign, AIB equipment, etc.

However, the term "forest fire" is interpreted broadly, implicitly encompassing all fires in the wildland-urban interface (WUI) where vegetation fires interact with developed areas. The definition in Framework Law 353/2000 was revised by Decree Law 120/2021 to include the definition of a WUI area, but not specifically a "WUI fire". In essence, Law 353/2000 defines forest fires but does not address other types such as WUI fires, vegetation fires, or rural fires. These distinctions are instead defined, sometimes inconsistently, by the Regions within their AIB Plans. This lack of standardised terminology can lead to confusion regarding roles and responsibilities.

Another relevant legislative instrument that led to a major institutional reorganisation is Legislative Decree 177/2016. Since 2016, the State Forestry Corps – until then responsible for forest fire prevention, investigation and with a key role also in suppression – was dissolved and their responsibilities redistributed to the Carabinieri and the National Fire and Rescue Service (see also Section 2.2, Institutional framework). This decision is still subject to criticism. It is important to note that this reform, however, did not affect the five Autonomous Regions, in which regional forest corps remain operational.

In accordance with Legislative Decree 177/2016, the "Framework Agreement between the Government and the Regions on Forecasting, Preventing and Actively Fighting Forest Fires" (2017) established general criteria for collaboration between the National Fire and Rescue Service (CNVVF) and the Regions in matters of active fighting forest fires and cooperation in implementing their respective responsibilities for forecasting and prevention. The Regions and CNVVF shall stipulate agreements on actively fighting forest fires, taking into consideration the needs of the reference region, which also considers the previously existing agreements between the State Forestry Corps and the CNVVF. The conventional relationship between the Regions and the CNVVF is intended to regulate the forms of collaboration in the implementation of Art. 9 of Law 177/2016 concerning matters of cooperation in the active fight against forest fires, coordination of suppression operations and participation in the national and regional coordination structures. The form of collaboration between the two is defined based on framework "programme agreements" and operational programmes, which serve as general indications to be followed⁷.

In September 2021, after an extreme summer forest fire season in Italy, Decree Law 120/2021 concerning provisions for fighting forest fires and other "urgent civil protection measures" was adopted and then converted into Law 155/2021, amending Law 353/2000. Overall, this law defines measures for the coordination, technological upgrading, and expansion of the operational capacity for forecasting, preventing and active fighting forest fires. The DPC is in charge of monitoring and evaluating every three years the available forecasting-related technologies, especially those useful for the issuance of the Daily National Forest Fire Forecast Bulletin (see also Section 6.1 - Wildfire preparedness), as well as assessing the need for reinforcement in the areas of response means, infrastructure, and expertise.

These activities are supported by the Forest Fire Technical Committee, established by the same Law (see also Section 2.3 - Coordination and partnership). On the basis of the results obtained by the evaluation, a three-year "National coordination plan for the technological upgrading and enhancement of operational capacity in forecasting, preventing and actively fighting forest fires" – hereinafter 'National Forest Fire Coordination Plan' – shall be drafted by the DPC (see also Section 4.1, Wildfire risk management planning).

The novelties in Decree Law 120/2021 include the adoption of measures to ensure the timely updating of information in the Fire Cadastre; more severe penalties for wildfire offences; the definition of a fire in the WUI area, as mentioned above; the introduction of prescribed fire as a preventive measure; and the possibility of financial rewards in cases where high-risk territories achieve a significant decrease in burned areas.

⁷ Ministero dell'Interno e Dipartimento dei Vigili del Fuoco del Soccorso Pubblico e della Difesa Civile, 'Schemi di accordo di programma e di programma operativo per la collaborazione in materia di protezione civile nonché di lotta attiva agli incendi di bosco' (2019)

2.2 - Institutional framework

- The **Civil Protection Service** is composed of Civil Protection Authorities, Components, Operational structures, and Contributing subjects.
- **Regions and Autonomous Provinces** are entrusted with the responsibility of forecasting, preventing and actively fighting forest fires, whereas the **State** is in charge of supporting extinguishing activities via the state aerial firefighting fleet, through the Unified Air Operations Centre (COAU) of the DPC.
- Besides the **National Fire and Rescue Service**, relevant actors with a role in wildfire risk management include the Carabinieri Forestali, the Ministry of Environment and Energy Security, the Ministry of Agriculture, Food Sovereignty and Forests, and the Ministry of Culture.

Regulated by the Civil Protection Code, the SNPC is constituted by all levels of government, designated as Components of the Service, which are the State, the Regions, the Autonomous Provinces of Trento and Bolzano and the Local Authorities. Together with the Components, the national and local Civil Protection Authorities, the Operational structures, and the Contributing subjects are also part of the SNPC, and their roles and responsibilities are defined by the Code.

The national and local Civil Protection Authorities include the President of the Council of Ministers, the Presidents of the Regions and Autonomous Provinces of Trento and Bolzano and the Mayors and Metropolitan Mayors. As a national civil protection authority, the President of the Council of Ministers (i.e., 'Prime Minister') is responsible for the direction and coordination of the SNPC, functions that are exercised through the Civil Protection Department (DPC). The Prime Minister is also in charge of drafting civil protection policies at the national level and providing the guidelines for the development of civil protection activities throughout the country. In the current government, some prime ministerial functions related to civil protection have been delegated to the Ministry for Civil Protection and Maritime Policies (MCPMP) by Decree of the President of the Council of Ministers 12 November 2022.

The Prefects represent the State locally and manage the emergency services at the provincial level in liaison with the President of the Region. Therefore, although not legally defined as a 'civil protection authority', Prefects play a crucial role. Specifically, they coordinate the intervention of the state entities operating locally, and ensure a constant flow of information with the DPC, the Regions, the Municipalities, the Provinces (where delegated), and the Department of Fire, Public Rescue and Civil Defence of the Ministry of the Interior. The Presidents of the Regions and Autonomous Provinces of Trento and Bolzano and the Mayors and Metropolitan Mayors exercise supervisory functions for the integrated and coordinated development of civil protection activities by the structures belonging to their respective administrations, and are responsible for their organisation⁸.

The Components of the SNPC are the State, the Regions and Autonomous Provinces, the Metropolitan Cities, the Municipalities and the Provinces. Their functions include forecasting and prevention; civil protection planning; the organisation of technical, operational and administrative activities to deal with emergency situations, among which the organisation of the Decentralised Functional Centres and regional and provincial Operations Rooms (see also Sections 6.1 – Wildfire preparedness and 7.1 – Wildfire emergency response); and the implementation of the necessary interventions to tackle the emergency. At the municipal level, civil protection functions are also aimed at adopting measures to safeguard public and private safety, deliver first aid and provide information to the population on natural and man-made risk scenarios and the related civil protection planning activities⁹.

⁸ Dolce et al (2020).

⁹ Ibid.

The Operational structures (or 'Operational components') include the National Fire and Rescue Service (CNVVF), the Armed Forces, the Police Forces, the scientific community (see Section 2.3), the National Health Service, the organised civil protection volunteer service (see Section 2.3), the Italian Red Cross, the National Corps of Alpine and Speleological Rescue, the National System for Environmental Protection, the organisations responsible for meteorological services at national level, and the central and peripherals boards of the Ministry of Culture. According to Art. 10 of the Civil Protection Code, in case of disaster events, the CNVVF – which is also considered a 'fundamental component' of the SNPC – is the main authority responsible for technical rescue interventions and search and rescue, acting as technical and operational coordinator, with the support of other Components and Structures involved.

The Code defines the Contributing subjects as 'companies, enterprises and other public or private organisations that perform functions useful for civil protection purposes' and which are part of the SNPC (see also Section 2.3).

The DPC of the Presidency of the Council of Ministers is a department of the Presidency of the Council of Ministers established in 1982 in order to provide the country with a body able to mobilise and coordinate the national resources that ensure assistance to the population in case of emergencies. With the adoption of Law 225 of 1992, now repealed, the DPC became the point of reference of the SNPC, a qualification reinforced with the Civil Protection Code through the addition of new responsibilities. The DPC is responsible for the direction, promotion and coordination of the entire SNPC. It is led by the Head of the DPC, supported by the deputy head, and is composed by a number of specific offices and units¹⁰. In coordination with the Regions and Autonomous Provinces, it coordinates the intervention of the SNPC during major emergency situations and is responsible for the drafting and implementation of national plans and national relief programmes, the coordination of civil protection activities, including training, and the promotion of studies and research on risk forecasting and prevention. Additionally, it coordinates the participation of the SNPC in the civil protection policies of the European Union and its intervention in disaster relief operations abroad.

Institutional framework of wildfire risk management

In accordance with Law 353/2000, responsibilities for wildfire risk management are divided between regional and national authorities. As mentioned before, the Regions are entrusted with the responsibility of forecasting, preventing and actively fighting forest fires, which is undertaken according to the AIB Plans. At the national level, the State is in charge of supporting extinguishing activities by deploying the state aerial firefighting fleet, through the Unified Air Operations Centre (COAU) of the DPC. Additionally, in accordance with the Framework Law, the State (with the support of other ministries and authorities) performs the following tasks: sets policies and issues guidelines; supports with national ground resources the regional firefighting activities; provides forecasting and prevention plans in state-protected areas (see below); supports regional patrolling activities; and is in charge of criminal investigations and investigations to determine the cause of fires.

In the field of wildfire risk, the DPC performs the following functions: provides certain wildfire forecasts; drafts and disseminates recommendations ahead of the summer forest fire season for more effective fight against forest fires and organises a plenary meeting with all the institutional stakeholders involved in wildfire risk management (see also Section 6.1 - Wildfire preparedness). In addition, the DPC also develops the National Forest Fire Coordination Plan (see Section 4.1 – Wildfire risk management planning).

The CNVVF is part of the Department of Fire, Public Rescue and Civil Defence of the Ministry of the Interior. It has a main role in firefighting, with the responsibility of intervention in case of fire in WUI areas, and is also involved in

¹⁰ These include the Emergency Coordination Office; the Legal Office and six additional offices, divided in turn into services: Office I - Volunteering and National Service Resources; Office II - Technical and Scientific Services, Forecast and Risk prevention Activities; Office III - Emergency Infrastructure Planning; Office IV - Emergency Recovery; Office V - Human and Instrumental Resources and General Services; Office VI - Administration and Budget.

prevention activities, controlled burnings, and the implementation of awareness campaigns. The CNVVF AIB Service is organised into central and regional structures, which are directed by the Head of the CNVVF. Notably, the CNVVF is divided into 8 central directorates, under which are 18 regional directorates, 103 provincial headquarters, 727 professional and volunteer fire stations and Special Operational Units (in Italian, *reparti e nuclei speciali*). At the central/national level, the Central Directorate for emergency, technical rescue, and forest fire fighting has the functions of planning and coordinating the AIB Service and defining the guidelines on the active fight against forest fires. Specifically, for forest firefighting, the CNVVF operates at the regional level on the basis of programme agreements with the Regions (as mentioned in Section 2.1) that define the collaboration between the CNVVF and Regions, as required by Law 353/2000. The CNVVF is present in 18 Regions¹¹ and has stipulated agreements with 17 of them, with the exception of Veneto. The form of collaboration established in the agreements may vary greatly according to the region and can include: entrusting the CNVVF with the regional AIB operational system almost entirely; participation in the regional Permanent Unified Operations Rooms (SOUP) and the Provincial Operations Centres (COP) (see Section 7.1 - Wildfire operations and coordination); and strengthening services through the involvement of teams dedicated to forest firefighting.

As part of the Police Forces, the Carabinieri Armed Forces are a crucial actor in wildfire risk management. The Carabinieri are a military police force under the authority of the Ministry of Defence with general powers for the protection of public security¹². In accordance with Law 177/2016, the Carabinieri 'inherited' the responsibilities of the State Forestry Corps, with the exception of the function of actively fighting forest fires, which passed to the CNVVF¹³. However, they also have a role in response, as they can be called upon to provide assistance during large-scale wildfires, for evacuation, maintaining public order in affected areas, and ensuring the safety of the public and responders. The units of the Carabinieri Armed Forces include the Forest, Environmental and Agri-food coordination units (CUFAA) (also called 'Carabinieri Forestali'), established in 2017 and divided into four commands. One of these is the Carabinieri Command for Forests and Parks conservation (hereinafter 'Forest Command') specifically tasked with wildfire risk management functions. The Forest Command has a role in the prevention and suppression of violations concerning forest fires, and monitors the territory by collecting, processing, storing and disseminating data (including information on burned areas). Under the Forest Command, the NIAB (Forest Fires Information Unit), established in 2000, is highly specialised in law enforcement and gathering information (police intelligence) in the field of wildfires. It provides technical, scientific, and operational support to the local departments of the Carabinieri Forestali; among other tasks, NIAB plans the wildfire perimeter using drones; collects statistical data in the Carabinieri Forestali database (C-SIFA); tests new technologies to support investigations; and collaborates with the Police on surveillance, prevention, and repression of forest fires (crime mapping)¹⁴. Finally, Carabinieri Forestali has recently set up a Forest Fire Task Force, composed of personnel with extensive experience in forest fire investigations, capable of reaching the event/crime scene in 12-24 hours to support local units.

At the level of municipalities, the Mayor is the first civil protection authority. He/she is responsible for planning, prevention and response to civil protection emergencies in case of fires in WUI areas, as well as for the application of restrictions in burned areas (see section 5.1 - Wildfire prevention).

Other relevant actors with a role in wildfire risk management include the Ministry of Environment and Energy Security (MASE), the Ministry of Agriculture, Food Sovereignty and Forests (MASAF), and the Ministry of Culture (MiC). In accordance with Law 353/2000, MASE is responsible for preparing and overseeing the implementation of the Forest

11 The CNVVF is not present in Valle d'Aosta Region and the Autonomous Provinces of Trento and Bolzano.

12 According to Legislative Decree 66/2010, the Carabinieri report hierarchically to the Chief of the Defence, as far as military tasks are concerned; functionally to the Minister of the Interior for tasks related to the protection of public order and public security; and to the Ministry of Agriculture and Ministry of Environment for the tasks assigned to the Carabinieri Forest, Environmental and Agri-food coordination units.

13 In the four Autonomous Regions and two Autonomous Provinces, regional and provincial forest corps remain operational.

14 Forestry Environmental and Agri-food Unit - Carabinieri Command. 'Forest fires in Italy and the role of the Carabinieri Forestali'. n.d.

Fire Plans for National Protected Areas (see section 4.1 - Wildfire risk management planning). According to Legislative Decree 34/2018, Framework Law on Forests and Forestry Supply Chain (TUFF), MASAF is responsible for forestry management, including wildfire prevention interventions, and has authority in forest fire risk management in accordance with the National Forest Strategy, the Strategic Plan of the Common Agricultural Policy (CAP) of 2014-2020/22 and the Strategic Plan of CAP 2023-2027.

MiC has jurisdiction in the protection of cultural heritage in the event of emergencies resulting from natural hazard-related disasters. In the event of a national state of emergency, the Crisis Unit - National Coordination (UC-CN-MiC) is activated to guarantee the necessary coordination with relevant authorities, such as civil protection, the CNVVF, Carabinieri, volunteers, and between central and peripheral structures of MiC, also through the Crisis Unit - Regional Coordination at the regional level. UCCN-MiC also ensures the implementation of post-emergency operations concerning cultural heritage (e.g., damage assessment, cataloguing, relocation of assets). Additionally, within the framework of AIB activities, MiC ensures, in cultural sites under its supervision, the implementation of prevention activities and collaborates with civil protection authorities in preparedness activities (i.e. training). Lastly, it develops recommendations for more effective firefighting and prevention of wildfires, interface risks and their consequent impact on cultural heritage.

2.3 - Coordination and partnership

- The **National Platform for DRR** was established in 2008 and is currently being restructured to adapt it to the situation in Italy and improve its effectiveness.
- Under the guidance of the DPC, the **Forest Fire Technical Committee and the Coordination Committee** have a strategic role in ensuring effective collaboration and cooperation in forest fire risk management.
- A **good horizontal and vertical coordination** in forest fire risk management is in place, despite the typical complexity of the Italian system.

In 2008, after the adoption of the Hyogo Framework for Action 2005-2015, the National Platform for Disaster Risk Reduction (NPDRR) was established and continued its activities under the framework of the Sendai Framework for Disaster Risk Reduction 2015-2030. The NPDRR, composed of key authorities at the different levels responsible for disaster risk management related activities, is coordinated by the DPC with the aim of identifying and involving all the public/private bodies necessary to cope with disasters, ensure joint coordination and direction at national level, and support all the Operational structures involved. The NPDRR was conceived as a hub for the coordination of all disaster risk reduction policies among the different institutional, technical and scientific, economic, social and cultural actors of the country. Additionally, it was supposed to be the body in charge of drafting the National Risk Assessment and the Risk Management Capability Assessment (under Decision 1313/2013/EU). Despite the legislation, the NPDRR has never been fully implemented in Italy because some of the functions that the SFDRR assigns to national platforms are under the responsibility of the SNPC, under the coordination of DPC, and the DPC itself. For this reason, and to avoid overlaps, the NPDRR is currently being revised with the main purpose of redefining its primary function. The new vision is that the NPDRR should represent a key forum for sharing, identifying, monitoring and connecting all prevention actions that the Country's system puts in place also outside the activities strictly pertaining to the SNPC (e.g., implemented by each of the platform's members). The platform will therefore provide a forum offering a shared overview of these activities and fostering the necessary synergies.

With regard to the scientific community, the Civil Protection Code appoints the latter as an Operational Structure of the SNPC¹⁵. Within the scientific community, some research institutes, universities, as well as government administrations, agencies and district river basin authorities have been appointed as ‘Competence Centres’¹⁶. Hence, the Competence Centres, whose role and functions are specifically defined by a Decree of the Prime Minister¹⁷, provide technical and scientific support in periods of non-emergency and during emergencies and carry out both integrated and preliminary experimental activities. For instance, they have the specific task of developing tools/analyses for civil protection. According to Art. 21 of the Code, the Components of the SNPC can establish and sign agreements with the Competence Centres.

Other two relevant bodies part of the scientific community are the Functional Centres (see Box 13 in Section 6.1), and the National Commission for the Forecasting and Prevention of Major Risks, often referred to as ‘Major Risks Commission’. The Major Risks Commission is an independent structure of the DPC. It is chaired and composed of experts qualified in matters of interest for civil protection, who provide technical and scientific advice on issues raised by the Head of the DPC and guidance on how to improve the ability to assess, forecast and prevent risks. The current commission was officially established in September 2023 and supports the DPC and the entire SNPC in eight risk areas, including forest fires¹⁸. It is composed of 64 members¹⁹ identified in collaboration with the Competence Centres from among the most prestigious Italian universities and institutes.

As stated in the Civil Protection Code, companies, enterprises and other public or private organisations that perform functions useful for civil protection purposes are also part of the SNPC as ‘Contributing subjects’. Professional orders and colleges and, among others, companies that provide and guarantee mobility and essential services²⁰ provide a valuable contribution in terms of both knowledge and technical and operational skills, also during emergency management.

Another important actor in civil protection are citizens. The principle of citizen participation in civil protection in Italy was introduced by the Civil Protection Code with a view to improving awareness and resilience among the population.

Concerning volunteering, the SNPC promotes the participation of organised volunteering actions/volunteer organisations. It is worth noting that Italy has over 5,000 organisations throughout the country, engaging more than 400,000 volunteers²¹. Volunteer organisations, which are among the Operational structures of the SNPC, over the years have created an organised, trained and prepared body of volunteers representing all the professions and knowledge of society. The organisations willing to participate in forecasting, prevention and response activities in case of an ongoing/foreseen disaster event must register with the National Register of Voluntary Work Organisations, which is made up of the central register and the territorial lists of Regions and Autonomous Provinces²². The DPC supports

15 The Code clarifies the operational criteria of the scientific component in the SNPC, which only considers products deemed mature according to scientific rules. Available at link: <https://servizio-nazionale.protezionecivile.gov.it/it/approfondimento/il-codice-di-protezione-civile-cosa-cambia-0/>

16 The complete list of the Competence Centres is available at link: <https://servizio-nazionale.protezionecivile.gov.it/it/approfondimento/centri-di-competenza/>

17 Presidenza del Consiglio dei Ministri, ‘Definizione dei principi per l’individuazione ed il funzionamento dei Centri di Competenza.’, Pub. L. No. 4134 (2012).

18 DPC (28 settembre 2023). Insediata la nuova Commissione grandi rischi. See link: <https://www.protezionecivile.gov.it/en/comunicato-stampa/protezione-civile-insediata-la-nuova-commissione-grandi-rischi-0/>

19 The list of experts is included in Decree of the Minister for Civil Protection and Sea Policies of 31 August 2023, available at link: <https://www.protezionecivile.gov.it/it/normativa/dmpcm-del-31-agosto-2023/>

20 For instance, the DPC signed agreements or memoranda of understanding with Ferrovie dello Stato Italiano (Italian national rail company), ENEL (electricity), and TERNA (utilities).

21 Information on voluntary work at CPD is accessible at this link: <https://volontariato.protezionecivile.gov.it/en/>

22 Both central and territorial lists are publicly available at this link: <https://volontariato.protezionecivile.gov.it/en/national-list/central-list/>

the participation in the civil protection system by volunteers formally registered on these lists, for example by funding related expenses (Art. 39-40, Civil Protection Code), meaning that volunteers engaged in civil protection activities can combine it with their job (and employers can request reimbursement of the wages paid to employees for the time they are engaged in civil protection activities), and have supplementary insurance coverage.

Voluntary organisations are represented in the National Civil Protection Volunteers Committee that is also voluntary and serves a three-year term, at the end of which new elections are called. The committee meets at the DPC headquarters at least three times a year and when necessary, carries out consultative tasks of research, study and discussion on issues related to the promotion, training and development of organised civil protection volunteering, and promotes interaction with other Components and Operational structures.

Other relevant bodies with a role in emergency management and coordination, such as the Civil Protection Operational Committee, and the various coordination centres at the different levels are detailed in Section 7.1, Wildfire emergency response.

Coordination and partnership in wildfire risk management

The Forest Fire Technical Committee and the Coordination Committee have a leading role in coordinating wildfire risk management activities. The Forest Fire Technical Committee, established with Decree Law 120/2021, has a technical but also strategic role. It can be considered an update of the previous 'Inter-Institutional Technical Board', which was set up in 2017 after a devastating forest fire season to improve capabilities in terms of forecasting, preventing and actively fighting forest fires and fires in the WUI. Coordinated by the DPC and composed of representatives of the actors and institutions involved in forest fire risk management²³, the Forest Fire Technical Committee's task is to monitor and coordinate forest fire-related activities. Additionally, as mentioned in Section 2.1, the committee carries out evaluation activities in support of the drafting of the National Forest Fire Coordination Plan.

