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Forest Fires in Europe, Middle East and North Africa 2024

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Forest Fires in Europe, Middle East and North Africa 2024

Contents

Abstract

This report summarises the 2024 fire season across Europe, the Middle East, and North Africa. It is based on official data from contributing countries and the analysis and mapping conducted by the European Forest Fire Information System (EFFIS).

The national report section compiles official figures from 33 countries, focusing primarily on fire occurrence and affected surfaces (number of fires and total burnt area). Some countries also provide data on: Fire danger and causes; Firefighting resources and prevention efforts; Injuries, loss of life, and mutual assistance operations; Notes on climate change and research activities. This section also includes a comparison for the southern EU countries with longer time series (1980–2024): France, Greece, Italy, Portugal, and Spain.

The section including the EFFIS analysis covers 45 countries (36 European and 9 Middle East/North Africa). The data is presented using a standard template that covers: Fire Weather Index (FWI), Monthly burnt area and number of fires, Annual burnt area for fires larger than 30 hectares, Burnt area categorized by land cover.

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Foreword: 'Forest Fires in Europe, Middle East and North Africa 2024'

Major wildfires have broken out across Europe nearly every year since 2017, significantly impacting communities and the EU's ecosystems. In 2024, this trend of increasingly large and intense fires continued.

While 2024 can be considered a more moderate wildfire year in the EU, the total burnt area of 419 298 hectares was above average for the 2006 – 2023 period. In July, serious wildfires occurred in some of the Greek islands and in Madeira (Portugal). In September, a series of wildfires spread across mainland Portugal burning over 100 000 hectares in just a week.

The JRC's European Forest Fire Information System (EFFIS) plays an essential role in mitigating the effects of wildfires and boosting EU preparedness. It has been tracking wildfires since 2001 and has become the central source for reliable, up-to-date, and standardised information on wildfires across Europe. EFFIS data revealed that four of the last seven fire seasons experienced above-average annual burned areas.

As climate change worsens, current firefighting practices need to adapt. The JRC leads research to provide up-to-date wildfire risk assessments. This work strengthens Europe's preparedness and readiness, helping communities, organisations, and individuals better protect themselves from wildfires.

Strong firefighting capabilities are essential in the face of Europe's growing wildfire threat. Through the EU Civil Protection Mechanism, we have built the tools to respond quickly and effectively when disaster strikes. The EU recently doubled its rescEU firefighting air fleet — a game-changer for our collective response. In practice, it meant 33 firefighting planes and helicopters from the rescEU fleet could be deployed rapidly across Europe. These were reinforced by another 33 aircraft from the European Civil Protection Pool, spontaneous offers from Member States, and more than 800 first responders. The shared rescEU fleet has already proven its worth. It is more than equipment — it is a symbol of European solidarity in action, backing up national efforts and ensuring no country is left to fight the flames alone.

At the time of publication of this report, the 2025 wildfire season is already on track to become the most severe since 2001. We are confident that the findings of this report will inform current and future initiatives to better prepare for and mitigate wildfire effects, both in the EU and internationally. We remain committed to supporting communities, using EU resources to monitor wildfires and supporting Member States in their response.

Hadja Lahbib

European Commissioner for Equality, Preparedness and Crisis Management

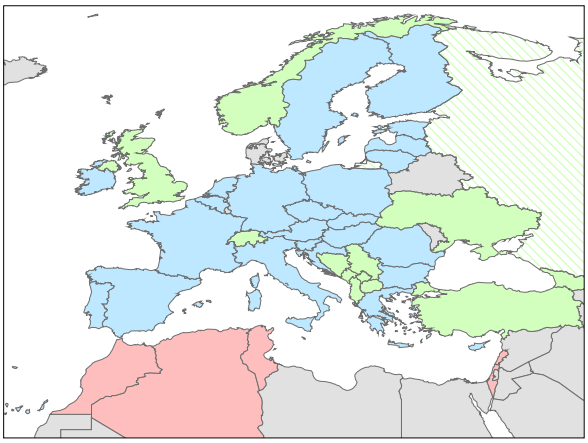
Executive summary

This issue of the EFFIS annual report on forest fires for the year 2024 is the 25th in the series. This report is consolidated as highly appreciated documentation of the previous year's forest fires in Europe, Middle East and North Africa (MENA). The section on national reporting gives an overview of the efforts undertaken at national and regional levels in the majority of countries in the European Forest Fire Information System (EFFIS) network. This is followed by information from EFFIS on the evolution of fire danger in the European and Mediterranean regions and the damage caused by fires in the 43 countries on the network.

The preparation and publication of the report aims at improving cooperation with the members of the Expert Group on Forest Fires (EGFF) especially with regard to fire prevention and climate change adaptation measures in relation of fires. Our common aim is to maintain and protect our landscapes and natural heritage, to avoid loss of human lives and to minimise the damage caused to property by uncontrolled forest fires.

The aim of EFFIS is to provide harmonised information on forest fires and assessment of their effects in the pan-European region. For this purpose, collaboration with EU Member States and neighbouring countries has been on-going since 1998. EFFIS started as a pilot project of collaboration between the European Countries and the European Commission in the area of fire information and fire prevention.

Figure 1. EFFIS network (blue: EU, green: non-EU, pink: MENA)



Source: JRC's elaboration.

On the European Commission side, EFFIS was initiated by the Joint Research Centre in collaboration with the DG Environment. Due to the strong support by the Expert Group on Forest Fires, which constitutes the network of fire management experts from the countries, the system was developed to an operational level supporting national and European policies and providing the information basis for the discussion of issues related to forest fires in the European Parliament[1]. Currently, EFFIS provides operational support to DG ECHO in the area of civil protection [1][2], DG DEFIS in the implementation of the Copernicus Regulation [3] as well as to DG REGIO regarding the implementation of the EU Solidarity Fund Regulation [4] for critical fires. Data from EFFIS is used for the analysis of wildfire regimes under future climate change scenarios [5][6], in support to the DG CLIMA initiatives. In 2015, EFFIS was included as a component of the EU Copernicus Program Emergency Management Services, which provides a legal and financial basis for its operation under this framework since then.

[1] http://www.europarl.europa.eu/plenary/en/parliamentary-questions.html

EFFIS provides an ideal platform for countries to exchange good practices on fire prevention, firefighting, restoration practices and other activities related to fire management, and for the European Commission to update the forest fire services in the countries on relevant initiatives at the European level.

Since its first operation in the year 2000, the number of countries contributing to the information on forest fires in EFFIS and receiving data from it has increased steadily. The EFFIS system was used by government organizations and citizens, with 700 000 visits from 141 countries in 2024.

Currently, the EFFIS network constitutes 43 countries, including 25 EU Member States (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the Netherlands), 13 European non-EU countries (Albania, Bosnia & Herzegovina, Republic of North Macedonia, Georgia, Kosovo, Montenegro, Norway, Serbia, Switzerland, Türkiye, Ukraine and the United Kingdom - Russia is temporarily excluded from the network), and 5 MENA countries (Algeria, Israel, Lebanon, Morocco and Tunisia).

1. Forest Fires in 2024: country reports from National Fire services

1.1. Introduction to the 2024 fire season

Table 1 compares fire data for 2024 with the average of the previous ten years.

Table 1. Overview of the number of fires and burnt areas as reported by the contributing countries in 2024[2].