The Coordination Committee, established in 2022, is activated and operates during the forest fire season, meeting regularly at least once a week. It follows the evolution of the forest fire season, reinforcing patrols through the coordination of resources, preventing critical situations, and supporting twinning between regions. The committee is composed of representatives of the DPC, the CNVVF, Carabinieri Forestali and Regions.

With regards to voluntary organisations, some volunteers are fully trained in forest fire prevention and fighting, and can be fully deployed in forest fire fighting activities. Additionally, on the basis of twinings between Regions and voluntary organisations, volunteers are organised in advance to move from one place to another to provide support in wildfire prevention and active firefighting activities during peak periods, as well as to receive training and exchange experiences with other volunteers²⁴.

Other coordination committees/boards specifically related to forest fire management are detailed in Section 7.1.

23 It is composed by representatives of the Presidency of the Council of Ministers; the CNVVF; CUFAA; the Regions and Autonomous Provinces of Trento and Bolzano and the Municipalities designated by the Unified Conference; Ministries of Interior, Defence, Infrastructure and Transport, Economy and Finance; MASE; MASAF; the Department for Digital Transformation and the Department for Regional Affairs; and Autonomies of the Presidency of the Council of Ministers; the Competence Centres.

24 Vallari, S., Sorrentino, G. Commitment of civil protection volunteers in wildfire prevention & fighting. Presentation during Peer Review programme on disaster risk management. Thematic wildfire peer review in Italy. On behalf of the Italian Civil Protection Department. 21 May 2024, DPC, Rome.

Box 1 - Good practice from Portugal in wildfire risk governance

The Portuguese 'Agência para a Gestão Integrada de Fogos Rurais' (Agency for Integrated Rural Fire Management - AGIF) is a Portuguese model of governance tasked with the planning, strategic coordination and assessment of the Integrated Rural Fire Management System (SGIFR). It seeks to improve cooperation and coordination, bringing all stakeholders to the same table, at all decision levels. AGIF coordinates a dedicated set of planning instruments, ensuring consistency and cohesion, as well as improved monitoring of impacts (source: <https://www.agif.pt>).

2.4 - Wildfire risk management strategy

- The 'Disaster risk management in Italy' report, drafted by the DPC in 2020, describes the national **strategy for the management and reduction of disaster risks** in Italy, with forest fires as one of the key risks.
- The **National Plan for Adaptation to Climate Change**, drafted by MASE, entered into force in February 2024 to implement the **National Strategy for Climate Change Adaptation**.
- The **National Forest Strategy**, adopted in 2022 and promoted by the Ministry of Agriculture in consultation with the Ministries of Environment, Culture, Economy, and the State-Regions Conference, is valid for 20 years (until 2032) with regular review and updates every five years.

A national disaster risk reduction strategy 'document' does not exist in Italy. However, the 2020 report 'Disaster risk management in Italy'²⁵ drafted by the DPC for the Department for Cohesion Policies of the Presidency of the Council of Ministers (PCM), describes the national strategy and framework of plans and measures for the management and reduction of disaster risks in Italy (see also Sections 2.6, Systemic resilience and 4.1, Wildfire risk management planning). The document takes into consideration the key risks affecting Italy and focuses in particular on climate-related risks (hydrogeological and hydraulic risks, snow and avalanche risk, water deficit and forest fires, geophysical risks, and human-induced risks).

The National Strategy for Climate Change Adaptation (SNACC) was developed and adopted by the Ministry of Environment and Land and Sea Protection in 2015. The SNACC encourages more effective cooperation between institutional actors at all levels (State, Regions, Municipalities) and promotes the identification of territorial and sectoral priorities in the field of climate change adaptation.

Implementing the SNACC, the National Plan for Adaptation to Climate Change (PNACC) was drafted in 2023 by MASE and entered into force in February 2024. Its main general objective is to provide a national guiding framework for the implementation of actions aimed at minimising risks from climate change, and for the integration of adaptation criteria in the procedures and instruments already existing at the various levels. Two annexes of the PNACC detail the methodologies for drafting regional and local climate change adaptation strategies and plans. Additionally, to cope with the lack of coordination on this topic at the national level, a National Observatory for Climate Change Adaptation is currently under implementation and will play a key role in the implementation of the PNACC. It will be composed of the ministries responsible for different sectors, the Italian Regions and Autonomous Provinces, Municipalities, the DPC, the National Agency for Meteorology and Climatology, and the Italian Institute for Environmental Protection and Research (ISPRA). Among other things, the observatory will: identify specific funding sources for implementation; provide inputs for coordination between national and regional planning and programmes; carry out monitoring, reporting and evaluation activities; and periodically update the plan.

²⁵ Major risks are defined by extent or geographical coverage, population involved, quantity and severity of expected damage.

Wildfire risk

Italy does not have a national wildfire risk management strategy document. However, national key strategies and plans address wildfire risk. Most importantly, the National Forest Strategy (NFS) was adopted in 2022 and promoted by the Ministry of Agriculture in consultation with the Ministries of Environment, Culture, Economy, and the State-Regions Conference. It is valid for 20 years (until 2032) and is subject to review and updating every five years. It provides a framework for national and regional forestry policies and emphasises the importance of a comprehensive and integrated approach. The NFS defines national guidelines for the protection, enhancement and active management of the national forest heritage and for the development of the forest sector. Among other things, the strategy includes provisions for forest fire prevention and management (see Box 2 below).

The NFS is the result of an extensive yet essential process of collaboration, involving a multidisciplinary panel during the drafting process and a public consultation. It represents a significant effort to harmonise topics and terminology, in close connection with the other implementing decrees of the Framework Law on Forests and Forestry Supply Chain 'TUFF' (Legislative Decree No 34/2018), under which the NFS is implemented. The NFS is composed of a set of implementing decrees which demonstrate the recent steps taken by Italy to upgrade the strategic framework for sustainable forest management and adaptation.

Box 2 - The forest fire risk in the National Forest Strategy

For each of its 3 General Objectives, the NFS provides a series of Operational Actions (OA), supplemented by Specific Actions (AS - sub-actions) and Instrumental Actions (IA). Among these, the following specifically address forest fire risk management:

- OA A.1.1 addresses the need to integrate forest fire risk prevention into AIB Plans, ensuring coordination and convergence on shared objectives with other planning and programming tools (biodiversity, climate crisis, landscape, bio-economy, energy, local and rural development).
- OA A.5 promotes forestry interventions in the AIB Plans to prevent and assist in the active fight against forest fires, with particular focus on high and medium fire risk areas, peri-urban areas and urban-rural and urban-forest interface areas, to be integrated in and correlated to the Territorial Forestry Planning and to the Forest Management and Settlement Plans (PGAF).
- A.S. 2.1 (a) promotes actions of integration and technical and operational coordination, in regional and national planning, in the different phases of wildfire risk management; (b) aims to establish a permanent inter-institutional control room coordinated by MASAF, in support of the DPC and the State, to foster the programmatic integration between land use, forecasting, prevention and active forest fire fighting; (c) promotes a more consistent and homogeneous application of the ministerial guidelines for AIB planning (from the definition of risk to the mapping of fuels for prevention) which can be valid at national level.
- A.S. 2.2 promotes the coordination and convergence of fire prevention strategies with forestry, agro-pastoral and conservation policies in protected areas (e.g., by enhancing the action of tools provided by Rural Development Plans).
- A.S. 2.3 aims to establish a system of sanctions against municipalities that fail to implement and update the Fire Cadastre and prescribed fire in the AIB Plans
- A.S. 2.4 aims to (1) improve the collection, analysis and dissemination of data on wildfires in Italy, including uniform standard procedures for all regions and a national georeferenced cartography and related wildfire database accessible to all and available remotely; (2) bring regional data and fire cadastre's data into the information system SINFor (see below), as well as economic data on prevention and firefighting costs.
- IA 1.4 addresses the establishment of the National Forest Information System (SINFor) and a georeferenced forest map, aiming to provide a single point of access to data and information from the wide range of knowledge available on forestry in Italy (see Section 5.1, Wildfire prevention).

In addition, within the Strategic Plan of Common Agricultural Policy (CAP) of 2014-2020/22 and the more recent version 2023-2027, various actions address forest fire risk management. For instance, the Strategic Plan of CAP 2023-2027 includes actions concerning investments aimed at forest fire monitoring, prevention and extinction, as well as investments for the restoration of forest damage, and of forests potentially damaged by natural disasters, adverse climatic events or catastrophic events, including forest fires.

Wildfire risk is also addressed in the PNACC, which provides for a range of measures aimed at mitigating the effects of climate change on forests and wooded areas, while recognising their capacity to deliver economic and environmental benefits²⁶. The reduction of wooded areas subject to fire risk is one of the indicators for monitoring the PNACC.

2.5 - Wildfire risk financing

- Regions and Autonomous Provinces define **independently the resources** to be allocated in the field of forest fire risk management, in accordance with Framework Law on Forest Fires 353/2000.
- Following the summer forest fire season of 2021, funds were allocated for the implementation of the National Forest fire Coordination Plan (Decree Law 120/2021), the National Strategy for “Inner Areas” (SNAI), and the RRP (Recovery and Resilience Plan).
- The European Commission supports wildfire risk management in Italy mainly through the following financial instruments: the European Regional Development Fund (**ERDF**), the Recovery and Resilience Facility (**RRF**), and the European Agricultural Fund for Rural Development (**EAFRD**).

In terms of civil protection, the Civil Protection Code regulates the measures and financial instruments for the implementation of civil protection actions. At the national level, resources for risk forecasting and prevention are provided by the DPC and constitute the ‘National Civil Protection Fund’, registered in the budget of the Presidency of the Council of Ministers. As for response, the ‘Fund for national emergencies’ is specifically addressed to emergency events that trigger the declaration of the state of emergency. However, to manage and overcome national emergencies, the funds made available by the government are often integrated with funds from the regional and local authorities concerned and, for some major emergencies, from the European Union Solidarity Fund.

At the regional level, the ‘Regional Civil Protection Fund’ is used to support the civil protection system of the regions and local bodies and to tackle regional emergencies. The allocation criteria for each region are regulated by a special decree of the President of the Council of Ministers in agreement with the Unified Conference.

Regarding wildfire risk financing, the Regions and Autonomous Provinces define independently the resources to be allocated to forest fire risk management, in accordance with Framework Law on Forest Fires 353/2000.

Following the extreme summer forest fire season of 2021, funds were allocated for the implementation of the National Forest fire Coordination Plan (Decree Law 120/2021), the National Strategy for “Inner Areas” (SNAI), and the RRP (Recovery and Resilience Plan) as follows:

- For the National Coordination Plan, Budget Law 234/2021 established a specific fund to be transferred to the Presidency of the Council of Ministers - DPC. Specifically, EUR 40 million for the year 2021 have been allocated for the urgent strengthening of the operational capacity of the state components involved in the prevention and active fight against forest fires; EUR 40 million for the year 2022; EUR 50 million for the year 2023 and EUR 60 million for the year 2024, of which 20 EUR million for each of the years from 2022 to 2024 to be allocated to the regions.

²⁶ DPC (2020). Gestione dei rischi da catastrofi in Italia. Rapporto per il Dipartimento per le Politiche di Coesione.

- Concerning the SNAI²⁷, EUR 20 million for the year 2021 and EUR 40 million for the period 2022-2023 were allocated to forest fire prevention in the ‘inner areas’ of Italy most exposed to forest fires, including protected areas. These funds are also designated to implement the actions foreseen within the AIB Plans.
- As for the RRP, EUR 500 million was allocated by the NGEU (Next Generation EU) for the implementation of the SIM Project, aimed at launching an advanced and integrated monitoring and forecasting system. EUR 150 million of 500 million is to be allocated to prevention and active forest fire fighting (see Box 7 in Section 5.1, Wildfire prevention).

In terms of funding for the implementation of the National Forest Strategy, Budget Law 234/2021 established a specific fund allocating EUR 30 million for the years 2022 and 2023 and EUR 40 million for each subsequent year (until 2032) to ensure the implementation of priority actions for achieving the general objectives of the NFS (see Box 2 in Section 2.4). Each Region and Autonomous Province manages the allocation of these financial resources autonomously. They can choose to implement all or only some of the actions outlined by the NFS, based on their local characteristics.

With specific reference to prevention, MASE funds programmes to enhance the resilience of natural and semi-natural forest systems through ecosystem recovery and structural restoration. Additionally, the ‘Parks for Climate’ and ‘UNESCO for Climate’ programmes support parks and protected areas in reducing CO₂ emissions by funding good forestry practices and infrastructures for wildfires.

The European Union supports wildfire risk management in Italy mainly through the following financial instruments: the European Regional Development Fund (ERDF), the Recovery and Resilience Facility (RRF), and the European Agricultural Fund for Rural Development (EAFRD). The ERDF provides the largest share of EU support to wildfire risk management for the period 2021-2027, which is mainly directed towards wildfire preparedness activities at the regional level, ranging from early detection and warning systems to the acquisition of firefighting equipment. The RRF funds large-scale investments in wildfire preparedness, such as renewal of the CNVVF fleet of firefighting vehicles, as well as prevention activities, as defined in the Italian Recovery and Resilience Plan (RRP). According to recent estimates, Italy will invest around EUR 1,2 billion of EU funding in wildfire risk management between 2021 and 2027, which is an increase of 60% compared to 2014-2020. The overall increase is mainly due to the support provided by the RRF, a significant share of which (EUR 420 million) is in the form of a loan²⁸.

Like the ERDF, EAFRD investments in wildfire risk management are planned at regional level, in line with the division of responsibilities for the management of this risk in Italy. However, while the ERDF focuses primarily on four Southern regions – Campania, Sicily, Calabria, and Sardinia, with Calabria benefitting from 59% share of the total allocation –, the EAFRD distributes funding more widely (2023-2027), with 19 Regions choosing to invest these resources in fire prevention and restoration of damage to forests.

Italy is also receiving financial aid from the UCPM for hosting the ResceEU aerial firefighting capacities, after being awarded, in 2022, a UCPM grant of EUR 100 million to purchase two medium amphibious planes.

27 The SNAI is a strategy that aims to promote and protect the assets and local communities of the “Inner Areas” of the country. These are fragile territories, distant from the main urban centres that provide essential services and too often left to fend for themselves. More information is available at <https://politichecoesione.governo.it/it/politica-di-coesione/strategie-tematiche-e-territoriali/strategie-territoriali/strategia-nazionale-aree-interne-snai/>.

28 Source: European Commission, 2024.

Finally, Italy has benefited from the support of the Horizon and LIFE programmes for research, innovation and other wildfire-related actions. In particular, since 2014, six LIFE projects addressing wildfires have been financed in Italy, for a total of EUR 13 million²⁹.

2.6 - Systemic resilience

- The report on 'Disaster risk management in Italy' clearly demonstrated a **strong commitment at the national level to fostering policy coherence** and promoting a cross-sectoral approach in disaster and climate risk assessment and management.
- The PNACC is bringing together various **sectoral plans on climate related risks** (geological, hydrological and hydraulic risks, forest fire risk, and risks related to water resources and water scarcity).

As already mentioned in Section 2.4, the report on 'Disaster risk management in Italy' describes the overall national DRR strategy and provides an overview of plans and measures for DRR in Italy. The report clarifies that responsibilities for managing and reducing risks from natural hazard-related disasters and adapting to climate change are not assigned to a single entity, but are shared among different institutional actors operating at different scales and in different geographical areas. Therefore, the nationwide approach is aimed at integrating all risks, with a focus on risks affected by climate change. To ensure policy coherence, the report takes into consideration that already included in the 'National risk assessment document' (2018, art.6 Dec.1313/2013), drafted by the DPC, and in the PNACC, drafted by the Ministry of the Environment and Land and Sea Protection.

The document also considers further analyses of expected climate change impacts in Italy provided in the report 'Risk analysis - climate changes in Italy'³⁰ published by the Euro-Mediterranean Center on Climate Change (CMCC) in 2020. The report covers the analyses of future climate scenarios and expected risk for certain key sectors (urban environment, geo-hydrological risk, water resources, agriculture, and forest fires). For each risk, a matrix of criticality by spatial level (national or sub-national) and by prevention or preparedness is provided as a reference for constructing the plans and measures described in subsequent chapters. The report also shows how the risk analysis and assessment activities were conducted in parallel for all risks, with the most detailed assessment of risks with the greatest impact or directly related to climate change.

The PNACC has also begun the process for merging various sectoral plans on climate change related risks (geological, hydrological and hydraulic risks, forest fire risk, and risks related to water resources and water deficits). In 2019, the 'Guidelines for the regional climate change adaptation strategies' were adopted within the MASTER ADAPT project (LIFE) and provide the Regions with a support tool for the implementation of the regional adaptation strategies.

Additionally, other actions are planned or are currently under implementation to foster a cross-sectoral approach in forest fire risk governance. For instance, as shown in Box 2 (Section 2.4), the NFS aims to ensure coordination and convergence on shared objectives with other planning and programming tools (biodiversity, climate crisis, landscape, bio-economy, energy, local and rural development). The CAP is coherent with the NFS and the Forestry Programmes of the Regions and Autonomous Provinces, having several actions addressing forest fire risk.

²⁹ These projects include measures to reduce the vulnerability of forest ecosystems, integrated solutions for the prevention of forest fires involving all the relevant actors, integrated forest management plans, the reduction of fire damages through nature-based solutions and risk management tools.

³⁰ The report can be found at this link: <https://www.cmcc.it/analisi-del-rischio-i-cambiamenti-climatici-in-italia>

Another important action to facilitate the implementation of a multi-risk and holistic approach is the SIM project. This initiative aims to develop a remote monitoring system, enabling the forecast of risks induced by climate changes and inadequate territorial planning³¹. The monitoring data will serve as the foundation for developing risk prevention plans (see also Box 7 in Section 5.1).

2.7 - Conclusions

The National Civil Protection Service (SNPC) in Italy is a well-structured, integrated system that effectively manages disaster risks through a whole-of-society and whole-of-government approach, involving key actors at various territorial levels. The SNPC is regulated by the Civil Protection Code, which successfully consolidates and streamlines all civil protection provisions into a single text, clarifying the roles and responsibilities in the field of disaster risk management.

The National Civil Protection Department (DPC), reporting directly to the Prime Minister, ensures timely and effective coordination, particularly in the response phase. To improve overall coordination in disaster risk management, the DPC is also adapting the general concept of the National Platform for Disaster Risk Reduction (NPDRR) to the national context, as a strategic tool, bringing together all key stakeholders and gathering information on disaster risk management-related activities beyond the scope of the SNPC.

According to the Italian Constitution and sectoral laws, each Region and Autonomous Province has its own civil protection system, reflecting specific territorial and socio-economic characteristics. While being a strength, this configuration also poses challenges in coordination and consistency. To address these challenges, common minimum standards, capacities, terminology, and processes shall be agreed upon and implemented to ensure efficiency and fairness across the country. Increasing the technical, administrative and financial capabilities of regional and local civil protection systems is essential for improving resilience and implementing common standards. With this aim, at national level, there is the continued need for the exchange of knowledge and expertise, joint training, and twinning programmes.

The country has adapted to integrated wildfire risk management, moving from a suppression-focused approach to one that includes planned and controlled fires as landscape modelling mechanisms, supported by the forward-looking Framework Law 353/2000. However, this law needs revision to clarify the roles, responsibilities, and terminology to avoid ambiguities, especially during the response phase. Indeed, a common terminology that clearly defines different types of wildfires according to different landscapes would be of great benefit, but only if accompanied by a clarification of the roles and responsibilities across the entire risk management cycle.

The strong effort in improving the whole-of-society and whole-of-government approach towards wildfire risk management that is being applied at the different territorial levels has already resulted in a noticeable improvement in the effectiveness of the overall system. To improve its efficiency further, a more flexible approach to the concept of the fixed fire season could also be considered in light of climate and environmental changes.

The Forest Fire Risk Unit (AIB Unit) at the DPC plays a crucial role in coordinating the system and fostering relationships with relevant actors at different levels; reinforcing this unit with additional staff and capacities would benefit the entire system. Good cooperation among key stakeholders is maintained through continuous DPC efforts, such as national plenary meetings and fact-finding visits, contributing to a robust wildfire risk management system. Establishing

³¹ For more information, visit the following link: <https://www.mase.gov.it/pagina/investimento-1-1-realizzazione-di-un-sistema-avanzato-ed-integrato-di-monitoraggio-e-0>. Last accessed 03/07/2024.

shing a Coordination Committee and the Inter-Institutional Technical Board has proven effective for maintaining stakeholder engagement and consensus on wildfire risk management approaches and objectives. One example of good cooperation among different stakeholders on cross-cutting topics related to disaster (including forest fire) risk management is the effective collaboration between the DPC, Regions, Autonomous Provinces, and the Ministry of Culture (MiC), which demonstrates joint efforts to protect cultural heritage and landscapes against risks. Integrating cultural heritage safeguarding procedures into emergency management plans is a best practice that should be disseminated to inspire other European countries.

The development of a National wildfire risk management strategy with cross-sectoral objectives and clear responsibilities among various actors and levels may be considered, with a view to defining a clear vision for the country. When adapting the national strategy at the regional level, priorities that best suit regional and national goals should be chosen and thresholds of risk tolerance should be discussed, allowing for a more efficient risk management and resource allocation.

Given the Italian political and administrative structure, characterised by a strong decentralisation of powers in the field of civil protection, policy and decision-making processes in (among others) wildfire risk management need a solid commitment from all relevant stakeholders, which should include not only governmental actors but also industry experts, researchers, public and private organisations, as well as local communities. In relation to the latter, traditional practices of the population should be considered while developing the strategy, offering alternatives or safer ways for them to continue carrying out their business.

In such a complex governance framework, improvements to how and when different stakeholders work together and reach decisions would be highly beneficial to speed up decision-making on the most effective approaches for the entire system. With this aim, governance mechanisms should be revised, adopting a model that guarantees permanent, multi-level dialogue, negotiation and problem-solving, with fora for stakeholders to engage on policy and decision making. Moreover, already existing synergies between forest fire risk management and other topics (such as climate change, disaster risk reduction and rural development) should be fostered to strengthen resilience and develop less vulnerable landscapes by promoting closer mechanisms for cross-sectoral dialogue. In order to reflect the social reality of the country, a wide consultation process to understand gaps and strengths, consider trade-offs, define strategic actions, and establish an efficient monitoring/evaluation framework would also facilitate the alignment with other existing strategies, such as the National Climate Change Adaptation Strategy and the National Forest Strategy; the latter being a solid strategic document with a 10-year funding commitment, whose effective implementation will depend on the commitment and capacities of the competent authorities.