Country	Number of fires			Burnt area (ha)			Notes
	2024	2014-23 average	2024 as % of average	**2024**	2014-23 average	2024 as % of average	
Austria	130	200	65	142	104	136	
Bulgaria	595	438	136	17116	4613	371	
Croatia	106	143	74	14607	12565	116	
Cyprus	121	104	117	3425	1764	194	
Czech Republic	1284	1605	80	140.4	503	28	
Estonia	25	79	32	16.6	113	15	
Finland	1260	1307	96	390	574	68	
France[3]	1452	2718	53	2949	15442	19	
Germany	563	1113	51	334	1120	30	
Greece	981	859	114	28288	37051	76	
Hungary	582	1243	47	2799	4970	56	
Italy	3784	5159	73	52623	72876	72	
Latvia	222	651	34	63	726	9	
Lithuania	110	152	72	49.47	81	61	
Morocco	382	453	84	874	4925	18	
Netherlands	222	582	38	17	364	5	Average 2017-2023
North Macedonia	250	111	224	61061	2123	2876	
Norway	776	571	136	887	1621	55	2016 fire recording change
Poland	5857	6671	88	1357.8	3024	45	
Portugal	6255	12496	50	137651	112455	122	
Romania	728	363	200	10360	2982	347	
Serbia	186	86	215	6870	2351	292	
Slovakia	102	184	55	81.73	360	23	
Slovenia	49	89	55	134.42	564	24	
Spain	6134	9670	63	47711	103918	46	
Sweden	2867	5079	56	310	4701	7	
Switzerland	46	107	43	42	127	33	
Türkiye	3797	2568	148	27485	23325	118	
Ukraine[4]	1993	1453	137	23963	12223	196	

Source: JRC's elaboration of the country reports.

[2] Some countries do not report precise figures for fire numbers/burnt area and are not included in this table.

[3] Forest fires only.

[4] Data on forest fires come from statistics obtained only from enterprises which are coordinated by the State Forest Resources Agency of Ukraine (73% of all forests in Ukraine). Some fires probably missing.

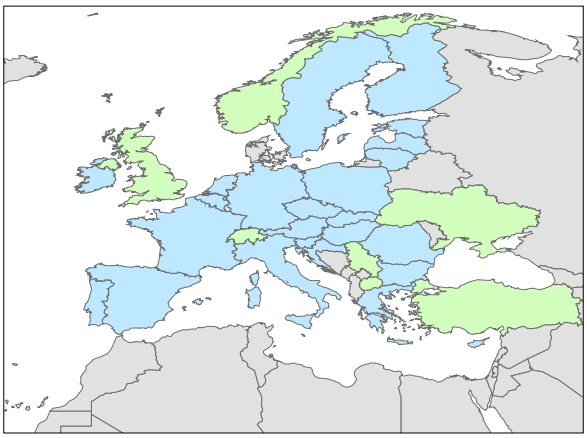
1.2. European countries

The following chapters contain the reports from the contributing European countries.

The reports are arranged in alphabetical order and comprise reports from 24 Member States and 7 other non-EU members of the EFFIS network.

The images and tables for each section are copyright or provided by the related source at the end of the section.

Figure 2. European contributing countries.



Source: JRC's elaboration.

1.2.1. Austria

Fire danger in the 2024 fire season

Despite 2024 being by far the warmest year in Austria's recorded history, the number of forest fires remained below average, similar to the 2023 season. This apparent contradiction can largely be attributed to above-average precipitation levels throughout the year, combined with the absence of prolonged dry periods.

The winter of 2023/24 was notably wet, followed by very moist late spring months (May and June), which had a significant dampening effect on wildfire risk, extending into the height of summer. While July and August brought a record number of hot days, recurring rain showers and thunderstorms, especially in alpine regions, prevented critical dry spells from developing. Additionally, public warnings and increased awareness among the population may have further contributed to the low number of fires.

The total for 2024 stands at 130 documented forest fires in Austria, a slight increase from 123 fires in 2023 but still well below the long-term average of around 200 fires per year. These are among the lowest numbers in two decades, despite consecutive record-warm years.

Fire occurrence and affected surfaces

The regional distribution of wildfires in 2024 remained consistent with previous patterns. Most fires occurred in Styria (34), Lower Austria (32), and Tyrol (19). In contrast, Vorarlberg reported no forest fires for the year.