Various European funds support wildfire risk management activities at different territorial levels. Developing a national investment programme for integrated wildfire risk management and enhancing capacity at the national and regional levels to identify and exploit funding opportunities would strengthen the overall system. Reducing bureaucracy, promoting training, and sharing best practices through a dedicated network or the Technical Committee/ Unified Conference would further improve wildfire risk management.

As a final note, to improve the wildfire risk management system, better data sharing would heighten the perception and awareness of what is being done, and what remains to be done, driving efforts in terms of priorities and planning. This could accelerate prevention efforts and make suppression more efficient and could also help the Regions secure adequate funding to tackle their specific challenges.

3 - Wildfire risk assessment

3.1 - Legislative framework and processes

- The **National Risk Assessment** (NRA) was first developed by DPC in 2015, updated in 2018, and complemented with the assessment of disaster risk management capabilities in 2021. The NRA includes a national synoptic mapping of forest fire risk showing the probability of forest fires defined as probability of fire spread (PPF).
- The **Regions and Autonomous Provinces** are responsible for carrying out forest fire risk assessments that serve as the basis for drafting the Regional Plans for Forecasting, Preventing and Actively Fighting Forest Fires (AIB Plans), which include the risk assessment itself.

The National Risk Assessment (NRA) was first developed in 2015, updated in 2018 following the adoption of the Civil Protection Code, and complemented with the assessment of disaster risk management capabilities in 2021 following the entry into force of Regulation (EU) 2021/836 of the European Parliament and of the Council of 20 May 2021. It was drafted by the DPC, pursuant to Directive 1313/2013/EU, with the support of the Competence Centres, Research entities and Italian universities. It outlines the risk conditions of the country, specifically by providing an assessment of the following risks: seismic, volcanic, tsunami, hydrogeological (hydraulic, hydrologic, landslide, and avalanche risk), drought, and forest fires.

As concerns forest fires, the NRA includes a national synoptic mapping of forest fire risk carried out by the DPC, which details the probability of forest fires, defined as Probability of Fire spread (PPF). The value of the PPF is based on the normalised ratio between the total burnt area and the total area occupied by a particular vegetation cover. The results of the zonation produced by the model indicate how the forest fire risk varies during the year.

Additionally, the above-mentioned report 'Disaster risk management in Italy' drafted by the DPC in 2020, provides an overview of the key risks affecting the national territory, also focusing on climate-related risks (hydrogeological and hydraulic risks, snow and avalanche risk, water deficit and forest fires, geophysical risks, and human-induced risks).

As mentioned, the Regions and Autonomous Provinces are responsible for carrying out forest fire risk assessments (Law 353/2000). The Regional Plans for Forecasting, Preventing and Actively Fighting Forest Fires (AIB Plans) are drafted based on these assessments, which are included in the plans themselves. Each Region/Autonomous Province applies its own methodology on the basis of its specific territorial characteristics and knowledge – differences may relate to the different territorial divisions adopted to conduct the analysis or the input parameters used to evaluate the risk index³². However, according to the national guidelines (see Section 4.1 below) established following the adoption of Law 353/2000, each AIB Plan shall specify: the causes of the fires; the areas affected by fires the previous year; the areas exposed to forest fire risk represented on a map which also details the types of vegetation in the area; the areas treated using prescribed burning; periods of high forest fire risk, with indication of anemometric data and exposure to winds; and hazard indices based on a quantitative analysis.

³² National risk assessment (2018).

3.2 - Conclusions

Good risk assessment and mapping conducted by the Regions and Autonomous Provinces, which are included in the AIB Plans, inform planning processes on forest fire risk management at the sub-national level and are updated on a regular basis using new tools and models. However, common minimum standards for conducting forest fire risk assessment should be provided at national level via the standard guidelines for drafting AIB Plans, currently under review. A list of must have/could have elements should be recommended to Regions and Autonomous Provinces for effective and up-to-date risk assessment processes.

4 - Wildfire risk management planning

4.1 - Legislative framework and processes

- Introduced by law in 2021, the **National Forest Fire Coordination Plan** is drafted every three years by the DPC with the support of the Forest fire Technical Committee.
- In accordance with Art.3 of Law 353/2000, the Regions/Autonomous Provinces are responsible for drafting the Regional Plans for Forecasting, Preventing and Actively Fighting Forest Fires (AIB Plans).
- The AIB Plans identify **areas at risk** of forest fires, establish prevention and control **measures**, allocate **resources**, and define the **roles and responsibilities** of different stakeholders involved in the various phases of forest fire risk management.

According to Decree Law 120/2021, the National Forest Fires Coordination Plan is drafted every three years by the DPC with the support of the Forest fire Technical Committee. It is based on the results achieved by the activities of monitoring and evaluating the available forecasting-related technologies and the needs in the area of response means, infrastructure, and skills. Although the National Forest Fire Coordination Plan was first due to be adopted by October 2021, it has not yet been completed in the form of a single consolidated document. However, some budgetary resources have been allocated to support actions falling within the framework of the plan, a portion of which goes to the Regions.

In accordance with Art.3 of Law 353/2000, the Regions/Autonomous Provinces are responsible for drafting the AIB Plans (Regional Plans for Forecasting, Preventing and Actively Fighting Forest Fires), which are submitted to the DPC. The plans last for three years and must be updated annually in synergy with specific regional legislation on the active fight against forest fires. On 30 April each year, the Minister for Regional Affairs and Autonomies convenes the Unified Conference³³ for monitoring the update of the AIB Plans and the related and interconnected activities under the responsibility of the Municipalities. These local authorities are required to develop municipal civil protection plans, which should also cover wildfire risk, where relevant (see also Section 6.1, Wildfire preparedness).

Overall, the AIB Plans identify areas at risk of forest fires, establish prevention and control measures, allocate resources, and define the roles and responsibilities of different stakeholders involved in the various phases of forest fire risk management. Although Regions and Autonomous Provinces adapt their AIB Plan according to their territorial characteristics and specific Operational structures, they have to follow a general structure which is based on the Guidelines for Regional Plans for Forecasting, Preventing and Actively Fighting Forest Fires provided for by Decree of 20 December 2001 (see Table 1). The guidelines, which have received the approval of the Unified Conference, are currently being reviewed by a subgroup of the Forest Fire Technical Committee.

³³ The Unified Conference is the forum in which Regions, Provinces and Municipalities are called upon to express themselves on issues of common interest and take decisions, promote and sanction understandings and agreements, and appoint representatives.

Section N.	Description of the section
I.	<i>General part</i> 1. Description of the territory; 2. Databases; 3. Basic cartography; 4. IT support; 5. Historical analysis of AIB data; 6. Priority targets to be defended; 7. Organisational model.
II.	<i>Forecast</i> 8. Main causes and predisposing factors of fire; 9. Burned areas in the previous year, represented on thematic maps; 10. Areas at risk of forest fires represented on updated thematic maps, with an indication of the main vegetation types; 11. Periods of forest fire risk, with an indication of the prevailing seasonal anemological characteristics; 12. Quantitative and Synoptic hazard indices; 13. Forest fire forecast and prevention also through satellite monitoring systems.
III.	<i>Prevention</i> 14. Contrasting actions leading even only potentially to the ignition of fires in areas and periods at risk of forest fires; 15. Consistency and location of access routes and firebreaks as well as adequate water supply sources; 16. Forest cleaning and maintenance operations, with the possibility of providing for substitutive interventions of the defaulting owner in particular in the areas of higher risk; 17. Training requirements and related scheduling; 18. Communication activities.
IV.	<i>Active fighting</i> 19. Size and location of means, instruments and human resources as well as procedures for active forest firefighting; 20. Patrolling, surveillance, detection, warning, extinguishing; 21. Permanent Unified Operations Rooms (SOUP); 22. Substitute intervention by the State against defaulting regions.
V.	<i>Regional protected areas</i>
VI.	<i>State natural parks and natural reserves</i>
VII	<i>Economic-financial forecast of the activities included in the plan</i>

Table 1 - General structure of the AIB Plans according to the Guidelines for Regional Plans for Forecasting, Preventing and Active Fighting Forest Fires (2001).

In accordance with Law 353/2000, MASE (Ministry of Environment and Energy Security) is responsible for overseeing the development of the Forest Fires Plan for National Protected Areas (National Parks and State Nature Reserves)³⁴.

These plans are systematically updated every five years starting with a plan proposed by the management bodies of the protected areas. After consultation with the Carabinieri Forestali and CNVVF and in agreement with the relevant Region, the plans have to be approved by MASE, which verifies their compliance with the reference 'Scheme' and 'Manual' prepared by the 'AIB Division' of MASE. The Italian Academy of Forestry Science provides scientific support for this analysis. Like the AIB Plans, these plans also encompass the phases of forecasting, preventing, and actively fighting forest fires and include a detailed geo-referenced AIB map, useful for fire prevention and fire extinguishing. Once approved, they are incorporated into the respective regional AIB Plan. The current plans, together with the relevant maps, are available on the website of MASE³⁵, and will soon also be available on the websites of the Integrated Monitoring System (see Box 7, Section 5.1, Wildfire prevention) or the National Geoportal.

³⁴ In total, the National Protected Areas include 24 National Parks and 147 State Natural Reserves.

³⁵ The plans of the National Parks and State National Reserves are available at this link: <https://www.mase.gov.it/pagina/attivita-antincendi-boschivi>

Box 3 - Good practice from Portugal: wildfire risk management planning process

Planning for wildfire risk management in Portugal is divided into six stages (planning, preparing, preventing, pre-suppressing, suppressing and post-event) which have high-level processes describing the expected outcomes, and who is responsible for each process. These high-level processes can be detailed at regional and local levels, hence giving each governance level some degree of flexibility to adapt.

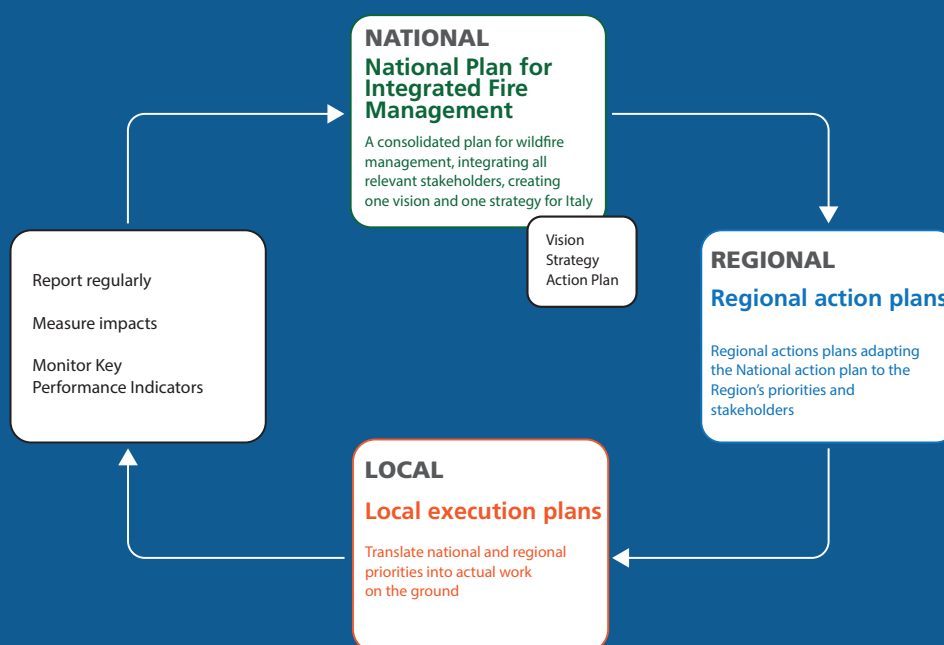


Figure 5 - The wildfire risk management planning process at the various territorial levels in Portugal. Source: adapted by the authors from Portuguese law.

Other planning instruments relevant to wildfire risk management include the Forest Management Plans, regulated by Legislative Decree 34/2018 on the Framework Law on Forests and Forestry Supply Chain (TUFF)³⁶. The drafting of these plans is promoted by the Regions for public and private properties as a necessary tool for the protection, enhancement, and active management of forest resources. They implement the Regional Forestry Programmes (which, in turn, are drafted by the Regions in line with the National Forestry Strategy), and include measures of forest fire prevention. However, based on 2019 data, only 18% of the national forest area in Italy is managed through Forest Management Plans, resulting in repercussions for the forests' state of health and susceptibility to wildfires³⁷. This lack of coverage is caused, among others, by the high fragmentation of public and private land and the low economic returns from forest activities³⁸.

Civil protection planning processes are described in Section 6.1 - Wildfire preparedness/Contingency planning.

³⁶ Presidente della Repubblica, Ministro dell'ambiente e della tutela del territorio e del mare, Ministro dei beni e delle attività culturali e del turismo, Ministro per la semplificazione e la pubblica amministrazione, e Ministro dell'economia e delle finanze. Testo unico in materia di foreste e filiere forestali, Pub. L. No. 34, Decreto legislativo (2018).

³⁷ For more information see the report 'Risk analysis - climate changes in Italy' at this link: www.cmcc.it/analisi-del-rischio-i-cambiamenti-climatici-in-italia

³⁸ Insights from the LIFE project '[LIFE21-CCM-IT-LIFE.ClimatePositive'](http://LIFE21-CCM-IT-LIFE.ClimatePositive/)

Box 4 - Example from the Czech Republic: Regional and local forest plans.

In the Czech Republic, the Regional Forest Development Plans (OPRL) implement State forestry policy at the regional level, providing forest management recommendations to landowners, such as strategies to mitigate the negative impacts of droughts and water scarcity. Each natural forest area has a 20-year area plan, revised according to current natural conditions and the State Forestry Policy Strategy.

At the local level, owners or users of continuous forest stands larger than 50 hectares must have a Forest Management Plan that aligns with OPRL guidelines. These plans are essential for incorporating wildfire risk management, prevention, and preparedness measures and include detailed information about the forest, maps, and management strategies.

Additionally, at the local level, building permits near forest areas require the consent of the state forest administration authority and fire rescue service, necessary for buildings within 30 metres of the forest boundary (reduced from 50 metres as of 1 January 2024). Buildings are classified into four categories, with the smallest (under 40 m²) not requiring a permit. Regulations are stricter for residential buildings and more lenient for buildings for leisure activities.

Box 5 - Examples from Spain: guide for the preparation of the Municipal Action Plan (PAM) against the risk of forest fires

The Council of Generalitat Valenciana approved the Special Plan for Forest Fire Risk (PEIF) of the Valencian Community, which serves as a guide³⁹ for local territorial planning against this risk, establishing the basic functions and minimum content of both Strategic Forest Management Plans and Fire Risk Management Plans (Operational Plans). There is support available from the Regional Government for the drafting of both plans, and they must also be approved and reviewed by the Regional Authority.

The document is composed of five sections: introduction; information on the territory and risk analysis; organisational structure; operational measures, including evacuation plans; provisions on implementation and maintenance; and the annexes, including maps.

4.2 - Conclusions

The regional plans for forest fire risk management under Framework Law 353/2000, known as AIB Plans, have been in place since 2001. These plans cover the entire risk management cycle and serve as strategic tools for ensuring a viable and up-to-date system. In the absence of a specific national strategy, the regional AIB Plans represent the primary planning instrument for forest fire risk management. A comprehensive assessment of AIB Plans by the Department of Civil Protection (DPC), from which to draw lessons learned (to be made publicly available) would certainly foster greater collective understanding of forest fire risks and management approaches.

The ongoing revision and updating of guidelines for AIB Plans is an excellent opportunity to improve the overall forest fire management system by establishing common minimum standards to ensure coherence and consistency among plans from different Regions and Autonomous Provinces. The updated guidelines should address both the planning process and content.

Regarding the overall process, it is of paramount importance to ensure the implementation of a virtuous planning cycle encompassing all key stages, thus including regular revision/updating, monitoring and evaluation. Clear objectives linked to key performance indicators (including economic ones) and, if developed, to the national wildfire strategy, should be identified and specified to guide the planning process. A wide consultation, to the extent possible engaging also stakeholders outside the AIB system, is highly recommended to ensure that key cross-cutting, cross-sectoral

³⁹ The guide is available at this link: <https://www.112cv.gva.es/es/guies-per-a-l-elaboracio-plans-locales>.

aspects and trade-offs are considered. Also, common and clear terminology should be defined and adopted in AIB Plans throughout the country to ensure a common understanding.

As for the content, among others, AIB Plans should include future scenarios, based on foreseen environmental, socio-economic, and climate changes. Identified risk reduction measures should be linked to specific timeframes, costs, indicators and authority(ies) responsible for their implementation and monitoring. A specific section should be included on prescribed fires and conditions for the use of tactical fire, along with criteria for other fuel management mechanisms, such as grazing. Details should also be given on the use of different funds (EU/national) to implement different kinds of measures.

Given the fragmentation of planning processes, which makes it difficult to ensure a clear and consistent approach for the whole country at the different administrative levels, it could be useful to consolidate all plans relating to forest fires into a single plan. Such a national plan, which should include provisions for adaptations at each governance level, would still offer different stakeholders and governance levels the opportunity to attend to their priorities and to offer their best expertise. Thus, when drafting and negotiating a national plan for wildfire management, all steps of the value chain would have to be considered, making it a whole-of-government and whole-of-society instrument. As such, all stakeholders would cooperate in choosing the most important projects to pursue for Italy, thus reducing susceptibility to ignition through prevention, reducing vulnerability through preparedness and reducing impact through response. Projects contained in the national plan should have a clear purpose and targets, their own RACI tables, calendar, key performance indicators and funding. Defining a RACI table for all processes and projects developed/implemented by different stakeholders at the different scales, would enable the clear definition of roles in terms of who is (R)esponsible (who carries out the task), (A)ccountable (who has to answer for the impact of the task, or lack of thereof), (C)onsulted (who has to be consulted and provide inputs) or (I)nformed (who has to be informed or given an output).

This approach would greatly improve Italy's ability to accelerate the efficient spending of available funds and monitoring of impacts. Furthermore, this planning should be adaptive and consider scenarios on physical and demographic variables, closely monitoring needs and impacts at the regional and local levels, in order to adjust actions and targets accordingly, as well to negotiate adequate funding and other resources. The national plan, as well as associated action plans at all levels, should be publicly reported at regular intervals.

Building and maintaining a nation-wide monitoring platform, collecting data and granting access to relevant stakeholders, with granular access control lists, to accelerate priority definition and budget allocation is highly recommended. The successful implementation of the integrated IT platform (SIM project, under implementation) will be beneficial to centralise and share common baseline data/information to inform planning, funding allocation, and decision-making processes.

Focusing on the local level, Italy has more than 8,000 municipalities with very different characteristics and capacities, but which play and shall play a very important role in the management of forest fires. Since the management of fires from a single level, whether national or regional, is neither affordable nor sustainable, active policies are needed to promote the capacity of municipalities in terms of prevention and preparedness against forest fires, also ensuring homogeneity and minimum requirements throughout the country.

Existing guidelines for drafting local civil protection plans ensure common standards and consistency across the country, with regional and autonomous provincial support for municipalities. Aligning civil protection plans with AIB Plans across different territorial levels is crucial for effectively managing the entire risk cycle. It is also important that operational and civil protection planning is fully integrated and coherent with actions to prevent causes and support suppression (firebreak areas, forest roads, strategic fuel management points).

5 - Wildfire prevention

5.1 - Legislative framework and processes

- Forest fire prevention measures are contained in the **AIB Plans** of the Regions and Autonomous Provinces, as well as in the Forest Fire Plans for National Protected Areas, which are an integral part of the AIB Plans.
- At the **local level**, Provinces, Mountain communities, and Municipalities implement prevention activities in line with the guidelines established by Regions and Autonomous Provinces, and are involved in their actual execution.
- The **Framework Law on Forest Fires** (Law 353/2000) defines two types of forest fire prevention activities: fuel management and prescribed burning. Moreover, the law establishes a system of sanctions, prohibitions and prescriptions aimed at limiting the use of areas affected by fires and eliminating the financial interest in arson, by preventing the change of intended use of areas.

Article 4 of Framework Law 353/2000 defines two types of forest fire prevention activities: fuel management and prescribed burning. Fuel management is implemented through silvicultural techniques, taking into account the specificities of protected areas and habitats. Prescribed burning, introduced following the amendments of Law 353/2000 (Decree Law 120/2021), is defined as the expert application of fire to planned surface through the use of specially trained personnel and by adopting prescriptions and operational procedures based on the guidelines provided by the Forest fire Technical Committee. Sardinia and Tuscany, as of today, are the only two Regions implementing prescribed burning (see Box 24, Section 9, Regional focus: Sardinia and Calabria).

Article 10 of Law 353/2000 provides for another type of prevention measure, which consists of setting up a system of sanctions, prohibitions and prescriptions limiting the use of areas affected by fires and eliminating the possible financial interest in arson, by preventing the change of intended use of areas. The law allows Municipalities to impose, as appropriate, time constraints on the use of areas affected by fire. It states that woods and pastures affected by fire cannot be assigned a different intended use from that existing prior to the fire for at least 15 years.

Additionally, it prohibits the following actions: the construction of buildings, structures and infrastructures intended for civil settlements and production activities for 10 years; reforestation and environmental engineering activities supported by public funds for 5 years, unless specific authorization is granted by the Ministry of the Environment or by the Regions; grazing and hunting for 10 years in wooded areas affected by fire; and, lastly, the gathering of undergrowth products in the forest for 3 years.

Enforcement of sanctions also depends on keeping fire records in the Fire Cadastre (cadastre of burnt areas), as established by Article 10. The Fire Cadastre is a national prevention tool that delimits and maps the burnt areas in each Municipality. The mapping is carried out in the field and using satellite imagery by a range of institutional actors, including Carabinieri Forestali, CNVVF, and the relevant Municipalities, and through a process of public evidence.

The mapping, which must be approved by the municipality, constitutes the basis for imposing the restrictions of use provided for by law. While the law mandates that the Fire Cadastre be updated annually, according to data provided by Carabinieri, in 2020, 44% of the Municipalities failed to submit data to the Fire Cadastre on the areas affected by

fires⁴⁰. Additionally, the obligation is waived for municipalities that have not been affected by fires in pastures and wooded areas.

Prevention measures are included in the different AIB Plans of the Regions and Autonomous Provinces, as well as in the Forest Fires Plans for National protected Areas – which are an integral part of the AIB Plans –, where these have to be implemented by the competent management bodies in the respective national park or nature reserve. At the local level, Provinces, Mountain communities, and Municipalities implement prevention activities according to the guidelines established by the Regions, and are involved in the actual execution of the prevention measures (e.g. clearing the roadsides). Also, as mentioned above, the Municipalities must set up a specific Fire Cadastre of areas affected by fires, with the technical support of the Regions if needed.

As regards prevention activities in cultural sites managed by the MiC, the Ministry has full responsibility for maintenance in these areas, including cutting back vegetation, clearing away combustible materials, creating adequate fire buffer zones for firebreaks, as well as monitoring visitor behaviour and providing adequate signage on fire safety and prevention.

Box 6 - Good practice from Spain: Comprehensive Forest Fire Prevention Teams

The Spanish Comprehensive Forest Fire Prevention Teams (EPRIF) were established in 1998 to intervene in areas with a high incidence of fires, specifically supporting rural communities. Their primary mission is to reconcile the interests of various groups in the territory by proposing and implementing specific, balanced measures that help control and improve vegetation, while maintaining the traditional practices of rural populations.

These teams assess and determine necessary actions based on identified needs, operating within the framework of current regional regulations. Composed of personnel highly trained in fire use and management, they possess extensive knowledge of prevention measures.

Although EPRIF teams are under the jurisdiction of the Spanish Government, they work in coordination with regional services. Their key activities include, among others, controlled and prescribed burning, clearing, training, raising awareness, and technical advice⁴¹.

With regards to the use of **innovation and knowledge services**, Italy is a frequent user of the Copernicus Emergency Management Service (EMS). For wildfire risk, since 2016 the Copernicus EMS has been activated 16 times in 'rapid mapping' mode and 1 time in 'risk and recovery' mode.

Additionally, the innovation and knowledge services and tools used or under development in Italy to support wildfire risk management include:

- **RIS.I.CO (Risk of Fires and Coordination)**: a predictive system used by the DPC since 2003 to support the issuance of the Daily National Forest Fire Forecast Bulletin and the pre-operational management of the state aerial firefighting fleet (see Sections 6.1. and 7.2). This system operates 24/7, 365 days a year and is constantly updated both technically and scientifically by the CIMA Foundation, a Competence Centre for hydro-geological risk and forest fires. It is also a valuable informational tool for managing regional wildfire and civil protection systems.

⁴⁰ Skytg24 (25 ago 2021) Incendi e desertificazioni, il disastroso bilancio italiano: bruciati oltre 150mila ettari. See link: <https://tg24.sky.it/ambiente/2021/08/25/incendi-desertificazioni-italia-report>

⁴¹ For more information, see: https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/incendios-forestales/quemasprescritasrealizadasporloseprifmetodoyaplicacion_compressed_tcm30-541707.pdf

- AUTOBAM (AUTOmatic Burned Areas Mapper), developed by the CIMA Research Foundation for the DPC: a fully automated processing chain for near real-time mapping of burned forest areas using Sentinel-2 multi-spectral imagery. It was designed to operate daily on a national scale for the Italian territory, aiding the DPC in managing forest fires⁴².
- The Forest fire geoportal, activated by CUFAA in 2022 as a forest fire prevention tool, and a new software, also used by CUFAA, designed for the automatic identification of fire origin areas, based on the Geographical Evidence Method.
- The National Inventory of Forests and Carbon Sinks, in which CUFAA stores data and monitors the qualitative and quantitative status of forest ecosystems, evaluating the carbon storage capacity (carbon sink) and biodiversity levels.
- Remote sensing techniques supporting post-fire operational protocols, specifically for assessing satellite images through the application of specially developed algorithms.
- Aircraft piloted remotely by specialised environmental protection Carabinieri units using aerial photogrammetry, in combination with an advanced photo interpretation software that facilitates the identification of fire outbreaks.
- SIM Project, which is an advanced and integrated monitoring and forecasting system under implementation by MASE (see Box below).

Box 7 - SIM Project: Implementation of an advanced and integrated monitoring and forecasting system: focus on forest and interface fire monitoring.

The SIM Project is part of several initiatives within the RRP (Recovery and Resilience Plan) and aims to develop a remote monitoring system for extensive areas of land, enabling the identification and forecast of risks associated with climate change and inadequate territorial planning. The monitoring data will form the basis for developing risk prevention plans, including for existing infrastructure, and for adapting to climate change.

SIM aims to make available, through a single access point, a mass of information from a constellation of federated environmental monitoring systems. With its innovative technological architecture, it will ensure interoperability among the environmental monitoring platforms through cooperation and standardised management of the different processes, data and simulation models by the various authorities involved in their different capacities within the system. The system's components include: the collection and homogenization of territorial data using satellites, drones, remote sensors, and the integration of existing information systems; continuously operating telecommunications networks; central and regional control rooms; and cybersecurity systems and services to protect against cyber-attacks. Among the thematic areas within SIM, the sixth specifically addresses forest fires and will provide tools to support forecasting activities, active firefighting and managing fire events, training and education, damage assessment and post-event investigation activities⁴³.

Another innovative tool aimed to support the implementation of the National Forest Strategy (NFS) is the National Forest Information System (SINFor)⁴⁴, currently under implementation by MASAF and the Council for Agricultural Research and Economics Analysis, based on the provisions of the Framework Law on Forests and Forestry Supply Chain (TUFF). SINFor is an important tool for national and regional planning and programming, forest management and the development of the forestry sector and its productive, environmental and socio-cultural supply chains. It provides

⁴² A more detailed description of the AUTOBAM tool can be found in the paper 'An Automatic Processing Chain for Near Real-Time Mapping of Burned Forest Areas Using Sentinel-2 Data' available at: <https://www.mdpi.com/2072-4292/12/4/674>

⁴³ Further information is available at: <https://openpnrr.it/misure/118/>

⁴⁴ The SINFor website is found at: <https://sinfor.sian.it/#/>

a joint point of access to data and information from the wide range of knowledge available on forestry in Italy. The SINFor System is made up of two interconnected survey environments – the National Forest Map and the SINFor Database – which provide up-to-date and reliable knowledge through the collection and consultation of timely and specific forestry data and information. The SINFor Forest Database consists of 147 structural indicators – e.g., ‘Number of events and areas affected by fires’ and ‘Forested area affected by fires by Inventory categories from the Fire Cadastre’ – that generate a picture of the state of forests and the national forestry sector and will monitor the implementation of the NFS. This advanced information system will serve to monitor integrated wildfire management in Italy, which is one of the key points of the NFS⁴⁵.

Another type of prevention activity is the implementation of risk awareness initiatives which, in Italy, are carried out at different territorial levels by different institutions. The main legislative tool governing risk awareness is the Civil Protection Code, which considers the dissemination of knowledge and culture of civil protection to be an act of civil protection, and assigns the responsibility for informing the population of the risk situations, educating on correct behaviour and deciding on preventive actions to protect the population to the Mayor and the President of the Region.

Awareness-raising initiatives promoted by DPC include ‘I don’t take risk - forest fire⁴⁶’, promoting behaviours to prevent forest fires or to reduce their impact, and ‘I am civil protection too⁴⁷’ school summer camps for young people between the ages of 10 and 16 organised in collaboration with the Regions, organised civil protection volunteers, and operational units (CNVVF, State Forest Corps, Police, and Financial Police). Since the first edition in 2007, ‘I am civil protection too’ has involved and trained more than 40,000 young people.

In 2023 the initiative ‘Protect what you love⁴⁸’ was designed and implemented by the CNVVF in collaboration with the Prime Minister’s Office. This campaign, broadcast on national TV, radio and social channels, was part of a broader communication campaign in cooperation with the different bodies involved in the protection against wildfires. In 2022, CNVVF and ANCI (National Association of Italian Municipalities) published the booklet ‘Protecting your home from vegetation fires’, which is a concise guide on how to protect their home from the risk of WUI fires. In 2023, CNVVF signed an agreement with Coldiretti, the main farmers’ union, to cooperate on different initiatives, such as the development of procedures for farmers to alert the CNVVF in case of fires.

Law No 92/2019 re-introduced ‘Civic Education’ among the mandatory subjects on the secondary school curriculum, which includes basic civil protection. As for wildfires, Article 5 of Law 353/2000 establishes that the State and the Regions must jointly promote the integration of educational programmes in schools at all levels. Furthermore, the Decree of President of the Council of Ministers n. 1551/2018 details behavioural norms in the case of fires, the format of public information bulletins, and the use of scenarios for civil protection activities.

5.2 - Conclusions

Fire cannot be removed from the landscape, and policies oriented towards banning fire are likely to fail and contribute to more dangerous wildfires. Italy has accepted fire as part of its landscape, however, prescribed burning and tactical fire are not yet uniformly accepted throughout the country. Promoting prescribed burnings is crucial, in close dialogue with environmental authorities, also considering their strategic role in training firefighters. Also, the deve-

45 Further information on the SINFor can be found at: https://www.politicheagricole.it/foreste_sinfor

46 The website is found at: <https://www.iononrischio.gov.it/en/>

47 More information at this link: <https://www.protezionecivile.gov.it/it/approfondimento/campi-scuola-anchio-sono-la-protezione-civile-ledizione-2024/>

48 More information can be found at this link: <https://www.interno.gov.it/it/notizie/proteggi-cio-ami-campagna-dei-vigili-fuoco-contro-incendi-boschivi-lestate-2023>

lopment of Guidelines for prescribed fires would be helpful in simplifying coordination mechanisms and increasing the efficiency of the system.

As people continue to use fire and vegetation grows, the pressure to control fuel accumulation, and to keep people safe, demands alternative methods for fuel management, and for an increased use of prescribed burning by qualified teams. Introducing legislation to enable State, Regions, and/or Municipalities to undertake fuel management on poorly managed public or private land is recommended in order to reduce fire risk. National fuel management guidelines and investment decision support tools would assist authorities and landowners in prioritising wildfire management investments.

The criminal justice system in Italy severely punishes arson to deter potential offenders. The adoption of partial bans or exceptions during the forest fire season instead of a total ban on fire activities could be beneficial, as blanket bans often lead to an increase in negligent practices.

Innovative tools and platforms – such as the SIM project currently under development – improve wildfire risk management through better collaboration, knowledge sharing, and interoperability.

Wildfire risk awareness campaigns are conducted nationwide, tailored to different groups using various technologies and approaches. Special attention is given to vulnerable groups, such as people with disabilities. Multiple channels – including websites, social media, radio, TV, and SMS – are used to disseminate information on risks and appropriate behaviours, aiming to raise awareness of and resilience against wildfires. Conducting an in-depth analysis of existing risk communication and awareness initiatives, culminating in a comprehensive report, could be useful for further improving their quality and effectiveness. This analysis would also help systematise and align the activities carried out by the various stakeholders at different levels.

Box 8 - Good practice from Portugal: 'Safe Village' and 'Safe People'

In 2017, Portugal introduced two key programmes – Safe Village and Safe People – aimed at enhancing the safety of individuals residing near the WUI. The 'Safe Village' programme focuses on population groups and forest protection by implementing structural measures to protect lives, property and buildings on the urban-forest boundary. This includes creating and managing protection zones and strategic infrastructure, identifying critical points, and establishing safe havens. The 'Safe People' programme centres on raising awareness through educating on risk prevention, self-protection measures, and evacuation drills, conducted in collaboration with municipal authorities.

These programmes are implemented via a protocol involving the National Authority for Emergency and Civil Protection (ANEPC), the National Association of Portuguese Municipalities (ANMP), and the National Association of Parishes (ANAFRE). At the strategic level, this partnership sets national standards, conducts awareness campaigns, and implements national warning systems. At the operational level, it focuses on the local implementation of protection and awareness measures through municipalities and parishes, utilising their local presence and community mobilisation capabilities. The programmes aim to protect groups, prevent risky behaviours, raise awareness, evacuate high-risk clusters, and establish safe shelters. Additionally, a guide has been developed to support the local implementation of activities to protect individuals and property during wildfires, complementing national government efforts.

Box 9 – Good practice from the Valencian Community (Spain): controlled grazing in forest areas as a measure to prevent forest fires.

In the Valencian Community, controlled grazing in forest areas is widely encouraged as a wildfire prevention action. Specifically, 'TECG - Grants for the Control of Natural Vegetation through Extensive Livestock Grazing in Strategic Areas Related to Forest Fire Prevention in the Valencian Community for the Year 2024 (22846 / SIA: 2896142)' allocates subsidies for the year 2024 for eligible beneficiaries.

The objective of this initiative is to achieve adequate control of vegetation through extensive livestock grazing of sheep, goats, horses, and/or cattle in strategic areas related to forest fire prevention. This helps reduce the risks of fire and fulfils an important ecological function in the Mediterranean forest.

As stated on the dedicated webpage, detailing all the requirements for application, beneficiaries include the owners of livestock farms rearing sheep, goats, horses, and/or cattle. Additionally, they can be individuals or legal entities, as well as communities of goods or any other type of economic unit or separate assets that, even without legal personality, can carry out the projects, activities, or behaviours, or are in the situation that justifies the allocation of the grant

6 - Wildfire preparedness

6.1 - Legislative framework and processes

- A number of wildfire preparedness measures are identified and described in the **AIB Plans**, which identify, among others, the size and locations of resources, tools and human resources and the procedures for the active fight against forest fires.
- Ahead of the summer forest fire season, **recommendations** drafted by the DPC are disseminated among all key authorities involved in wildfire risk management and a **plenary meeting** is held to increase the effectiveness of the whole system.
- During the summer forest fire season, the **National Functional Centre** (CFC) develops and disseminates to key stakeholders the **Daily National Forest Fire Forecast Bulletin** to support the activities of the Unified Air Operations Centre (COAU), activate alerts/operational phases on the territory, and strengthen wildfire patrolling, monitoring, spotting, warning, and extinguishing activities.

The main legislative instruments dealing with wildfire preparedness include the Framework Law 353/2000, Decree of 20 December 2001 on the 'Guidelines for Regional Plans for Forecasting, Preventing and Actively Fighting Forest Fires'; the Civil Protection Code; and Decree Law 120/2021; Directive of 30 April 2021 on the 'Guidelines for drafting civil protection plans at different territorial levels'.

Part of the wildfire preparedness measures (as intended in the Wildfire PRAF) are identified and described in the AIB Plans. According to Law 353/2000, these plans must identify, among others, the size and locations of resources, tools and human resources and the procedures for actively fighting forest fires; the size and location of the access routes and firebreaks and of adequate sources of water supply; training needs and their planning. As reported in the document Disaster Risk Management in Italy (2020), the national wildfire preparedness measures which supplement the provisions of the AIB Plans include actions to improve the readiness and effectiveness of the emergency fire response, such as the Daily National Forest Fire Forecast Bulletin.

Ahead of each forest fire season, the DCP draws up and disseminates recommendations for the more effective fight against wildfires⁴⁹. The recommendations are addressed to all the authorities involved in wildfire risk management. They are grouped into forecasting and prevention, planning according to Law 353/2000, and active fighting of forest and WUI fires and emergency management. In accordance with Law 152/2005, the national government establishes the calendar of the summer and winter wildfire seasons.

A plenary meeting involving stakeholders such as the various ministries, the CNVVF, Carabinieri, Regions, and volunteer organisations (see also Box 10) is held before each summer season to assess preparedness. Annually, the DPC, which coordinates the state aerial fleet through the COAU, establishes SOPs for the Regions and the Autonomous Provinces to request the intervention and support of the state aerial means.

⁴⁹ The activities for the 2023 forest fire season can be found on the website of the DPC at this link: <https://www.protezionecivile.gov.it/normativa/attivita-antincendio-boschivo-la-stagione-estiva-2023-individuazione-dei-tempi-di-svolgimento-e-raccomandazioni-un-piu-efficace-contrasto-agli-incendi-0/>

Another preparedness activity carried out before the forest fire season is increasing volunteer forces in the areas at highest risk through twinning initiatives between northern and southern regions (see below).

Box 10 - Plenary and operational meetings organised by the DPC ahead of the forest fire season

Ahead of the 2023 summer forest fire season, the representatives of the Ministries of the Interior, Defence, MASE, MASAF, MIC, the CNVVF, the Carabinieri, State aerial fleet Operator, Regions, National Association of Municipalities, and representatives of volunteering organisations were brought together to discuss all the aspects and issues of the forest fire management situation in Italy⁵⁰. Among the activities planned, the DPC also organised a series of operational meetings with the most wildfire-prone regions. The aim of these meetings was to get an overview of the organisations and local structures involved in the fight against forest fires. The following topics were covered: organisation and operations of the Permanent Unified Operations Rooms (SOU) at the regional level; regional aerial means and their deployment; number, and training of the Incident Commanders; forecasting activity in support of AIB organisation (regional bulletins, real-time forecasting, etc); agreements between volunteers - fire brigades⁵¹.

Patrolling and monitoring/surveillance

Art. 7 of Law 353/2000 on 'active fighting' regulates the activities of patrolling and monitoring/surveillance, which are under the responsibility of the Regions/Autonomous Provinces. Specifically, patrolling is carried out using light aircraft and adequately equipped ground teams which patrol the priority areas that have to be defended in periods of high risk. The monitoring/surveillance in areas of particular value or particularly high risk is performed continuously by teams in charge of territorial control, fixed monitoring systems and a monitoring network distributed throughout the territory.

Box 11 - Good practice from the Czech Republic: Wildfire detection

Wildfire detection in the Czech Republic is based on the collaboration of the local population and surveillance by forest plantation owners. Act 133/1985 requires that landowners with continuous stands of more than 50 hectares (ha) patrol their property to monitor the forest for possible wildfires. Approximately 13% of the forest area (350,000 ha) belongs to small landowners with properties of less than one hectare; for these properties, there is no obligation of fire surveillance.

Contingency planning

Civil protection planning at the different territorial levels is regulated by Art. 18 of the Civil Protection Code, which defines it as a non-structural prevention measure based on forecasting activities and on the identification of risk scenarios. Civil protection planning involves the entire civil protection system and must be carried out jointly by all administrations at the different territorial levels to prepare for and manage all the activities referred to in Art. 2 of the Code, respecting the principles of subsidiarity, differentiation and adequacy.

The Directive of the President of the Council of Ministers 30 April 2021, issued in implementation of Art. 18 of the Code, provides 'Guidelines for drafting civil protection plans at different territorial levels'. This Directive aims to ensure a coordinated framework throughout the national territory and integration between the civil protection systems of the different territories, while respecting the organisational autonomy of the Regions and Autonomous Provinces. The Directive establishes a common method for civil protection planning in terms of the content of plans at the various territorial levels, organisation, methodologies for approving, updating and evaluating the plans, and in relation to participation by the local population, and the public communication of information and risks.

⁵⁰ Presidenza del Consiglio dei Ministri Dipartimento della Protezione Civile e Ministro per la Protezione Civile e le Politiche del Mare. Campagna antincendio boschivo (AIB) estate 2023 – Convocazione riunione plenaria (2023).

⁵¹ Presidenza del Consiglio dei Ministri e Dipartimento della Protezione Civile. Campagna AIB estiva 2023 - Riunioni operative con le Regioni (2023).

Overall, the main objectives of civil protection planning are: the establishment of operational strategies and intervention models for the coordinated implementation of civil protection activities; the exchange of information with the structures responsible for warning and alerting the SNPC; the definition of communication flows between Components and Operational structures of the SNPC; the definition of the mechanisms and procedures for reviewing and updating the plans, for the organisation of exercises and for informing the population, the latter to be ensured even during an emergency event.

It is worth noting that, following the devastating forest fire season of summer 2007, an 'Operational manual for drafting a municipal or inter-municipal civil protection plan' was prepared and published by the DPC by Ordinance of the President of the Council of Ministers No 3606/2007. The manual provided practical guidelines for developing municipal civil protection plans for wildfires in WUI.

Concerning the CNVVF, a new model of response to the different types of emergency events has been defined by the Department of Fire, Public Rescue and Civil Defence of the Ministry of the Interior with Ministerial Circular EM-01/2020. The aim was to reorganise the Regional Convoys and national mobilisation by the CNVVF in case of emergency. The annex to the circular 'Manual for rescue management by the CNVVF in case of disasters' provides indications on the management of the various stages of alert and emergency, mobilisation levels and phases, Regional Convoys, exercises, coordination with SNPC and other relevant instructions to be followed during emergencies.

Box 12 - Good practice from Spain: the National Civil Protection Commission and civil protection plans

Regulated by Royal Decree 967/2002, the National Civil Protection Commission is an inter-ministerial collegiate body established under the Ministry of the Interior⁵². Its main purpose is to ensure effective coordination between national and regional administrations in the field of civil protection, aiming to guarantee effective action by public authorities to study and prevent situations of serious collective risk, catastrophe, or public calamity, and to protect and assist people and property when such situations occur. Its functions include the following:

- Providing input on technical standards issued at the national level in the field of civil protection;
- Developing the necessary criteria for establishing the National Catalogue of Resources that can be Mobilised in Cases of Emergency, whether public or private;
- Ensuring the homogenisation of civil protection plans within its scope.

Standardisation ensures that all plans comply with the minimum requirements in terms of objectives, structure, organisation, and operational and response procedures as established in the various basic technical guidelines issued at the national level. It is a prerequisite for their implementation within their respective geographical areas of competence, aiming to provide a standardised national model that facilitates coordination and joint action by the different services and administrations involved.

Early warning systems

Article 17 of the Civil Protection Code establishes a state and regional early warning system for the SNPC, managed by the DPC and the Regions and Autonomous Provinces. It consists of tools, methods, and procedures for developing and acquiring knowledge, information, and assessments in real time, in order to activate the SNPC at various terri-

⁵² The Commission, chaired by the Minister of the Interior, with its secretariat managed by the Director-General of Civil Protection (Government of Spain), is composed of the following members: a representative from each of the following ministerial departments (Economy, Science and Technology, Public Works, Education, Culture and Sport, Labour and Social Affairs, Agriculture, Fisheries and Food, Public Administrations, Health and Consumer Affairs, Treasury, and the Presidency); one member representing the General Secretariat of the Presidency of the Government of Spain; two members from the Ministry of Defence and two from the Ministry of the Environment; four members from the Ministry of the Interior; one representative of the Nuclear Safety Council; one representative from each of the Autonomous Communities and the two autonomous cities.

torial levels. The national early warning system for hydraulic and hydrogeological risks was first established in 2004. It is a multi-risk and impact-based early warning system which is used in some regions also for alerting in case of forest fire risk.