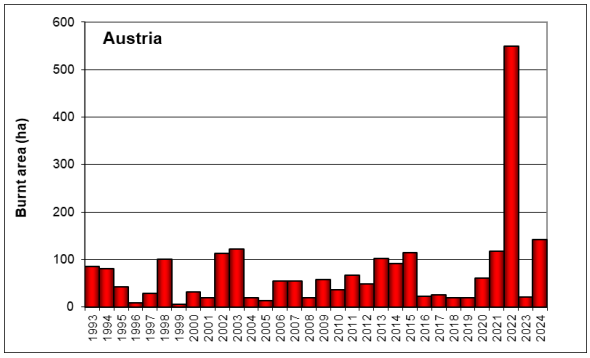
Notably, an unusual series of around 10 forest fires occurred in southeastern Styria during early winter, triggered by several weeks of local drought—a rare event for the season.

In total, 142 hectares of forest (slope-corrected) were affected by wildfires in 2024, marking a significant increase from 2023 (22 ha) and well above the 2003–2024 average of about 84 ha.

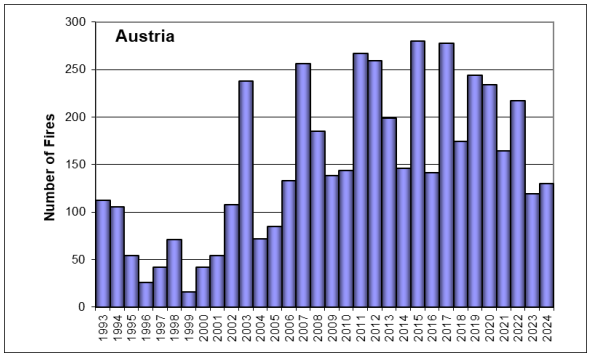
The two largest forest fire events in 2024 were the Wildalpen wildfire (Styria) in April, burning 92 hectares of forest, and a major fire in September near Gänserndorf (Lower Austria), where 30 hectares of forest land were affected.

The trends of fire data in Austria for the years 1993 to 2024 are shown in **Figure 3**.

Figure 3. Burnt areas (a), number of fires (b) and average fire size (c) in Austria from 1993 to 2024.



(a)



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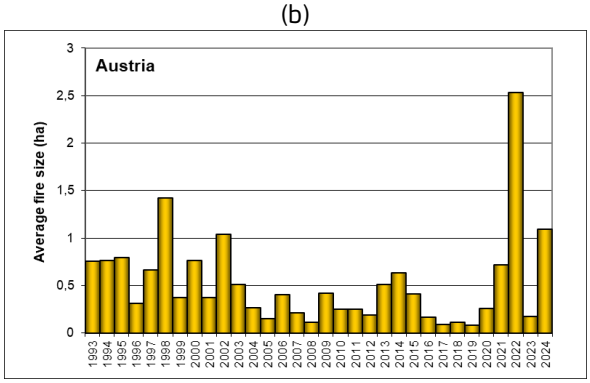
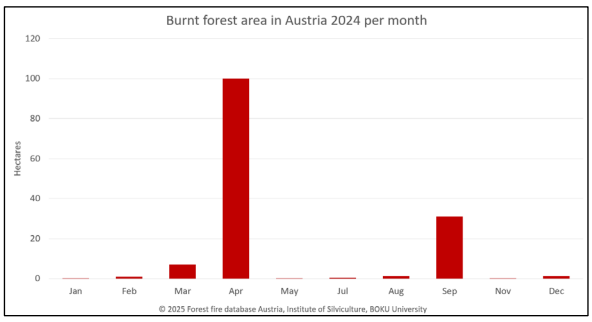


(c)

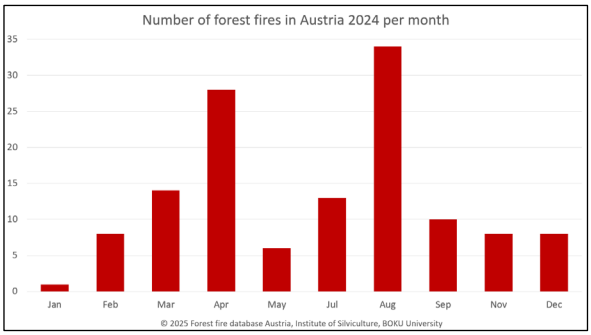
Source: JRC's elaboration of the country reports for Austria.

Figure 4. Burnt area (ha) by month in Austria in 2024.



Source: Authors of the country report for Austria.

Figure 5. Number of fires by month in Austria in 2024.



Source: Authors of the country report for Austria.

Fire causes

As in previous years, human activities remained the leading cause of forest fires in Austria, accounting for approximately 75% of all incidents in 2024.

Negligence, such as discarded cigarettes, were responsible for at least 20% of human-caused fires. Hot ashes contributed to around 15% and broken power lines and arson each accounted for approximately 10% of reported fires.

As only relevant natural cause in Austria, lightning strikes were responsible for more than 20% of all forest fires in 2024—above the long-term average of 15%.

Fire fighting means

Austria's network of approximately 4 500 fire departments and 260 000 active (mostly volunteer) firefighters continues to play a crucial role in wildfire response.

In 2024 specialised training continued through the Tyrolean Centre of Competence for Forest Fire Fighting, focusing on ground and aerial suppression tactics. All nine provincial fire brigade associations are strengthening the training of their firefighters in the field of Forest Fire Fighting.

Nationwide, special equipment and vehicles, water buckets for helicopters, and manual tools for firefighting in rugged alpine terrain are kept ready. A harmonised tactical guideline for

wildfire fighting was finalised and published in 2024.

Drones (UAVs) have become standard support tools in wildfire assessment and real-time decision-making. A harmonised national wildfire fighting guideline was finalized and implemented in the trainings.

Fire prevention activities and information campaigns

Building on initiatives under the Forest Fund Act 2020 (a €450 million investment through 2029), Austria continued to implement and expand forest fire prevention efforts: public awareness campaigns on wildfire safety and responsible behaviour were maintained throughout the summer, reinforcing five basic safety rules.

Integrated forest fire management strategies and operational maps for firefighting were further developed across regions and technical equipment procured.

Injuries and loss of human lives

In 2024, Austria reported no fatalities related to forest fires. A small number of minor injuries, mainly among firefighters and other volunteers, was reported.

This mirrors the 2023 season and reflects continued success in protective measures, training, and early suppression tactics.

Operations of mutual assistance

Forest fire suppression remains the responsibility of local fire brigades in Austria. The local fire brigades are supported by the regional structures of the fire brigade associations (e.g. disaster relief units and specialised units).

Aerial resources (helicopters, planes) are provided by the Ministry of the Interior (MoI), the Ministry of Defence (MoD) and private companies. There is close cooperation between these partners, including joint trainings and exercises.

Austria continued its engagement in European cooperation through the Union Civil Protection Mechanism (UCPM). In 2024, Lower Austrian fire brigades participated again in international prepositioning efforts, particularly in southern Europe. In total, four Ground-Forest-Fire-Fighting modules (GFFF) have been registered under the UCPM: three from the Austrian fire services (Lower Austria, Styria, Salzburg) and one from the Austrian Armed Forces. A joint module – comprising multiple provincial fire brigade associations – is currently being established.

Climate change and adaptation

Climate Conditions and Fire Risk

The fire regimes in Austria are increasingly driven by seasonal climate variability. While 2024 was the hottest year on record, the combination of high precipitation and absence of drought significantly suppressed fire danger, reinforcing the unpredictability of fire seasons under climate change.

National adaptation strategies / plans and in particular regarding plans to adapt the forest sector to climate change in order to limit forest fire risks

Austria continues to implement a multi-faceted national action plan for adapting forests and fire management to the effects of climate change, supported by the Forest Fund Act 2020 and project activities (like AFFRI 2 and CONFIRM). However, forest fire prevention and fire risk management are still only being addressed in a few individual projects and case studies. There are still no measures in place at the wildland-urban interface and no awareness of the role of fire and its use as a tool (e.g., controlled burning).

The "Hotspot Forest" action programme, which coordinates stakeholders in integrated wildfire management across climate, ecological, and behavioural dimensions is continuously implemented by the Austrian Federal Ministry of Agriculture and Forestry, Climate and

Environmental Protection, Regions and Water Management.