For hydraulic, hydrogeological and weather-related risks, the competent authorities use the network of Functional Centres (see Box 13); the structures in charge of the management of meteorological services at the national and regional level⁵³; the instrumental monitoring and surveillance networks; as well as any data and tools developed and provided by the technical structures of the Regions and the Competence Centres. For other types of risks, the competent authorities use the products of the Functional Centres (where applicable), the monitoring and surveillance networks, and material developed by the Competence Centres.

Prime Ministerial Directive 23/10/2020 describes the structure and organisation of the early warning system of the SNPC and the national public alert system (IT-Alert, currently not yet fully operational). It is a national multi-modal and multi-risk prevention measure that the DPC is implementing with the aim of reaching individual members of the population with 'real-time' alert messages in areas at risk. IT-Alert adopts the international Common Alerting Protocol (CAP-protocol) to ensure complete interoperability with other national and international systems for disseminating emergency public alerts. IT-Alert uses several independent communication channels, consisting of (i) messages sent in real-time to cell phones and smartphones using the cell broadcasting technology; (ii) a dedicated smartphone app; (iii) the public 'Machine to Machine' (M2M) channel, through which other apps and systems for emergency communication used by Components of the SNPC can receive IT-Alert messages for their further dissemination; and (iv) a dedicated website.

Among the activities of the CFC (see also the Box below), the centre produces the Daily National Forest Fire Forecast Bulletin, in support of the activities of the COAU. The bulletin is disseminated to the Regions and Autonomous Provinces so they can activate states of alerts/operational phases and strengthen wildfire patrolling, monitoring, spotting, warning, and extinguishing activities, as well as to the CNVVF, and the prefectures in order to ensure suitable flow of information and synergic interventions. The daily bulletin reports the probabilistic scenario of susceptibility to ignition and propagation of forest fires based on weather and climate conditions, as well as vegetation, physical condition and land use, and the morphology and organisation of the territory. It estimates the average susceptibility to fire outbreak at provincial scale over the next 24 hours and the trend for the next 48 hours, expressed as three levels of risk (low, medium, high). The Regions with a multi-risk Regional Functional Centre develop their own forecasts and issue alerts in greater detail than the national bulletin.

The two models used for forecasting forest fire risk and supporting emergency operations are RIS.I.CO (see Section 5.1), used for elaborating the Daily National Forest Fire Forecast Bulletin and monitoring the possible scenario evolution throughout the day, and Propagator (still under testing) specific for supporting emergency operations.

⁵³ The Armed Forces are among the institutions in charge of managing meteorological services at national level. They participate in meteorological forecasting through the issue of related periodic bulletins on avalanche risk and exchange of climate information and data.

Box 13 - Visit to the Central Functional Centre and the Decentralised Functional Centre of Lazio

The Functional Centres are responsible for forecasting and monitoring, with a significant role in terms of activation of the civil protection system at the different levels. The network of Functional Centres consists of the Central Functional Centre (CFC), managed by the DPC and located in its operational headquarters in Rome, and the Decentralised Functional Centres (CFDs) located one in each Region and Autonomous Province.

Each Functional Centre focuses on forecasting, monitoring and surveillance of weather-related phenomena in real time with the consequent assessment of the expected effects in a given territory. Together with the DPC and the Regions, the Functional Centres help to manage the national early warning system. Based on collected data – which are shared among the entire network – and modelling, the Functional Centres develop probabilistic scenarios, also through the use of predictive models of the impacts on the territory. Based on these assessments, they then issue bulletins – e.g., the Daily National Forest Fire Forecast Bulletin – and alerts to activate the SNPC and inform the general public on the ongoing and expected adverse events.

To conduct real-time forecasting and monitoring activities, the CFC uses the integrated system Dewetra, a web-based platform developed by the CIMA Research Foundation, which organises data and information systematically.

During the on-site mission in Rome, the Peer Review team visited the CFC at the DPC headquarters (Figure 6) and the CFD in Lazio (Figure 7).



Figures 6 and 7 - On the left, the CFC of the DPC; on the right the CFD in Lazio. Source: Presidenza del Consiglio dei Ministri - Dipartimento della Protezione Civile.

Box 14 - Examples from the Czech Republic: Integrated Warning Service System (SIVS)

In the Czech Republic, two meteorological fire risk indices have been developed by different institutions: the Czech Hydrometeorological Institute (CHMI) and the Faculty of Forestry and Wood Science. Both indices are based on the main meteorological variables that affect the onset and development of wildfires, interpreted with the application of detailed scientific knowledge. The integrated warning service system (SIVS)⁵⁴ is a joint warning service provided by the CHMI in cooperation with the Meteorological Service of the Army of the Czech Republic in the field of operational meteorology and hydrology. SIVS warnings are issued by CHMI after consultation with regional forecasting offices, the hydrological forecasting department, and the military meteorological service. At the same time, some warning information can also be issued or specified by regional forecasting offices and hydrological forecasting departments. The CHMI has developed an index with four levels of risk based on meteorological variables (temperature, humidity, wind, and precipitation), although an atmospheric stability factor (Haines) and a statistical ignition risk factor (Area Vulnerability Index) have also been included. Fire warnings are issued if the fire risk is moderately high or high. This fire risk is calculated based on the dryness of the landscape, and a forecast model of precipitation, air temperature, humidity, and wind speed.

The Faculty of Forestry offers various risk predictions via web from both a meteorological perspective (wind speed and atmospheric stability) and from the perspective of fire behaviour (fire spread risk). The fire risk is presented in five levels (negligible, moderate, medium, moderately high and high). Additionally, there is a section for advanced users where different predictions can be compared based on the meteorological model.

⁵⁴ More information on the SIVS are available at: <https://www.chmi.cz/files/portal/docs/meteo/om/sivs/sivs.html>

Training, exercises, and national/international exchanges

In the field of civil protection, civil protection operators (including public employees, representatives of public and private companies performing civil protection tasks, and volunteers) shall be trained in accordance with Art. 2 of the Civil Protection Code. The code also regulates civil protection exercises and other training activities involving communities and to test planning and system operability.

With specific reference to cultural heritage, Circular No 25 of 29 May 2019, issued by MiC, outlines criteria and methods for the implementation of training courses in collaboration with the DPC. Specifically, it sets minimum requirements for the training of civil protection volunteers and public administration officials on safeguarding cultural heritage.

In the field of forest fire risk, the Regions/Autonomous Provinces oversee the organisation of technical and practical courses on forest fire forecasting, prevention, and active firefighting, also with the support of the CNVVF. For instance, the Regions organise independently the training of incident commanders, or the Director of Suppression Operations (DOS), according to the intervention model contained in their AIB Plans and based on Prime Ministerial Decree (DPCM) of 10 January 2020 on the 'Definition, functions, training, and qualification of managing wildfire fighting operations'⁵⁵. Specifically, the document 'Course for Incident Commanders (training modules and certification) with national training standards' was drafted as a result of the debriefing session carried out after the 2017 summer forest fire season (see also Section 8.1, Recovery and lessons learned).

At the national level, the DPC organises training for the personnel involved in wildfire risk management at the regional level. To give an example, a series of training meetings were organised in February/March 2024 by the DPC with the personnel of the Permanent Unified Operations Room (SOUP) (see Section 7.1, Wildfire emergency response) in the regions worst affected by wildfires. The aim of these meetings was to establish a synergy between the operators of COAU, develop standardisation and mutual knowledge to improve the efficiency of the SNPC, and, in general, optimise forest fire fighting⁵⁶.

Volunteers, as mentioned above, play a key role within the Italian civil protection system, also by virtue of the fact that they are fully trained. A specific branch of volunteers is also fully trained in wildfire prevention and fighting, which in some regions allow them to take an active role also in response operations. Additionally, regional twinning is promoted by the SNPC to enable training activities and exchange of experience among volunteers from different territories.

As for the CNVVF, training activities are mainly carried out by the three training schools – the Capannelle Central Firefighting Schools, the Higher Institute of Firefighting, and the Montelibretti Operational Training School – supported by the local education centres and Provincial Commands. Other specific training activities are organised, for instance, by the CNVVF Fire Investigation Unit (NIA). The NIA is responsible for training and exercises in investigation techniques and legislation (in their area of expertise), including for officials responsible for unit activities within Regional Directorates or Provincial Commands⁵⁷.

55 The annexes to the DPCM on the 'Definition, functions, training and qualification of the management of suppression operations' and the course of the DOS are available at these links: <https://www.protezionecivile.gov.it/it/normativa/definizione-funzioni-formazione-e-qualificazione-della-direzione-delle-operazioni-di-spegnimento-degli-incendi-boschivi/> and https://www.protezionecivile.gov.it/static/004867f0ff406a37e2f82153bd2bb56f/Allegato_A_-_Contenuti_didattici_del_corso_per_Direttore_delle_Operazioni_di_spegnimento_-_DOS.pdf

56 Presidente del Consiglio di Ministri e Dipartimento della Protezione Civile. Campagna AIB 2024 - Formazione a distanza per operatori SOUP regionali (2024).

57 For more information see the website of 'Dipartimento dei Vigili del Fuoco, del Soccorso Pubblico e della Difesa Civile Corpo Nazionale dei Vigili del Fuoco', available at: <https://www.vigilfuoco.it/asp/asp/ldPage=4513>, last accessed 01.07.2024

With regards to the Carabinieri, the armed forces offer the international community the opportunity to attend the Carabinieri Training Centre - Forestry School in Sabaudia, which serves as an International Competence Centre. The Sabaudia Training Centre has a longstanding tradition of excellence in training professionals in environmental protection, biodiversity preservation, and ecosystem management. It specialises in land conservation through the application of advanced forest engineering techniques. Training can be offered to international organisations, government and non-government agencies, academia, and the private sector for train-the-trainer activities, suitable for decision-makers, as well as executive activities for technical staff working in the field.

National exercises are organised by the DPC in partnership with the Regions or Autonomous Provinces where they are carried out. The objectives can vary and essentially concern testing the activation and governance of the system, the deployment of equipment/vehicles and resources of the various structures and components of the system, and improving emergency planning and knowledge at the various territorial levels. In addition to national exercises, the DPC takes part in international exercises that are mainly part of the cooperation activities funded by the UCPM. The National Civil Protection Operational Committee (see Section 7.1) can be convened during international and national exercises for sharing activities and strategies of national civil protection planning.

Rescue capacities

The state aerial firefighting fleet, whose operations are coordinated by COAU, is a modifiable capacity with up to 18 Canadair CL415 and 6 Erickson S64 heavy helicopters operated by the CNVVF. Additional helicopters, including military aircraft and even provided by private companies, are used if needed. The state aerial firefighting fleet can also be deployed to assist other countries within the framework of the UCPM. In 2022, regional aerial means were engaged on 3,191 missions, and national capacities were requested 1,407 times.

Regional aerial response capacities are based on contracts between the Regions and private companies. Therefore, regional fleets may vary over the years due to available budget and market conditions/fluctuations.

Regional air fleets include some 70 helicopters operated by private companies⁵⁸. Prior to every AIB season the Regions and Autonomous Provinces are required to submit to the DPC a detailed list of the regional aerial means which will be used during the season. This list should include specific information, such as the duration of rental contracts, the deployment during operations, daily operational readiness, and the various tasks assigned to each aircraft⁵⁹.

The DPC periodically conducts a review of needs concerning: firefighting vehicles/aircraft, including aerial and remotely piloted assets, as well as aviation facilities (airfields, water landing areas, and helipads); training for the personnel involved in firefighting activities, including activities for the rescue of animals, air fleets and related infrastructures, including those used by the CNVVF, the Regions, and the organised civil protection volunteers. As for long-term retardant, this is provided by the CNVVF, but is rarely used in operations – the decision to use it or not is made by the DOS.

After the devastating 2017 forest fire season, Italy launched a 10-year funding scheme aimed at enhancing the wildfire response of the country, with the objective of increasing the ground and air resources of the CNVVF.

When the rescEU Transition fleet was created in 2019, Italy established its own rescEU aerial forest fire fighting module consisting of 2 Canadairs (water tank capacity of 6 tonnes each). Indeed, two Italian CL415 were deployed in major fires to provide an extra layer of protection of people, properties and environment following the activation

⁵⁸ San-Miguel-Ayanz, J., Durrant, T., Boca, R., Maianti, P., Libertá, G., Artés-Vivancos, T., Oom, D., Branco, A., de Rigo, D., Ferrari, D., Pfeiffer, H., Grecchi, R., Onida, M., Löffler, P. 2022. Forest Fires in Europe, Middle East and North Africa 2021, Publications Office of the European Union, Luxembourg, 2022.

⁵⁹ Presidenza del Consiglio dei Ministri Dipartimento della Protezione Civile. Campagna AIB estiva 2023 - Predisposizioni (2023).

request by the European Response Coordination Centre. By joining the rescEU Transition fleet, Italy has given added value to response operations in Europe. The Italian module performed missions under the Union Civil Protection Mechanism in Greece in 2019, in Austria in 2021, in Portugal, Czechia, France, and Germany in 2022, and again in Greece in July 2023. Furthermore, in 2023, Italy doubled its commitment to the rescEU fleet by renting two additional Fire Boss light aircraft that were selected from the market after winning an EU call that year and were registered in the dedicated CECIS folder in the EU resources tree.

6.2 - Conclusions

The DPC devotes much attention to good preparation for and effective management of summer forest fire seasons. Before the onset of the summer forest fire season, DPC promotes and organises preparatory meetings with Regions and Autonomous Provinces to assess and evaluate forest fire response capacities, allowing for the identification and resolution of potential critical issues in advance. The DPC also regularly provides training to Regions and Autonomous Provinces on various topics, including the Standard Operating Procedures (SOPs) for requesting the state forest fire air fleet, thereby enhancing preparedness and response capabilities.

During the summer forest fire season, Italy organises twinning initiatives between its Regions and Autonomous Provinces to enhance interoperability among firefighting teams. This approach helps to identify and address challenges, ensuring that different teams can work together effectively during emergencies. To further increase the preparedness of the entire system ahead of the forest fire season, providing aircraft procurement mechanisms for regions at an earlier stage and in a coordinated manner would help them reach the market under better negotiating conditions.

Italy has a highly organised and well-structured volunteering system, which demonstrates the strong sense of solidarity. A large number of trained volunteers, who possess specific skills and profiles, are part of volunteer organisations listed on the National Register of Voluntary Work Organisations. The volunteering activities are governed by well-defined SOPs that regulate activation and reimbursement, ensuring the efficient deployment and support of volunteers during emergencies. To overcome interoperability challenges and address the disparities highlighted during past twinning initiatives, common training courses and national certification are recommended for volunteers engaged in forest firefighting activities. Such standardisation would increase the cohesion and effectiveness of volunteer efforts in different regions and improve the ability of volunteers to intervene regardless of location, ensuring that procedures are carried out uniformly.

Although there is a common training programme for Directors of Suppression Operations (DOS) established by law, clearly describing the topics to be covered, activities to be completed, and how much time they should take, given the critical role of these figures in the response phase, it is essential to establish standard training and national certification, including common operating procedures. Such measures would ensure that DOS personnel across the country possess the necessary skills and preparation, thereby enhancing interoperability and ensuring consistent standards nationwide.

Italy also boasts a significant training capacity for all firefighters, which ensures a standardised response mechanism on a tactical level. This comprehensive training guarantees that all firefighters operate under common standards, enhancing the overall effectiveness of the firefighting efforts.

An efficient and well-structured early warning system for forest fire risk is in place, utilising innovative tools and models. During the forest fire season, daily briefings are conducted to discuss the ongoing situation and, based on

forest fire bulletins issued by the Central Functional Centre and real-time information from the ground, decisions are made regarding the positioning of the state aerial fleet, ensuring a rapid and effective response to emerging threats.

A national IT platform, which includes both a website and an app, is being developed to collect and centralise civil protection plans, early warning systems, alert messages, and awareness-raising documents. By leveraging geolocation technology, the platform can provide targeted information and messages to individuals based on their location, thereby improving the dissemination of critical information.

In summary, Italy's comprehensive approach to forest fire risk management could be further improved by enhancing team interoperability, leveraging the robust volunteer system, standardising volunteering and DOS training and creating national certification. These efforts collectively would strengthen a well-coordinated and efficient response to forest fire risks, safeguarding lives, property, and the environment.

7 - Wildfire emergency response

7.1 - Legislative framework and processes

- Forest fire response operations are under the responsibility of the **Regions and Autonomous Provinces**, as mandated by Framework Law 353/2000.
- In case of forest fires in the Wildland Urban Interface, operations are directed by CNVVF. In case of fires that endanger the population, the **civil protection system** is gradually activated, in accordance with the principle of subsidiarity.
- The State is responsible for coordinating the state aerial firefighting fleet through the **Unified Air Operations Centre (COAU)**, which is located in the DPC operational headquarters in Rome and active 24 hours a day all year round.

In Italy, wildfire response (in terms of ‘forest fires’) is under the responsibility of the regions, as mandated by Framework Law 353/2000 on Forest Fires (see section below on Wildfire coordination and operations). In case of WUI fire, firefighting operations are directed by CNVVF. Since WUI fire is considered a civil protection risk⁶⁰, the civil protection system is gradually activated, in accordance with the principle of subsidiarity and adequacy.

According to the Civil Protection Code, emergency management consists of the integrated and coordinated set of measures and interventions aimed at ensuring rescue and assistance to populations affected by hazardous events and to animals, as well as reducing their impact, including through the implementation of urgent and essential interventions and the use of simplified procedures, and the related activity of informing the population. To do so, the Code provides several legal-administrative instruments that guarantee extensive operational capacity, in particular: the Declaration of the state of mobilisation of the SNPC, which was first introduced by the Code itself; the Declaration of the state of national emergency; and the Ordinances of civil protection.

According to the principle of subsidiarity, the Code defines three types of civil protection emergency events which, regardless of the type of risk, are classified according to the extent, intensity and responsiveness of the civil protection system. Specifically, there are emergencies that can be tackled by complementary bodies, which may be local (type A), regional (type B) and national (type C).

If the regional level cannot cope with the event, the national level is called to intervene upon a request sent by the President of the Region or Autonomous Province affected⁶¹. Hence, the Prime Minister provides for the extraordinary mobilisation of the SNPC – this can also be for an event deemed imminent – through a decree adopted upon proposal of the DPC (Declaration of the State of Mobilisation). The mobilisation is coordinated by the Head of the DPC and supports the affected regional systems through the coordinated involvement of Regional Volunteer Convoys from other Regions and Autonomous Provinces, organised civil protection volunteers, national Operational structures, as well as Municipalities or Associations of municipalities. The end of a State of Mobilisation is declared by a decree, except in cases where a state of emergency is declared⁶².

⁶⁰ WUI fire constitutes a serious civil protection issue because human lives, properties and settlements might be in danger.

⁶¹ Request for the full deployment of the available territorial resources.

⁶² The state of mobilisation was created with the aim of introducing a further step before declaring the state of national emergency. For this reason, in some cases it might happen that the state of mobilisation is not followed by the state of emergency. For other types of events (e.g., earthquakes), the state of national emergency can be immediately declared without passing through the state of mobilisation.

The Declaration of the State of Mobilisation may be followed by a Declaration of the State of National Emergency in case of occurring or imminent natural and/or human-induced disasters that require the use of extraordinary means and powers. It is declared by the Council of the Ministers upon request of the Prime Minister and following an evaluation by the DPC and the Region of the affected. It can also be declared in case of international emergencies in which the Italian civil protection participates directly providing assistance abroad. The state of emergency can last up to a maximum of 12 months, and can be extended for another 12 months; its end is declared through an ordinance of the Head of DPC, who officially regulates the return to normal conditions. Overall, all interventions to address emergency situations are preceded by ordinances issued by the Head of the DPC, unless otherwise established by the state of emergency. The implementation of the ordinances is supervised by the Head of the DPC.

The mechanism of intervention for emergency management is defined by the Prime Ministerial Decree of 3 December 2008 'Organisation and functioning of SISTEMA at the National Situation Room of the DPC' and Directive of 3 December 2008 'Operational guidelines for emergency management'.

Response operations and coordination

As mentioned, in case of emergency civil protection events, the civil protection system is gradually activated. Local civil protection structures in the affected area are the first to be activated for immediate rescue operations and providing assistance to the population. In order to guarantee an efficient response from the very first phases of operations, each structure operates in strict vertical and horizontal connection and coordination. Then, the operation coordination centres at the various levels are activated gradually. Public administrations, private companies and civil society organisations also contribute to emergency management in accordance with their roles and responsibilities.

The operation coordination centres are the physical place in which the civil protection system coordinates emergency management and response operations. They operate at different territorial levels (municipal, provincial, regional and national), depending on the intensity, the extent of the emergency, and the coping capacities. They coordinate response and rescue activities through the organisation of an effective communication flow among the actors involved in the management of the emergency (the Components and Operational structures). They must also exchange information continuously with each territorial level, in particular the national DPC.

Each coordination centre is organised into support functions, defined as specific areas of activity that guarantee the coordinated management of the emergency. To give an example, the 'essential services' function is composed of the representatives of each service operator who work in coordination to tackle the situation and connect with the other functions within the same coordination centre as well as with other coordination centres (of higher or lower territorial levels) to implement activities in a coordinated manner (see also Box 15).

Starting from the bottom level, the coordination centres and operations rooms are named as follows: Municipal Operations Coordination Centre (COC), Relief Coordination Centre (CCS) (at the provincial level), the Regional Operations Room (SOR), and, at the national level, the Crisis Unit, the Civil Protection Operational Committee, and, if necessary, the Di.Coma.C. which operates onsite.



Figure 8 - Coordination at territorial and local levels. Source: Courtesy of the DPC, adapted by the authors.

Regardless of the type of event and the intensity of its impacts, the first response must be guaranteed at the local level, starting from the activation, by the Mayor, of the Municipal Operations Coordination Centre (COC), which is composed of the competent authorities/actors operating at this level. The Mayor chairs the COC and is responsible for the coordination of response operations at the local level, for assisting the affected population, providing first response interventions, and implementing the actions indicated in the civil protection plan. In case of very small or small municipalities, the regional/provincial administrations may support the mayors – this procedure shall be established during the planning phase – in managing the emergency situation. With the support of the Components and Operational structures operating on the territory – fire brigade, police, health structures, local volunteers, and water, electricity, gas, waste and telephony service providers, as well as private bodies –, the Mayor carries out the following activities: identifies the most suitable location for the COC, waiting areas and shelter areas for the population (where not already foreseen in the planning phase of the emergency); identifies the dangerous situations and secures the population through evacuation; provides healthcare for the injured; distributes meals and provides alternative accommodation for the homeless population; continuously informs the population on the situation and the behaviours to be adopted also through the activation of a municipal information office; controls the municipal roads, paying attention to the possibility of influx of rescuers and evacuation of the affected or at-risk population; continuously monitors the event.

At the provincial level, according to what is known as the 'organisational model for the response' adopted by each Region, there is a Relief Coordination Centre (CCS). Overall, the CCS ensures the unitary direction of the interventions that have to be carried out in coordination with the local interventions. The Prefect of the province, as local representative of the State, is usually in charge of coordinating the CCS. If further support is needed, the person in charge of the CCS can activate the Intermunicipal Operations Centres. The organisational model for the response at the provincial level should include a Unique and Integrated Operations Room which implements the decisions of the CCS and informs and stays in constant contact with the various operations centres activated in the territory, as well as the Regional Operations Room (SOR) and the DPC at the national level.

At the regional level, each Region/Autonomous Province ensures through the SOR: the immediate activation and deployment of the Regional Volunteer Convoys and voluntary organisations; the management of emergency health

interventions on the basis of its own organisation; the dispatch of its own technical staff to carry out structural inspections of buildings, damage assessments, residual and induced risk assessments, drinking water tests and environmental remediation interventions; the participation of its own officers in the work of the operation and coordination centres established in the territory; the management of radio networks for emergency communications and the activation and management of voluntary amateur radio organisations; and the distribution of essential goods to the population. Overall, the SOR shall constantly update the DPC with information on the various activities implemented, the type and quantity of national resources necessary for integrating the ones available at the regional level and coordinates with the operations centres activated at the provincial and municipal level. Also, upon request of the DPC, it has to prepare a report containing a summary of the activities carried out. If extraordinary means and powers are needed to respond to the emergency situation (both ongoing or foreseen), the Region can request the declaration of a national state of mobilisation.

At the national level, the DPC is responsible for emergency management. It operates, among others, through the following structures, which are located within its operational headquarters in Rome: the National Situation Room (SSI), where the national coordination centre called 'SISTEMA' operates (see Box 15); the Central Functional Centre - CFC (see Box 13 in Section 6.1); the Unified Air Operations Centre (COAU) – see next section; and the Operations Centre for Maritime Emergencies (COEM), the Civil protection Operational Committee.

Box 15 - National Situation Room (SSI) and the Support Functions

The SSI (Figure 9) is the room where the national coordination centre SISTEMA operates 24h/365. SISTEMA is composed of staff of the DPC, responsible of the overall coordination, and representatives of the Operational Structures, namely CNVVF, Armed Forces, State Police, Financial Guard, State Forest Corps, and Coastal Guard, who have the task of monitoring the national territory to identify any emergency situation, follow their evolution, as well as alert and activate the different Components and Operational structures of the SNPC that contribute to emergency management. Besides the constant connection with the other offices and services within the DPC headquarters, SSI also remains always in contact with the national operations rooms of the institutional forces responsible for rescue and/or public utilities; the civil protection operations rooms of the Regions and Autonomous Provinces (if activated); the Territorial Offices of the Government-Prefectures; the operations rooms or the central control structures of the bodies and administrations managing the critical infrastructure networks and essential services infrastructures; and, in case of emergency, the operational and coordination centres activated on the territory at the various levels.

In case of emergency, SISTEMA reorganises into 'support functions' in the 'functions' room'. Each support function is in charge of a specific activity needed to guarantee a prompt, efficient and coordinated management of the emergency (foreseen/ongoing).



Figures 9 and 10 - The National Situation Room (SSI) (left) and the Functions' room (right) at the DPC operational headquarter in Rome. Source: Presidenza del Consiglio dei Ministri - Dipartimento della Protezione Civile.

In case of national emergencies (ongoing and/or foreseen), the operational response of the DPC is articulated through: the convening of the Civil Protection Operational Committee (CPOC), which is the national body in charge of coordinating emergency operations (see Box 16 below); the coordination of the Command and Control Directorate on-site (Di.Coma.C.), if needed; the management of the Crisis Unit; and the deployment of Task forces to the affected areas for assessing, supporting and coordinating interventions.

The Command and Control Directorate (Di.Coma.C.) is the national operations coordination centre activated, if deemed necessary, on the site of the emergency to ensure overall coordination of the operations and to liaise with the territorial operations centres. To give an example, during the seismic event in Central Italy in 2016, Di.coma.C was activated in Rieti. The Region(s), in agreement with the DPC, provide for the identification and setting up of the venue.

Box 16 - The Civil Protection Operational Committee

The Civil Protection Operational Committee (CPOC) is the national body in charge of ensuring effective coordination and unitary direction of emergency operations in case of relevant emergencies (ongoing and/or foreseen). It is convened and chaired by the Head of the DPC, and composed of the highest representatives of all Operational structures, bodies and institutions of the SNPC directly involved in the emergency management (see Figure 11). Depending on the characteristics of the event, the needs, and the available and already deployed resources, the Committee defines the intervention strategy and ensures the unitary direction of emergency activities. It can remain operational from a few hours to some days – even 5 days in a row, as happened in the 2016 earthquake of Central Italy.

The CPOC can adapt to different emergency situations to effectively manage the emergency.



Figure 11 - The Peer Review team during a meeting held in the Civil Protection Operational Committee room. In case of an emergency, the authorities sitting at this table have a dedicated pre-defined seat equipped with a computer. Source: Presidenza del Consiglio dei Ministri - Dipartimento della Protezione Civile.

Scientific support during emergency situations at the national level is provided by the CFC and, if necessary, by the Major Risks Commission. The CFC takes care of defining the various risk scenarios and their evolution as well as drafting a scientific synthesis of the data on the event. It also evaluates the need to contact some Competent Centres for further opinions. As for the Major Risks Commission, this can be convened by the Head of the DPC also with extreme urgency to take part in the process of operational decision making, providing support with its technical and scientific knowledge (see also Section 2.3, Coordination and partnership).

Wildfire operations and coordination

The main legislative instrument governing forest firefighting is Law 353/2000 (Art. 7), which entrusts the Regions with responsibility for the active fight against forest fires⁶³, and the State with responsibility of suppression through the state aerial firefighting fleet (see Box 17).

⁶³ Active Forest Firefighting', according to the Law, includes actions of patrolling, monitoring, detection, alerting and extinguishing through manual equipment, backfire and ground and aerial means.

Box 17 - The Unified Air Operations Centre (COAU)

The State is responsible for coordinating the state aerial firefighting fleet through the Unified Air Operations Centre (COAU). COAU is located in the DPC operational headquarter in Rome and is active 24 hours a day throughout the year. It is the Command and Control Centre of all the state aerial means for forest fire fighting and coordinates the flight activities.

In case of wildfires, COAU is immediately informed by the Region affected (through its regional operations room (SOUP), see Box 18) and remains in constant contact. If the Region cannot cope with the fire and needs support from state aerial means, a request of support is electronically sent to the COAU by the Region. Once the request has been accepted, COAU immediately contacts the Aircraft Operator Operations Rooms, which directly sends the aircraft onsite.

The management of the AIB requests of the Regions is carried out through an IT application which is displayed on a big screen in the operations room of COAU (Figure 13). This application (called 'Coau web 2.0') shows the real-time situation, including the location of the fire, the type of vegetation, wind conditions, etc, and can be accessed by the Regions and other bodies involved in wildfire management, including the CNVVF, Carabinieri, and providers.

Decision support elements for the operational activities of COAU are provided by the COAU Support Working Group, which is composed of personnel from COAU and representatives of the SSI, CFC, Office II of the DPC, and CNVVF. COAU Support Working Group meets daily to discuss the Daily National Forest Fire Forecast Bulletin and analyse the country's situation, also with the aim to move aircraft to the regions at highest risk of forest fires.



Figure 12 and 13 - On the left, the Peer review team visiting the COAU. On the right, the web interface displaying the AIB aerial fleet and the regions' requests for State aerial support. Source: Presidenza del Consiglio dei Ministri - Dipartimento della Protezione Civile.

Based on their AIB Plans, the Regions plan firefighting activities and ensure communication and coordination between the regional and the national level (DPC/COAU) through their Permanent Unified Operations Rooms (SOUP) (see Box 18). The SOUPs, and consequently forest fire coordination, can differ among the different Regions, according to their AIB Plan and regional governance framework. For instance, the following conditions might be in place: wildfire coordination and the SOUP are entrusted entirely to the CNVVF – as in Liguria Region; the SOUP is integrated into the regional operations room of civil protection, as in Lazio (see Box below) and in Sardinia⁶⁴.

Besides the regional structures and aerial support, for forest fire response the Regions have also access to other resources, such as: personnel from the voluntary organisations; resources, equipment and personnel from the CNVVF (based on the agreements in place) as well as from the Armed Forces and State Police; and aerial means from other regions, based on programme agreements.

⁶⁴ In Sardinia, the SOUP is integrated within the so-called Integrated Regional Civil Protection Operations Room (SORI).

Box 18 - The Permanent Unified Operations Room and the case of Lazio Region.

The SOUP is the Region's operations room where regional forest fire response coordination activities take place and, in the case of Lazio Region, it is integrated in the regional operations room. The SOUP is operational 24/7 during the periods of high risk of forest fires. The SOUP ensures coordination and communication between the regional and local authorities and manages the intervention of regional aerial means as well as the requests for state air support when the regional forces (teams and helicopters) are not enough to cope with the fire. Through the SOUP, the region activates the Director of Suppression Operations (DOS), who coordinates both ground and aerial teams for the suppression of the wildfires.

During the on-site mission, the Peer Review team visited the SOUP in Lazio (see Figures 14 and 15). In this region, the SOUP has been set up in Lazio's Regional Civil Protection Operations Room (SOR), where interventions in response to civil protection emergencies are coordinated. While under normal circumstances the SOR operates as a civil protection room, from 15 June to 30 September each year (period of high forest fire risk) it also acts as a SOUP and includes regional operators, three units from the CNVVF, one unit from the Carabinieri Forestali, one unit from the Roma Capitale Civil Protection, and two volunteer units responsible for managing radio communications to and from the SOUP⁶⁵.

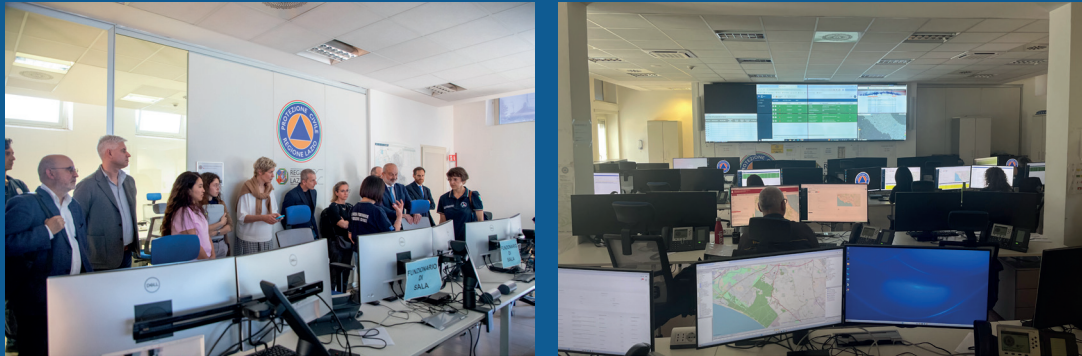


Figure 14 and 15 - Visit of the Peer Review team to the Lazio SOUP. Source: Presidenza del Consiglio dei Ministri - Dipartimento della Protezione Civile.

The actor responsible for coordinating response operations is the Director of Suppression Operations - DOS (or Incident Commander). DOSs are identified in the regional AIB Plans for each territorial area and have the task of coordinating ground and aerial teams (even those belonging to different administrations or bodies) and, specifically, containment, control of the fire front, suppression and mop up operations. Additionally, the DOS carries out the following activities: ensures coordination with the various actors involved in the operations; during firefighting operations, safeguards the fire origin area to prevent contamination and facilitates investigations by specialised units of the Carabinieri, the Forest Corps of Regions with special status, and other judicial police bodies; and prepares, if requested by the SOUP, an intervention report according to the model provided by the Region.

The DOS has to be employed as a public servant (among other requirements) and must attend a specific training course (as mentioned in Section 6.1). However, while a directive describing the training, role and responsibilities of the DOS exists (DPCM of 10 January 2020), national DOS certification is lacking.

In terms of forest fire operations, as soon as a fire is detected, the SOUP activates the DOS intervention, according to the procedures described in the 'intervention model' contained in the regional AIB Plan and based on the complexity of the scenarios⁶⁶. Ground teams coordinated by the Regions are the first to intervene under the DOS coordination. These teams, which are composed of regional staff or by operators of the CNVVF, Carabinieri, Armed Forces, State Police Forces and forest fire-fighting volunteers, use various means and techniques to put out the fire. If they are unable to control the fire, the DOS can request support from regional aerial means (mainly helicopters). If further support is required, the DOS informs the SOUP (or other designated rooms as outlined in the AIB Plan) of the need for intervention by the state aerial fleet; the SOUP then sends an electronic request to the COAU (see also Box 17).

⁶⁵ Regione Lazio. Sala Operativa Regionale. See link: <https://protezionecivile.regione.lazio.it/gestione-emergenze/sala-operativa> Last accessed 01.07.2024

⁶⁶ In case all available DOSs are engaged in a particular area, the SOUP mobilises the DOS from neighbouring territorial areas.

In case of a fire in a WUI area the CNVVF is directly responsible for response operations. In this case, the DOS collaborates and manages the intervention alongside the Head of Suppression Operations (ROS) of the CNVVF. The DOS and the ROS act within their respective areas of competence as detailed in the AIB Plans. Notably, the ROS is responsible for prioritising the protection of lives, physical integrity, property, and settlements, with the support of the DOS.

In response to wildfire emergencies, the AIB Service of the CNVVF plans and organises with each Region the forest firefighting activities using aerial and ground resources. It also coordinates the involvement of AIB volunteers (volunteer firefighters) in accordance with its agreement with the Region concerned. For this reason, as mentioned, the level of involvement of the CNVVF in emergency response may vary greatly depending on the type of agreement stipulated.

Alongside the operational activities of the CNVVF, in case of WUI fires, the civil protection system (and the related coordination centres at the different levels) may also be activated to assist the population.

Box 19 - Visit to the National Operations Centre of the CNVVF

During the mission, the Peer Review team visited the National Operations Centre (CON) of the CNVVF, located in the Ministry of the Interior in Rome.

The CON oversees the mobilisation and operational coordination of the emergency response system in support of the territorial structures of the CNVVF. Among other tasks, the CON also plans and organises the Regional Mobile Convoys and their mobilisation in emergencies and disasters, and monitors the CNVVF's response to emergencies and disasters as well as the operations and resources deployed by territorial structures. Additionally, it manages and coordinates the positions of its personnel in the SSI, COAU, and in the national Operational structures involving the CNVVF.

The CON Crisis Room is in constant communication with all the regional and local structures of the CNVVF (the AIB operations centres active at these levels) and can also communicate with civil protection structures.



Figure 16 - Members of the Peer Review team visiting the CON and representatives of the CNVVF. Source: Presidenza del Consiglio dei Ministri - Dipartimento della Protezione Civile.

Within the framework of the UCPM, Italy requested international assistance in the years with the most severe forest fire seasons, namely 2017, 2021, and 2023. However, in 2023, support could not be provided because the resources available were already operating in other countries, such as Greece. Italy is in turn one of the most active members of the EU providing support to other countries in fighting wildfires.

7.2 - Conclusions

The Italian National Fire and Rescue Service (CNVVF) is a cornerstone of the country's wildfire response strategy. It plays a pivotal role in ensuring standardised procedures and coordinated efforts both vertically and horizontally. This service holds full responsibility for managing efforts and coordinating various agents during the initial phase of a wildfire. When the threat to WUI areas becomes imminent, the CNVVF takes the lead in command and control for the effective mitigation of potential impacts.

One significant aspect of enhancing the efficacy of national and regional response interventions is the development and application of common key performance indicators (KPIs), which help to identify existing strengths and areas for improvement. This systematic approach ensures that both national and regional efforts are aligned with best practices and optimised in terms of efficiency and effectiveness.

The country's state aerial forest fire capacity is another component of Italy's forest fire management framework. This capacity is well-structured and its assets are effectively managed by CNVVF and other Operators, and coordinated by the Unified Air Operations Centre (COAU). The COAU's strategic pre-positioning of aerial resources across the country is based on current needs and forecasted fire susceptibility, allowing for an adaptable response to different conditions. Ensuring an overview of all the events on the ground would significantly increase the COAU's situational awareness, thereby enhancing the overall effectiveness of operations.

To address the complexities of simultaneous requests for the support of the state aerial fleet during the summer forest fire season, it is essential that all the actors involved apply the specific procedures, annually reviewed by the COAU. Establishing standardised national requirements for regional aerial fleets, although a challenging objective, would ensure that all Regions maintain a minimum aerial capacity and this would prevent the COAU from being overwhelmed by requests for state resources and ensure a more balanced and efficient use of available assets.

Developing a unified communication and information-sharing system would improve interoperability and coordination of response actions at both tactical and operational levels. This would facilitate the seamless exchange of information among various stakeholders, ensuring that all parties are informed and can act in a coordinated manner.

A uniform command and control system that ensures the presence of qualified personnel at incident command posts, regardless of region, would be helpful. In addition, the incident commander (DOS) should focus on decision making, with the full support of staff in the areas of planning, ground and flight operations, public relations, logistics, and finance. In this regard, integrating fire analysts into field response operations is another recommended strategy to improve the system's efficiency. These analysts would provide real-time information and influence decision-making directly from the ground, ensuring that tactical and strategic decisions are based on the most accurate and current data available.

Additionally, it is highly recommended that Regions and Autonomous Provinces establish a single operations coordination room. This room, integrating the SOUP (regional operations room), would facilitate both horizontal and vertical response coordination, maximising the use of available resources. Such integration would streamline operations and ensure that all levels of government and response teams work in unison.

Box 20 - Good practices from Spain: Guide to Communicating Emergencies in the Valencian Community

The Guide to Communicating Emergencies in the Valencian Community is an essential resource for directing communication efforts during situations of risk or disaster. Prepared in 2022 by the Communications Office of the Valencian Agency for Security and Emergency Response, part of the Valencian Community Government, this guide aims to provide effective guidelines for informing the public and the media in real time during emergencies.

Key highlights of the guide include:

- Definition and communication of emergencies: clarifies what constitutes an emergency and offers strategies for efficient communication.
- Recommendations for responsible communication: emphasises the importance of delivering accurate and truthful information.
- Immediacy, rigour, and veracity: stresses the critical nature of timely, rigorous, and truthful reporting.
- Role of official social media accounts: underlines the importance of using official social media channels to convey messages to both the affected population and the media.
- Terminology: provides both general and specific terms related to forest fires, floods, and other risks.

Box 21 - Good practice from Portugal: the geospatial intelligence solution 'FEB Monitorização'

Following the extreme wildfires that ravaged Portugal in 2017, the national civil protection authorities highlighted the lack of a repository of historical operational data necessary to study and learn lessons from past wildfire events. Hence, in 2018, the National Emergency and Civil Protection Command (CNEPC) established the Decision Support Unit for Rural Fire Analysis (NAD-AIR), operated by fire analysts from the Civil Protection Special Force (FEPC). The primary goal of NAD-AIR is to support the management and command structure at national, regional, or district levels, as well as the incident commander. To achieve this, NAD-AIR collects and analyses data on fire behaviour to improve understanding and predicted impacts of fire. This led to the development of Monitorização (FM), a geospatial intelligence solution based on ArcGIS technology, incorporating a WebGIS portal, dashboards, and mobile apps. It integrates real-time data with the geolocation of operational assets, remote sensing data, and other relevant information to support decision-making. This enables:

- Mapping and analysis of ongoing operations;
- Creation of products for the operational chain of command;
- Continuous flow of data/information between operatives;
- A common overview to support the cohesive response of fire operatives.

The FM system also includes additional information layers to support decision-making, such as meteorological data, demographics, topography, points of interest, tactical information, fire behaviour simulations, and other wildfire-related data. Additionally, it can also be integrated with other ArcGIS applications, such as Field Maps, Survey 123, and Experience. In 2021, FM received international recognition with the Special Achievement Award from the Environmental Systems Research Institute - ESRI.

Currently, the platform provides access to approximately 600 users from various public and private entities involved in operations, including academic institutions. The data repository contains more than 65,000 geographic elements and 39,000 event images.

8 - Recovery and lessons learned

8.1 - Legislative framework and processes

- The **Carabinieri Forestali** (in Ordinary Regions) and regional forestry corps (in Autonomous Regions) are responsible for forest fire investigations, identifying burned areas using GPS tracking technologies, and formulating and validating investigation hypotheses.
- After each summer forest fire season, a plenary meeting with key stakeholders is organised by the DPC to analyse any gaps and discuss **lessons learned**, with the final aim of continuously improving the forest fire risk management system.

One of the legislative instruments governing the recovery phase are the ordinances aimed at facilitating the return to normality following emergencies of national importance (post-emergency). These include the appointment of the Commissioner Delegate, who is in charge of coordinating the activities for overcoming the emergency, such as removing obstacles to returning to normality, restoring essential services and reducing the remaining risks in the affected areas. Additionally, the Commissioner – who can be either the Head for the Region’s AIB system, the President of the Region or the local Mayor, carries out an assessment of the interventions and the economic resources required to restore the damaged public and private structures and infrastructures and the damage to the local population, economic and production activities, as well as cultural and building heritage.

With regards to investigations into fires, in Ordinary Regions, the Carabinieri Forestali are responsible for launching investigations, identifying burned areas using GPS tracking technologies, and formulating and validating investigation hypotheses. These activities, which are carried out through the local Carabinieri Forestali Units and Local Parks Units, are supported by the Forest Fire Task Force, made up of soldiers with extensive experience in forest fire investigations. The NIAB – the Forest Fire Information Unit under the Forest Command – also supports the Carabinieri Forestali by mapping the wildfire perimeter using drones, inputting statistical data to the Carabinieri Forestali database (C-SIFA), and testing new technologies to support investigations.