Research activities

Several major research projects, funded through the Forest Fund Act, continued in 2024:

- IGNITE improved understanding of ignition danger through burning experiments and the adaption of fire weather indices.
- EMERGE focused on wildfire fuel mapping and refining models for fire spread and intensity.
- FIREDATA worked to harmonise forest fire documentation and build a database of case studies and monitoring plots.
- Austria Fire Futures (AFF), led by IIASA, evaluated future wildfire hazard scenarios under different climate pathways.
- REVEAL carried out vulnerability analyses for settlements and infrastructure at risk from wildfires.
- BURN-IT developed expert tools and public awareness content, including fire danger maps, podcasts, and a forest fire blog.
- Together.Safety.Firebrigade continued its youth education initiatives with new focus on forest fires, including summer school programmes for children aged 8–12.
- A Children Summer University worked on educational material and a very nice explanatory video-clip to engage children in forest fire prevention.

Research activities

The 2024 fire season again demonstrated that extreme heat alone does not equate to high fire incidence. Moist conditions and short drought periods, combined with effective prevention strategies and public awareness, led to a below-average number of fires. However, the total burned area increased, underscoring the risk of larger and more intense individual fire events, especially under changing climate conditions.

Austria continues to strengthen its capabilities in prevention, suppression, research, and international cooperation to address the evolving forest fire challenge.

(Source: Austrian Fire Brigade Association; Institute of Silviculture, BOKU University, Vienna; Austrian Federal Ministry of Agriculture and Forestry, Climate and Environmental Protection, Regions and Water Management, Austria).

1.2.2. Belgium

Fire danger

Following the relatively wet meteorological conditions throughout the entire year 2024, fire danger was overall very low in 2024. More specifically, there were no days with an increased or extreme wildfire danger (as assessed on the basis of the EFFIS FWI, current meteorological conditions, terrain characteristics, and so on), which underlines the unfavorable wildfire conditions throughout that year. In 2023 there were 60 and none of such days, respectively, whereas there were more than 120 and about 30 in 2022. So, in terms of fire danger, 2024 was similar to 2023 (and 2021), whereas 2020 and 2022 were years with many days with an increased wildfire danger

Fire occurrence, affected surfaces and causes

Since an adequate registration of wildfires in Belgium is not yet in place because the fire registration procedures have been optimized for fires in urban areas, we resort for this report to the emergency calls on fires in non-urban areas (of limited extent and extensive) made in 2024 to Belgium's public safety answering points (PSAPs) and to the number of interventions registered for extended non-urban fires. The statistics below, from the former, should be treated with care as the same wildfire might have been reported several times by different callers. Also, statistics from the latter might be blurred as there is not yet a clear definition of 'extended', so some true wildfires might not have been registered as such. Hence, they are merely indicative. Data on affected areas and causes of wildfires are generally unavailable (with a few exceptions), but the largest wildfire in an area managed by the Agency for Nature and Forests of the Flemish Government was smaller than 1 ha, which may be the upper limit for 2024 wildfires in Belgium.

In total, 737 calls concerning fires in non-urban areas were registered by the country's PSAPs, significantly less than the 1798 calls 2023. Of those, the marge majority (692, 94%) concerned fires of limited extent, while there were 45 (6%) calls related to extended fires. Of the latter, 29 (64%) were coming from Wallonia, especially the provinces of Luxembourg and Namur, and 16 (36%) from Flanders, especially the provinces Antwerp and Limburg. This geographical distribution corresponds to the one reported by Depicker et al. (2020) (https://nhess.copernicus.org/articles/20/363/2020/). For the entire country, 821 interventions for fires in non-urban areas were registered, and of those only 61 concerned extended wildfires. Of the latter, 37 (61%) took place in Wallonia, 23 (37%) in Flanders and 1 (2%) in Brussels Capital Region, so the spatial distribution of interventions for non-urban fires is similar to the one of PSAPs calls, despite a difference in absolute numbers due to aforementioned reasons.