Box 22 - Carabinieri Forestali wildfire data collection system

During the visit to the Forest Fire Information Unit (NIAB), the database C-SIFA ('Forest, Environmental, and Agri-food Information System') was presented. The data collected by the Local Carabinieri Forestali Units and Local Parks Units are collected in C-SIFA.



The information system is based on EU standards and uses satellites; it includes a special section that indicates whether the fire is a forest fire or not, with, among others, cadastral information, cause of fire, types of vegetation, level of risk, and orthophotos.

Currently, approximately 1,500 fires are recorded in this information system, accessible exclusively by the Carabinieri. After the data is cleaned and validated, it is published and shared with relevant authorities. In particular, around 70% of the data in the database is sent to MASE and other entities.

The peers and the rest of the visiting group also learned that the Autonomous Region of Sardinia uses a different system for data collection.

Figure 17 - Visit to the NIAB, where the interface of the C-SIFA platform was explained.

Another actor with a role in the post-disaster phase is the CNVVF. In general, in post-civil protection emergencies, the CNVVF conducts initial structural checks and assessments of buildings following seismic events and ground failures and secures unsafe areas. In the field of wildfires, the CNVVF Fire Investigation Unit has the functions of study, research, and analysis for evaluating the causes of fires. Specifically, the unit is responsible for conducting urgent investigations and technical surveys, coordinating technical investigations to be carried out in laboratories (tests and verifications) on seized evidence, and cooperating with national and international forensic scientists and technical and scientific investigators. This unit also supports the competent judicial police bodies in their investigations into fire incidents⁶⁷.

Two other entities support the recovery phase: the National Health Service, which plays a significant role in restoring normal living conditions and supporting economic and production activities (this may involve addressing public hygiene issues and animal health/hygiene concerns, especially in rural areas where there are farms and livestock); and MASE, which has launched a project⁶⁸ in support of local government and managers of protected areas. This programme provided funds to the protected areas affected by fire that are in need of interventions to improve resilience, and for the recovery of ecosystem services and the conservation of forest biodiversity (including scrub, bushland and grasslands) with a view to soil protection, reduction of hydrogeological risks, CO₂ absorption and safeguarding biodiversity and a well-functioning ecosystem.

Box 23 - Good practice from Spain: Data collection

To address the delay between the outbreak of forest fires and the consolidation of statistical data, Spain implemented the immediate collection of basic data for each forest fire at the national level. This led to the creation of a 'provisional' database – updated daily – which is accessible to all the agencies involved. This system enables real-time analysis throughout the fire season and the preparation of monthly reports.

Annually, comprehensive statistics are compiled with extended data, legally approved and then incorporated into the national forest fire statistics⁶⁹.

Lessons learned

Before and after the forest fire season, different plenary meetings are organised to take stock of Italy's wildfire risk preparedness (before) and to discuss and analyse any gaps identified during the summer⁷⁰. Following the forest fire season, the plenary meeting organised by the DPC reunites the Regions, Operational structures, and the various administrations involved in forest firefighting; these include proposals for improving the AIB system⁷¹. One example of a post-forest fire season plenary meeting is the 'debriefing' organised in 2017 after the devastating wildfire season. The discussion of the strengths and weaknesses of the entire AIB system resulted in the drafting of a document detailing various improvement proposals for each area of action, including the already-mentioned 'Course for Incident Commanders (training modules and certification) with national training standards' (see Wildfire preparedness). Other

67 See the website of Dipartimento dei Vigili del Fuoco, del Soccorso Pubblico e della Difesa Civile Corpo Nazionale dei Vigili del Fuoco: <https://www.vigilfuoco.it/asp/asp/Page.aspx?IdPage=4513> Last accessed on 04.07.2024

68 The project is called 'National programme to increase the resilience of natural and semi-natural forest systems through the recovery and structural and functional restoration of ecosystems and the functionality of their services through actions consistent with the protection and conservation of biodiversity (flora, fauna, vegetation and natural and rural landscape) in the protected areas covered by fire'. More information can be found at this link <https://www.mase.gov.it/bandi/programma-nazionale-di-incremento-della-resilienza-dei-sistemi-forestali-naturali-e-semi> Last accessed on 04.07.2024

69 For more information visit: <https://cjusticia.gva.es/es/web/prevencion-de-incendios/boletines-espurna>

70 See 'Raccomandazioni AIB 2022' (p.4). Available at: <https://www.protezionecivile.gov.it/static/03201216fca21904ce971b7438df1d1/raccomandazioniib2022.pdf>

71 Presidenza del Consiglio dei Ministri e Dipartimento della Protezione Civile. Campagna antincendio boschivo 2023 – Attività di debriefing e convocazione riunione plenaria per il giorno 7 febbraio 2024. (n.d.).

debriefing sessions could be held among the operators of the state aerial fleet to discuss and analyse the outcomes of operations during the season⁷².

8.2 - Conclusions

The Carabinieri Forestali (CUFAA) are pivotal in investigative processes, being responsible for collecting, verifying, and validating data through the C-SIFA portal and for transmitting statistical data to the European Forest Fire Information System (EFFIS). They possess excellent technical and administrative capacities for post-fire investigations and an efficient procedural framework and up-to-date consolidated system following international standards. Indeed, almost all forest fires investigations are successful with only a few undetermined causes. A deeper understanding the underlying structural/social causes of fires – which can stem from conflict over land use, and the establishment of pastures and hunting areas – could help in promoting alternative approaches, raising awareness and fostering community engagement, and establishing constructive dialogue at the local level by involving all stakeholders (including volunteers and academia).

This sound procedure ensures that decision-making processes are evidence-based and that restrictions are imposed on the burned areas mapped in the Fire Cadastre. Centralising all forest fire data and information – except for information related to criminal investigations – in a unified repository, such as the SIM platform currently under implementation, would significantly enhance planning processes. This centralised approach would facilitate informed decision-making across different territorial levels, thereby optimising measures throughout the entire risk management cycle.

The debriefings, organised by the DPC after each forest fire season, serve as critical forums for reviewing strengths and identifying areas for improvement. These meetings involve stakeholders from Regions, Autonomous Provinces, and competent authorities, culminating in actionable recommendations disseminated for implementation in the subsequent season. In parallel to these debriefings, a continuous lessons learnt mechanism should be devised, open to all wildfire related agents for reporting observations to be applied to solutions that are then tested and, if approved, incorporated into current standard operating procedures.

To complement such initiatives, a comprehensive performance assessment of the overall forest fire risk management system using appropriate key performance indicators should be conducted in order to systematically identify strengths and weaknesses, enabling timely adjustments and continuous improvements in the effectiveness and efficiency of wildfire response and mitigation strategies.

It is essential to address the underlying reasons why some municipalities have failed to create a Fire Cadastre and ensure its proper enforcement. This would ensure that land use restrictions are effectively applied in burnt areas, contributing to sustainable forest management and fire prevention efforts.

In summary, Italy's approach to forest fire management is characterised by rigorous investigation procedures, effective data management through specialised agencies, structured debriefing processes for continuous improvement, and initiatives to centralise information for improved decision-making. By addressing implementation gaps, enforcing regulations, and systematically assessing performance, Italy could bolster its resilience against forest fires and optimise its response capabilities.

⁷² Presidenza del Consiglio dei Ministri Dipartimento della Protezione Civile. Debriefing campagna AIB estate 2023 - Convocazione riunione operatori flotta AIB di Stato (n.d.).

9 - Regional focus: Sardinia and Calabria

As already discussed, in Italy, the roles and responsibilities for wildfire risk management are divided between regional and national levels. The Regions are entrusted with the responsibility of forecasting, preventing and actively fighting forest fires, in accordance with the AIB Plans. This approach allows each Region to develop and implement its own forest fire risk management system on the basis of its unique geography, climate, and socio-economic conditions. The result is 21 (19 Regions and 2 from the Autonomous Provinces) different wildfire risk management systems⁷³.

For this peer review, Sardinia and Calabria were selected by the Italian National Contact Point (NCP) as case studies to showcase the diversity of regional forest fire risk management systems. The significant difference between the two also lies in their administrative status: Sardinia is an Autonomous Region, and thus has greater legislative and administrative powers, while Calabria is an Ordinary Region. This distinction impacts their respective wildfire risk management approaches and systems. During the on-site mission in Rome, stakeholders from both regions, attending either remotely or in person, presented the main characteristics of their regional AIB systems.

Wildfire risk in Sardinia and Calabria

Sardinia is one of the Italian Regions most affected by forest fires due to its temperate climate characterised by hot, dry summers, and its predominantly wooded vegetation. According to the forest fire risk index, all the provinces of the Region of Sardinia are to be considered as 'high forest fire risk areas'. In 2022, there were nine major fires, defined as fires covering at least 200 hectares (see table below)⁷⁴.

Date	Province	Burnt area (ha)	Land cover
21 June	Codrongianus (Sassari)	203.47	Forest
25 June	Uras (Oristano)	524.29	Forest
25 June	Usellus (Oristano)	549.11	Forest
26 June	Nuraminis (Cagliari)	229.02	Crops
07 July	Mandas (Cagliari)	288.72	Forest, crops
17 July	Macomer (Nuoro)	284.18	Forest, pastures
22 July	Ozieri (Sassari)	229.79	Crops
24 July	Monastir (Cagliari)	322.48	Forest, crops
17 September	Berchidda (Teramo)	340.25	Crops, pastures

Table 2 - Major fires occurred in Sardinia in 2022. Source: "Regional Plan for forecasting, prevention, and active fight against forest fires - year 2023" (AIB Plan) of Sardinia Region.

Considering the average values for the last few years, Calabria ranks among the Italian Regions with the highest number of forest fires and surface area covered by fire. The number of forest fires that have occurred in the last twenty years make up about 14.5% of all forest fires occurring in Italy, while in terms of areas covered by fire, they make up about 21%. According to the forest fire risk index, 49.54% of the Region is low risk, 26.17% medium risk, and 24.28% high risk. In 2021, the average area covered by fire increased by 80% compared to 2017, while the number of fires decreased by 50%, meaning that there were fewer but larger fires. In 2022, firefighting operations received reports of a total of 7,039 fires, of which 685 were forest fires (10% of the total fires)⁷⁵.

⁷³ Despite each Region basing its AIB Plan on the national guidelines of 2001, Regions adapt their plan according to their territorial characteristics, legislative framework, and specific regional systems.

⁷⁴ 'Piano regionale di previsione, prevenzione e lotta attiva contro gli incendi boschivi 2023-2025', Regione Autonoma della Sardegna.

⁷⁵ 'Piano regionale per la prevenzione e lotta attiva agli incendi boschivi 2023', Regione Calabria.

Province	Fires	Forest fires	Burnt area (ha)
Cosenza	1816	319	2244,10
Catanzaro	1263	96	669,77
Crotone	1182	143	1875,77
Reggio Calabria	1686	67	1355,03
Vibo Valentia	1092	60	345,81
Total	7039	685	6490,47

Table 3 - Wildfires occurred in Calabria in 2022 divided by province. Source: "Regional Plan for the prevention and active fight against forest fires - year 2023" (AIB Plan) of Calabria Region.

Overview of the forest fire risk management systems in Sardinia and Calabria

Due to the difference in administrative status, Sardinia and Calabria have two very different forest fire risk management systems. As discussed in Section 2.1, in 2016 a major institutional reorganisation (Legislative Decree 177/2016) radically changed the systems of 'ordinary' Italian regions like Calabria: the State Forestry Corps, until then responsible for forest fire prevention, investigation and with a key role in suppression, were dissolved and their responsibilities were redistributed to the Carabinieri and the CNVVF. The former have become responsible for forest fire investigation and the prevention and suppression of violations in the field of forest fires. The CNVVF achieved a main role in firefighting, with the responsibility for intervention in case of fire in WUI areas, and are also involved in prevention. Autonomous Regions like Sardinia were not affected by this decree and maintained the same system of forest fire risk management. In other words, the main difference between Calabria and Sardinia is that the regional Forestry Corps still exists in Sardinia and has a prominent role in the forest fire risk management of the Region.

The AIB system of **Sardinia** includes, among others, the following main actors: regional civil protection, through the General Directorate of Civil Protection (DGPC), the Forestry and Environmental Surveillance Corps (CFVA), Regional Forestry Agency for Land and Environmental Development of Sardinia (hereinafter FORESTAS) and the Barracellari Companies. These have the following roles:

- The DGPC coordinates the civil protection activities of the regional structures, provinces, municipalities and volunteer associations. In the field of forest fires, in accordance with Law 353/2000, it is responsible for planning, forecasting and prevention, as well as the acquisition of goods and services for the firefighting activity.
- The CFVA is a technical corps established in 1985 with policing functions dedicated to the protection of the natural environment. It has operational functions of prevention and suppression of forest and rural fires, carries out surveillance activities, coordinates the forest fire campaign, and is responsible for the repression of unlawful behaviour. It is also responsible for investigations and manages the census of wildfire-affected areas, with the support of the CNVVF.
- FORESTAS was created with the aim of modernising and enhancing the efficiency of forestry policies in Sardinia. It is responsible for the innovation and valorization of the natural heritage and its derived products, contributes to the forest fire risk campaign, and supports prevention activities. FORESTAS, along with Barracellari Companies and voluntary organisations, provide support in response operations, under the coordination of the CFVA.
- Barracellari Companies are a rural police force exclusively of the Autonomous Region of Sardinia. They cooperate in forest firefighting operations supporting the CFVA. Specifically, Barracellari signed a cooperation protocol with DGPC, the CFVA, and the General Directorate of Local Entities and Finance, which defines its role in forest fire fighting.

- Personnel from the CNVVF are present in the regional SOUP/COP, responsible for communication and coordination with the various operations rooms and commands. In cases where the fire affects or is likely to affect urban areas and/or infrastructure (WUI fires), the CNVVF directs the operations related to emergency technical rescue, and the DOS complies with the provisions of the ROS. To improve intervention procedures concerning the extinguishing of fires in the WUI areas, the Region of Sardinia signed a collaboration agreement with the regional directorate of the CNVVF. Finally, to optimise the investigations into the causes of fire, the material authors, and the means used to ignite the fire, the CNVVF collaborates with the CFVA at the scene of the first outbreak of the fire.

Despite some peculiarities, the organisation of the AIB system of **Calabria** corresponds largely to the AIB system as described in the sections of this report (i.e., roles of Carabinieri, CNVVF, etc). It is composed of the following actors:

- The Calabria Regional Authority is responsible for all the functions assigned by Law 353/2000. Specifically, within the Region of Calabria, the Department for Mountain Policies, Forests and Forestry, Soil Defence (UOA) has the function of managing and maintaining the regional forests, including the prevention of hydrological, environmental, and forest fire risks, as well as building and maintaining forest infrastructures.
- The Calabria Verde Company (hereinafter CVC), is an operational entity responsible for fire prevention and AIB firefighting activities. It is a legal entity, regulated by public law, with organisational, managerial, technical, and financial autonomy. The CVC is responsible for all the interventions in the field of forestry and soil defence. In exercising these functions, the CVC is supported by the Regional Civil Protection Department and the Reclamation Consortia.
- The Regional Civil Protection Department is involved in AIB activities through the SOUP for WUI fires.
- The Reclamation Consortia actively participates in AIB firefighting and fire prevention, providing trained firefighters.
- The Carabinieri Forestali are responsible for preventing and repressing violations related to forest fires, in accordance with Legislative Decree 177/2016.
- Through a specific agreement, the CNVVF collaborates with the Region in firefighting efforts, coordinating extinguishing operations in WUI areas, and participating in national and regional coordination structures.
- Volunteer associations are engaged in AIB activities and may also be engaged in suppression operations in support of the regional AIB service. Agreements define the relationship between volunteers and Calabria Region, CVC and the National Parks of Calabria.

Good practices from Sardinia and Calabria

The boxes below describe key good practices that emerged from the presentations by Sardinia and Calabria during the onsite mission.

Box 24 - Good practices of fuel management in Sardinia: prescribed burning and silvopastoral activities

Sardinia is among the few Italian regions in which prescribed burning is a widespread technique for fuel management. Sardinia AIB Plan includes prescribed fire techniques among the plant fuel management intervention, consisting of biomass reduction and disruption of the horizontal and vertical continuity of biomass. Prescribed burning is used in areas identified by specifically trained personnel and according to the operational procedures defined in the guidelines of the Forest fires Technical Committee. In accordance with R.L. 8/2016, the actors permitted to use this technique are the CFVA and FORESTAS, in coordination with the CFVA (Art. 36-37).

The Regional Development Programme outlines the importance of preventing forest fires through the rediscovery of traditional practices. In Sardinia, silvopastoral activities have been a core activity of local culture for thousands of years (Mattalia et al., 2020). Therefore, in recent years, the CFVA has adopted these traditional agricultural practices. Specifically, animal grazing is actively used not only to reduce biomass and fuel to prevent fire ignition but also to monitor fire behaviour, allowing for prompt intervention. The region has been involved in EU-funded projects such as Med-Foreste and Med-Star that share its experience using grazing to prevent wildfires.



Figure 18 - Pastoral activities in Sardinia. Source: Photo by Cristian Mascia, retrieved from Sardegna Foreste.

Box 25 - Innovative technologies in Calabria: the control room and the use of drones

Due to the continuing trend of numerous wildfires over several years, culminating in the major emergency of 2021, Calabria started experimenting with drones to monitor the territory for forest fire risk prevention and deterrence through what was known as the 'Zero Tolerance' project. The trial involved five drone teams deployed to various areas of the region chosen based on risk scenarios and the frequency of fires. This led to the arrest of 22 arsonists.

In 2023, the system was consolidated and became an integral part of the AIB Plan. To strengthen prevention and deterrence efforts, the number of drone teams was increased to 30, and a central coordination Control Room was established at the Regional Citadel of Catanzaro.

The 'Control Room' functions as a 'Control Tower' for the take-off and landing of drones but, more importantly, receives live streamed footage from drones deployed across the territory. These images are monitored by operators and, in the case of suspected arsonists, by the Forestry Police, who can then take immediate action.



Figures 19 and 20 - (left) Control Room of Calabria and (right) drones operating in the field. Source: Civil Protection of Calabria.

Around 250 arsonists were reported in 2023, and administrative fines were issued totalling approximately EUR 200,000. The use of drones has also proven to be very useful for the early detection of fires, enabling faster response times and providing support to DOSs.

Finally, during fire monitoring, drones have also been highly effective in identification of illegal fly tipping sites, which can be both ignition sources and fuel for fires, particularly in urban-rural interface areas.

Box 26: Wildfire prevention measures in Calabria: risk awareness and accessibility for people with disabilities

The Calabria Region is one of the few Italian regions to formally mandate the inclusion of specific procedures to protect people with disabilities and plans for eliminating architectural barriers in municipal civil protection plans. The Giunta Regionale Resolution No. 394 of August 17, 2021, amending the earlier Resolution No. 611/2019 which provides guidelines for drafting the municipal civil protection plan, requires Calabrian municipalities to analyse and map routes, specifically highlighting architectural barriers. This integration aims to ensure comprehensive planning and accessibility in emergency management strategies.



Figures 21 and 22 - (left) A civil protection volunteer from Calabria region (source: Civil protection of Calabria Region); (right) Domenico Costarella, head of the Civil Protection of Calabria Region, during a meeting with the Peer Review team in Rome (source: Presidenza del Consiglio dei Ministri - Dipartimento della Protezione Civile).

In 2024, a Memorandum of Understanding was signed between the Civil Protection directorate of the Calabria Region, the Department of Biology, Ecology, and Earth Sciences of the Università della Calabria, the Municipality of Frascineto, the Order of Geologists of Calabria, the Federation of National Associations of People with Disabilities, the Italian Federation for Overcoming Handicap, and the regional voluntary association "Rescue without Barriers". This agreement aims to implement the regional project Rescue and Disability. In this framework, the region also promotes training activities for people with disabilities and vulnerabilities to teach them the appropriate behaviours to adopt during disasters.

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Annex 1: Italy Country Profile

Overview

Italy, officially the Italian Republic, is a Member State of the European Union, located in Southern Europe. It is a parliamentary republic and has a population of about 58 million⁷⁶, making it the third-largest state in the European Union. The capital and largest city is Rome.

Delimited by the Alpine arc, Italy shares its northern borders with France, Switzerland, Austria, and Slovenia, from west to east. The Italian peninsula extends into the Mediterranean Sea, surrounded by the Ligurian, Tyrrhenian, Ionian, and Adriatic Seas, and several islands (the largest being Sicily and Sardinia), covering 302,073 square kilometres⁷⁷. The states of Vatican City and San Marino are enclaves of the Republic, while Campione d'Italia is an exclave of the Italian Republic and an enclave of the Swiss Confederation.



Figure A - Map of Italy. Source: European Commission

Italy, the eighth largest economy in the world and third in the European Union by nominal GDP, is a country with a high standard of living: the human development index is very high (0.906)⁷⁸, and life expectancy is 83.157 years⁷⁹. It is a founding member of the EU, NATO, the Council of Europe, and the OECD; it has been a member of the UN since 1955 and is part of the Schengen Convention. Italy is also a member of the G7 and G20, participates in NATO's nuclear sharing project, ranks ninth in the world in military spending, and is both a regional and a major global power.

76 'Popolazione e famiglie', ISTAT, <https://www.istat.it/it/popolazione-e-famiglie>. Accessed 15 April 2024.

77 'Principali dimensioni geostatistiche e grado di urbanizzazione del paese', ISTAT, <https://www.istat.it/it/archivio/137001>. Accessed 15 April 2024.

78 'Specific Country Data', Human Development Reports, <https://hdr.undp.org/data-center/specific-country-data#/countries/ITA>. Accessed 15 April 2024.

79 'Tavole di mortalità: speranza di vita alla nascita con Italia copie', ISTAT, <http://dati.istat.it/index.aspx?queryid=7283>. Accessed 15 April 2024.

It is the fifth most visited country in the world and claims the largest number of UNESCO World Heritage sites (59)⁸⁰.

Full name	Italian Republic
Capital city	Rome
Official languages	Italian
Area	302,073 km ²
Population	58,997,201 (January 1st, 2023)
Currency	euro (€)
Time zone	UTC+1

Politics. Italy is a unitary parliamentary republic with a head of government, the Prime Minister, appointed by the President, and a Head of State, the President. The Italian government is based on a mixed proportional and majoritarian voting system. The parliament is perfectly bicameral: it consists of two chambers, the Chamber of Deputies and the Senate of the Republic, which have the same powers. The country is subdivided into twenty regions, five of which have a special autonomous status, enabling them to pass legislation on some local matters.

Economy. The most important sectors of the Italian economy in 2020 were wholesale and retail trade, transport, accommodation, and food services (20.1%), industry (19.5%) and public administration, defence, education, human health, and social work activities (17.5%). Intra-EU trade accounts for 51% of Italy's exports (Germany 13%, France 10%), while outside the EU 10% goes to the United States and 6% to Switzerland. In terms of imports, 58% come from EU Member States (Germany 16%, France 8%, and the Netherlands 6%), while from outside the EU 9% come from China and 4% from the United States⁸¹. Italy is part of the eurozone monetary union and of the European single market. Various national trade policies are determined by agreements between European Union (EU) members and EU legislation. Italy introduced the common European currency, the euro, in 2002 and its monetary policy is set by the European Central Bank.

Geography. Plain areas essentially limited to the large northern triangle of the Po Valley, cover only one-fifth of the country's total area; the rest is roughly evenly divided between hilly and mountainous land, which provide variations to the generally temperate climate. There are two main mountain systems: the Alps, parts of which lie within the neighbouring countries of France, Switzerland, Austria, and Slovenia; and the Apennines, which form the backbone of the entire peninsula and the island of Sicily. The highest peaks can be found in the Western Alps, where numerous peaks exceed 4,000 metres, including the Matterhorn (4,478 m), Monte Rosa (4,634 m), and Mont Blanc (4,807 m), the highest mountain in Europe. The Apennine chain runs the length of the peninsula, from Liguria to Sicily, and Gran Sasso (2,912 m) is its highest peak. Many elements of the Italian territory are of volcanic origin, such as most small islands and archipelagos in the south. There are also several active volcanoes, including Etna in Sicily (the largest active volcano in Europe), Vulcano, Stromboli, and Vesuvius.

Climate. Geographically, Italy lies in the temperate zone. The climate is strongly influenced by the surrounding seas, which provide a beneficial reserve of heat and humidity. They determine, within the temperate zone, a particular climate called the Mediterranean climate. Because of the considerable length of the peninsula, there is a variation between the climate of the north, attached to the European continent, and that of the south, surrounded by the Mediterranean Sea. According to Köppen's classification, Italy can be subdivided into three types of climates (temperate, cold temperate, and cold), which in turn are subdivided into different microclimates: from the subtropical temperate

80 'Italy – UNESCO World Heritage Convention', UNESCO, <https://whc.unesco.org/en/statesparties/it>. Accessed 15 April 2024.

81 'Italy – EU member country profile', European Union, https://european-union.europa.eu/principles-countries-history/country-profiles/italy_en. Accessed 15 April 2024.

climate (present in the coastal areas of Sicily, Sardinia, and Calabria) to the glacial climate (typical of the highest peaks of the Alps covered with perennial snow, at altitudes generally higher than 3,500 metres above sea level).

Biodiversity. Italy is one of the richest European countries in both plant and animal biodiversity, with a population very rich in endemic forms. The Italian fauna includes more than 57,000 recorded fauna species, of which 4,777 are endemic, accounting for more than a third of all European fauna. The Italian flora was traditionally estimated at around 5,500 species of vascular plants, although more recent estimates stand at around 7,672 census species, of which 1,371 are endemic. The areas richest in endemism are, in addition to the islands (especially Sardinia), the high mountain massifs isolated between lower areas, which can be considered 'biogeographic islands'⁸².

Disaster risk profile

Among the countries most subject to natural disasters, Italy is unfortunately at the top of the list for the numerous and frequent phenomena that continue to affect its territory. Volcanic eruptions, earthquakes, landslides, floods, wildfires: Italy has historically been hit by a series of disasters that have shaped its territory, but have also caused significant socio-economic damage, with many victims and huge costs for the country.

Landslides and floods. Although only 21% of its territory consists of plains, compared to 40% hills and 39% mountains, Italy holds one of the worst landslide and flood risk records in Europe. Overall, the landslide hazard zones, including the warning zones, cover 59,981 km², equal to 19.9% of the entire national territory. The regions with the largest number of people exposed to landslides and floods are Emilia-Romagna, Tuscany, Campania, Lombardy, Veneto, and Liguria. The most catastrophic events include major historical floods: Polesine (1951), Salerno (1954), Florence (1966), Genoa (1970), Piedmont (1994), as well as landslides followed by flooding, such as the tragedies of Vajont (1963) and Val di Stava (1985), both dam-related accidents. In recent years, Italy has been hit by two dramatic events: the flooding in the Marche region on 15 September 2022, with 13 victims⁸³, and the series of flooding events that hit the Emilia-Romagna region from 2 to 17 May 2023, which caused 17 deaths⁸⁴.

Droughts. Italy is one of the European countries most exposed to the risk of drought and water crisis. Over the last twenty years, these events have not only affected the south, which has always been exposed to the risk of drought for climatic reasons, but also the central and northern regions, causing serious economic damage, with an impact on civil use as well. The water crises of 2003, 2006, 2007, and 2017 affected the Po River basin, the most densely populated and industrialised area, and some regions of central Italy (Lazio, Umbria, Marche). In early 2018, another water crisis hit Palermo, in Sicily. For two years now, southwestern and eastern European countries, including Italy, have been among the hardest hit by the drought emergency⁸⁵.

Earthquakes. Italy is a highly seismic country due to its geographical position. The greatest seismic activity is concentrated in the central and southern part of the peninsula, along the Apennine ridge (Val di Magra, Mugello, Tiber Valley, Val Nerina, Aquilano, Fucino, Liri Valley, Benevento, Irpinia, Val d'Agri), in Calabria and Sicily, and some northern areas, including Friuli-Venezia Giulia, Veneto, and part of western Liguria. In the southern Apennines, Irpinia has, over the centuries, seen some of the most catastrophic earthquakes in Italian seismic history, the last one being in 1980, which left deep scars, still clearly visible in the area. The most recent earthquakes have been in L'Aquila on 6 April 2009, reaching magnitude Mw 6.3 and intensity of IX-X on the MCS scale, and the 2016-17 seismic sequence of central Italy, with two earthquakes of magnitude Mw 6.2 and 6.6 and effects corresponding to XI on the MCS scale.

82 'Italy', Encyclopedia Britannica, <https://www.britannica.com/place/Italy>. Accessed 17 April 2024.

83 'Alluvione nelle Marche', Polaris, <https://polaris.irpi.cnr.it/event/alluvione-nelle-marche/>. Accessed 17 April 2024.

84 'Alluvione in Romagna', Polaris, <https://polaris.irpi.cnr.it/event/alluvione-in-romagna/>. Accessed 17 April 2024.

85 'Bollettino giugno 2023', Drought Central, <https://droughtcentral.it/bollettino-italia/bollettino-giugno-2023/>. Accessed 17 April 2024.

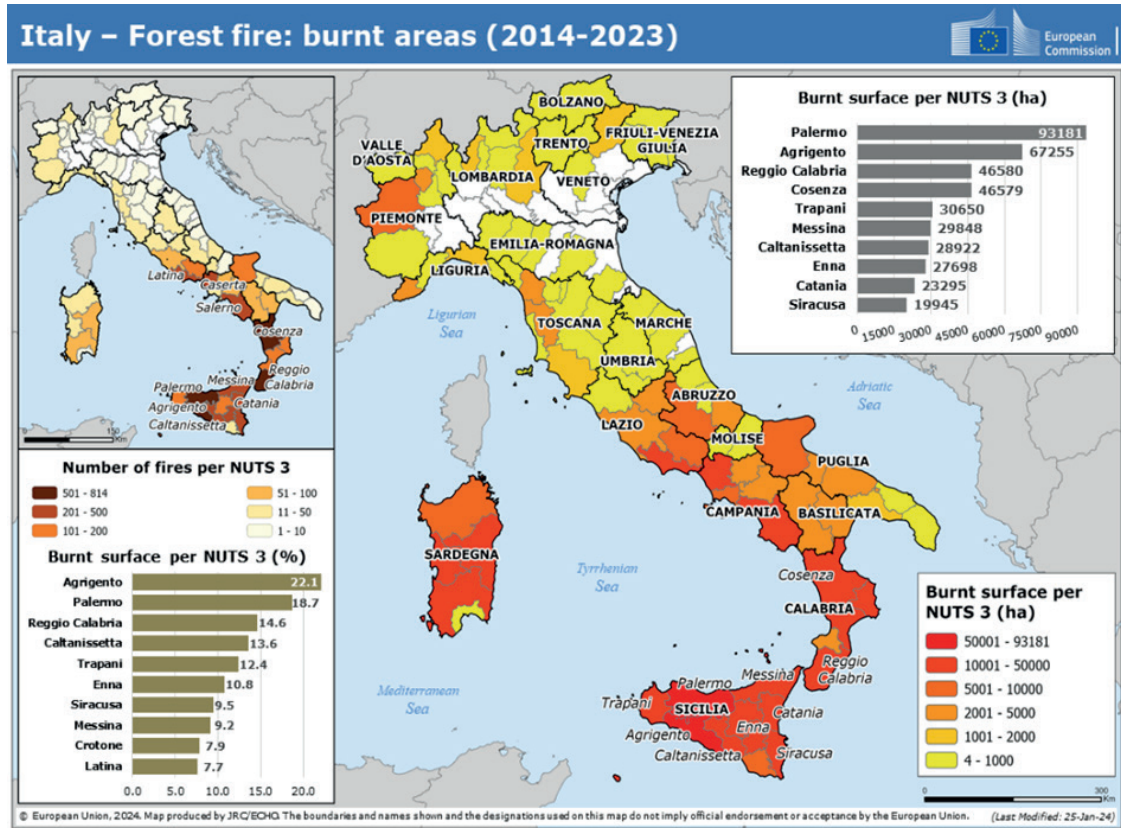


Figure B - Areas burned by wildfires in Italy from 2014 to 2023. Source: European Commission

Volcanic eruptions. After Iceland, Italy is the country with the largest number of active volcanoes in Europe and is one of the first countries in the world by number of people exposed to volcanic risk. Active or potentially active volcanoes are located in southern Italy and present different levels of hazard. Etna and Stromboli erupt frequently and, since they are in open conduit conditions, present a limited risk with very short-term precursor signals. The other volcanoes, in particular Vesuvius, Phlegraean Fields, and Vulcano have a low eruptive frequency and currently obstructed ducts (quiescent period). The eruption of Vesuvius in 79 A.D., which occurred after about three centuries of inactivity, was one of the most powerful and destructive events in history. The eruption was catastrophic for Pompeii, Herculaneum, and Stabia. The most recent is the eruption of Vesuvius in 1944, which caused the death of 26 people due to the collapse of the roofs and almost destroyed the villages of San Sebastiano, Massa di Somma, and Terzigno.

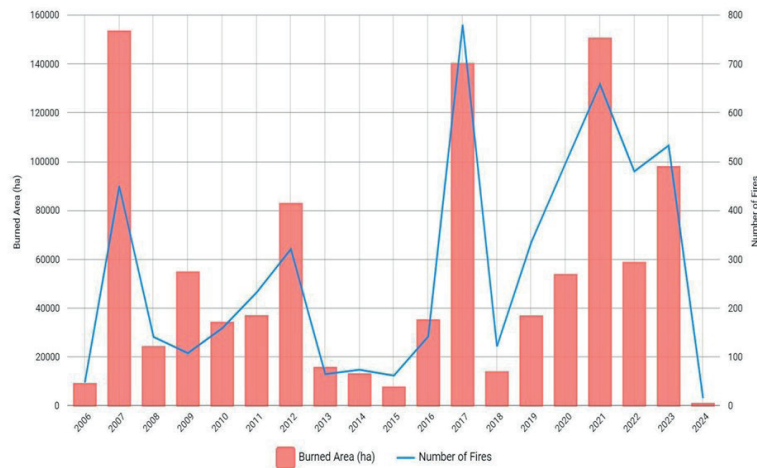


Figure C - Burned area (ha) and number of fires recorded in Italy from 2006 to 2024 (currently updated). Only fires of 30 ha or more are included. Source: EFFIS Copernicus, <https://effis.jrc.ec.europa.eu/apps/effis.statistics/estimates/ITA>. Accessed 18 April 2024.

Tsunamis. The Mediterranean Sea is exposed to the danger of tsunamis due to the high seismicity of submerged territories, seabed morphology, and numerous active volcanoes. In Italy, the most affected coastal areas are in the south, especially in eastern Sicily, Calabria, Apulia, and the Aeolian archipelago. However, minor tsunamis have also occurred along the Ligurian, Tyrrhenian, and Adriatic coasts. The most recent event affected the Aeolian Islands and was caused by a landslide that developed along the side of the Stromboli volcano during its strong eruption in 2002, with waves ten metres high.

Disaster	Year	Total deaths	Disaster	Year	Affected people	Disaster	Year	Damage (US\$)
Extreme temperature	2003	20,089	Earthquake	2009	56,000	Earthquake	2012	20,139,674
Extreme temperature	2022	18,010	Flood	2023	46,000	Flood	1994	18,361,882
Earthquake	2016	296	Flood	2000	43,000	Flood	2000	13,596,043
Earthquake	2009	295	Earthquake	1997	38,100	Earthquake	1997	8,249,822
Landslide	1998	160	Earthquake	2016	22,292	Extreme temperature	2003	6,999,853

Table A - Top five natural hazard-related disasters reported in Italy for the period 1990-2024 by number of total deaths, affected people, and economic damage. Source: European Commission

In 2017, Italy was the country with the highest number of forest fires, with a burnt area of 140,405 hectares and 788 fires larger than 30 hectares. Much of the damage occurred in July and August, when over 300 fires were mapped in each month. The first large fire of the season occurred in January, when more than 1,600 hectares burned in the province of Imperia (Liguria), while the largest of the year occurred in the province of Turin (Piedmont) at the end of October and affected 3,533 hectares. The southern regions of Sicily and Sardinia were also heavily affected. Of the 41 fires exceeding 500 hectares mapped in 2017, 17 were in Sicily. Two fires of about 3,000 hectares were mapped in the region in July-August. There were nine casualties due to forest fires in 2017⁸⁶. In 2021, Italy was the second most affected country by fires in terms of burnt area (after Turkey), again recording the highest number of fires. The total burnt area of 159,537 hectares mapped from 1,422 fires was the highest recorded in over a decade. Most of the damage occurred between July and August. There were 659 fires larger than 30 hectares and 49 fires larger than 500 hectares, the highest number of large fires mapped in 2021 in Europe, the Middle East, and North Africa. Fifteen of the 49 fires exceeded 1,000 hectares and the largest (in Sardinia) was over 13,000 hectares. Sicily was particularly affected, with 32 of the 49 large fires⁸⁷.

According to the DPC, Italy activated the UCPM twice in the summer of 2021. The first activation was on 25 July in Sardinia and the second on 1 August for forest fires in southern Italy. In 2022, Italy faced 17% fewer interventions than in 2021. However, some areas in the north of the country were affected by fires more than usual and some significant fires occurred outside the summer season. The year 2023 was better than 2022 in terms of national fire management. However, areas not traditionally affected by fires were affected, particularly in the northern part of the country, and fires broke out beyond the normal fire season. Over the past three years, the combination of prevention, preparedness and pre-positioning of the police has been effective and efficient, as were interventions by civil protection and coordination with volunteers.

86 San-Miguel-Ayanz, J., Durrant, T., Boca, R., Libertà, G., Branco, A., de Rigo, D., Ferrari, D., Maianti, P., Artés Vivancos, T., Costa, H., Lana, F., Löffler, P., Nuijten, D., Christofer Ahlgren, A., Leray, T.; Forest Fires in Europe, Middle East and North Africa 2017, Publications Office of the European Union, Luxembourg, 2018.

87 San-Miguel-Ayanz, J., Durrant, T., Boca, R., Maianti, P., Libertà, G., Artés-Vivancos, T., Oom, D., Branco, A., de Rigo, D., Ferrari, D., Pfeiffer, H., Grecchi, R., Onida, M., Löffler, P. 2022. Forest Fires in Europe, Middle East and North Africa 2021, Publications Office of the European Union, Luxembourg, 2022.

Annex 2: List of stakeholders consulted in the Peer Review mission

 <p>PROTEZIONE CIVILE Presidenza del Consiglio dei Ministri Dipartimento della Protezione Civile</p>	<p>Italian Civil Protection Department (DPC)</p> <ul style="list-style-type: none"> • Emergency coordination office • Volunteering and national resources office • Technical scientific, forecast and risk prevention activities Office • Legal Office • Press Office • International relations and activities Unit • Communication and civil protection culture Unit
 <p>MINISTERO DELL'AGRICOLTURA DELLA SOVRANITÀ ALIMENTARE E DELLE FORESTE</p>	<p>Ministry of Agriculture, Food Sovereignty and Forests (MASAF)</p> <ul style="list-style-type: none"> • General Directorate of Mountain Economy and Forests (DIFOR) • National and International Forestry Policy Coordination Office (DIFOR II)
 <p>MINISTERO DELLA CULTURA</p>	<p>Ministry of Culture (MiC)</p> <ul style="list-style-type: none"> • Directorate General for Archaeology, Fine Arts and Landscape • Directorate General for Cultural Heritage Security
 <p>MINISTERO DELL'AMBIENTE E DELLA SICUREZZA ENERGETICA</p>	<p>Ministry of Environment and the Energy Security (MASE)</p> <ul style="list-style-type: none"> • DG Sustainable soil and water management Office I • General and accounting affairs, risk prevention and climate change adaptation • Directorate-General for the Protection of Biodiversity and the Sea
 <p>VIGILI DEL FUOCO CORPO NAZIONALE</p>	<p>National Fire and Rescue Service (CNVVF)</p> <ul style="list-style-type: none"> • Central Directorate for Emergency, Rescue, Forest Fire Fighting
	<p>Arma dei Carabinieri</p> <ul style="list-style-type: none"> • Carabinieri – Forest, Environment and Agri-food coordination Units (CUFAA)
 <p>REGIONE AUTÒNOMA DE SARDIGNIA REGIONE AUTONOMA DELLA SARDEGNA</p>	<p>Sardinia Region</p> <ul style="list-style-type: none"> • Civil Protection • Forestry and Environmental Surveillance Corps (CFVA)
 <p>REGIONE CALABRIA</p>	<p>Calabria Region</p> <ul style="list-style-type: none"> • Civil Protection • Soil Defence, Land Protection and Disaster Prevention Sector of the UOA Mountain, Forestry and Soil Defence Policies
 <p>REGIONE LAZIO</p>	<p>Lazio Region</p> <ul style="list-style-type: none"> • Civil Protection

Annex 3: Acronym Table

AGIF	Portuguese Agency for Integrated Rural Fire Management
ANEPC	National Authority for Emergency and Civil Protection (Portugal)
AIB	Common use acronym to indicate the relation to forest fires management. AIB stands for "Antincendi Boschivi".
ANCI	National Association of Italian Municipalities
AUTOBAM	AUTOmatic Burned Areas Mapped
CAP	Common Agricultural Policy
CCS	Relief Coordination Centres
CFC	Central/National Functional Centre
CFD	Decentralised Functional Centre
CFVA	Forestry and Environmental Surveillance Corps (Sardinia Region)
CIMA Foundation	International Centre for Environmental Monitoring
CMCC	Euro-Mediterranean Center on Climate Change
CNVVF	National Fire and Rescue Service
CNVVF AIB Service	Forest-Fire Fighting Service of the National Fire and Rescue Service
COAU	Unified Air Operations Centre of DPC
COC	Municipal Operations Coordination Centre
COEM	Operational Centre for Maritime Emergencies
CON	National Operation Centre of the CNVVF
CP	Civil Protection
CPOC	National Civil Protection Operational Committee
C-SIFA	Forest, Environment and Agri-food Information System (Carabinieri)
CUFAA	Forest, Environment and Agri-food coordination Units (Carabinieri)
CVC	Calabria Verde Company
DGPC	General Directorate of Civil Protection of the Presidency of the Region of Sardinia
DOS	Director of Suppression Operations (Incident Commander)
DPC	Italian Civil Protection Department
DPCM	Decree of the Presidency of the Council Of Ministries
DRR	Disaster risk reduction
EAFRD	European Agricultural Fund for Rural Development
DG ECHO	General Directorate for Civil Protection and Humanitarian Aid Operations
EFFIS	European Forest Fire Information System
EPRIF	Spanish Comprehensive Forest Fire Prevention Teams
ERDF	European Regional Development Fund
EWS	Early Warning System
FORESTAS	Regional Forestry Agency for Land and Environmental Development of Sardinia
ICS	Incident Command System
ISPRA	Institute for Environmental Protection and Research
M2M	Machine to Machine
MCPMP	Ministry for Civil Protection and Maritime Policies
MASAF	Ministry of Agriculture, Food Sovereignty and Forests
MASE	Ministry of Environment and the Energy Security
MiC	Ministry of Culture
NAD-AIR	Decision Support Unit for Rural Fire Analysis
NFS	National Forest Strategy
NGEU	Next Generation EU
NIA	Fire Investigation Unit (CNVVF)

NIAB	Forest Fire Information Unit (Carabinieri)
NPDRR	National Platform for Disaster Risk Reduction
NRA	National Risk Assessment
OECD	Organisation for Economic Co-operation and Development
OPRL	Regional Forest Development Plans of the Czech Republic
PCM	Presidency of the Council of Ministers
PGAF	Forest Management Plan
PNACC	National Plan for Adaptation to Climate Change
PPF	Probability of Fire spread
PRAF	Peer Review Assessment Framework
RIS.I.CO.	Risk of Fires and Coordination
ROS	Responsible for Suppression Operations
RRF	Recovery and Resilience Facility
RRP	Recovery and Resilience Plan
SINFor	National Forest Information System
SNACC	National Strategy for Climate Change Adaptation
SNAI	National Strategy for "Inner" Areas
SNPC	National Civil Protection Service
SOPs	Standard Operating Procedures
SOR	Regional Operations Room
SOUP	Permanent Unified Operations Room
SSI	National Situation Room
TUFF	Framework Law on Forests and Forestry Supply Chain
UCCN-MiC	Crisis Unit - National Coordination of the Ministry of Culture
UCPM	European Union Civil Protection Mechanism
UOA	Autonomous Organisational Unit
UOC	Operations Sector Unit
WUI	Wildland Urban Interface