No people were injured or lives were lost as a consequence of these fires. Currently, a workflow is being designed to optimize the registration of wildfires in Belgium. To enable a faster detection of wildfires in the field, the Agency for Nature and Forests, of the Flemish Government is currently conducting a pilot study aiming at an automatic smoke detection using dedicated cameras and AI.

Firefighting means and intervention campaigns

Given the fact that several governmental agencies at different administrative levels are involved in the (safety) management of public forests and parks, and hence taking adequate fire prevention measures, the relevant actions are mutually coordinated in consultation with the involved agencies.

(Sources: BionamiX, Ghent University; Noodcentrales 112 (PSAPs), Directorate-General Civil Security, Ministry of the Interior; Agency for Nature and Forests of the Flemish Government, Belgium).

1.2.3. Bulgaria

Fire occurrence and affected surfaces

According to the Executive Forest Agency database in 2024 the number of forest fires in Bulgaria is 595 and the burnt area is estimated to be 17 116.4 ha, with 1 462.4 ha of them burned by crown fires. The average size per forest fire in 2024 increased to 28.76 ha. The biggest forest fire affected 4 191 ha of forest territories. The largest number and area burnt by forest fires were reported in Regional Forest Directorate /RFD/Sliven (18 fires and 4 692 ha) and RFD/Kardzhali (74 fires and 4 478 ha). These two RFD-s concentrate more than 53% of all burnt forest areas in the country.

The direct losses by forest fires in 2024 are estimated at 4 193 000 Euro, which is over half of the total value for the previous ten years – 8 045 700 Euro.

Distribution of the burnt areas in 2024 according to ownership is:

- State forest - 57%;
- Municipal forest –30%;
- Private forest – 11%;
- Other – 2%.

Table 2. Fire statistics for Bulgaria 2015-2024.

Year	Total number of fires	Burnt area (ha)	Fire causes (number)		
			Human activities	Natural	Unknown
2015	429	4313	335	12	82
2016	584	6340	472	22	90
2017	513	4569	433	14	66
2018	222	1453	201	7	14
2019	668	5619	550	8	110
2020	499	5258	350	13	136
2021	349	3143	238	28	83
2022	516	8126	337	21	158
2023	448	6388	280	24	144
2024	595	17116	409	38	148
Mean	**482**	**6233**	**360**	**19**	**103**

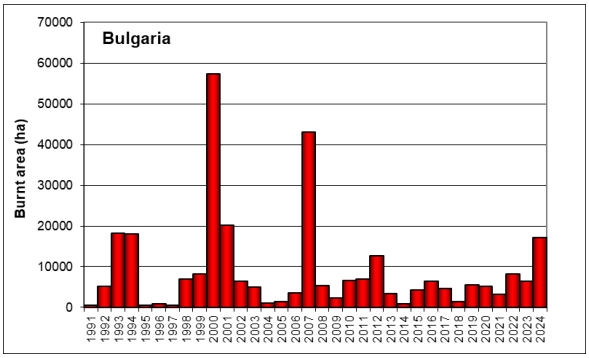
Source: Executive Forest Agency, Bulgaria.

(Source: Executive Forest Agency, Bulgaria).

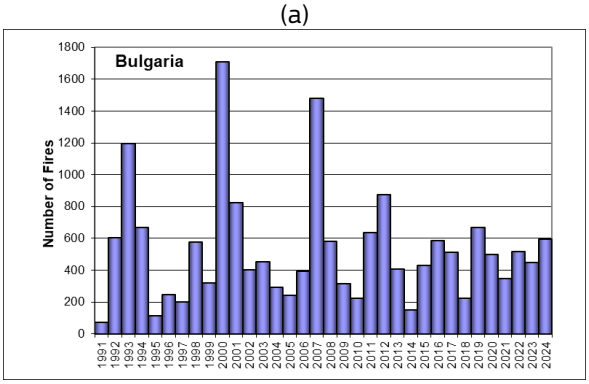
The main causes for the forest fires during 2024 are as follows:

- Carelessness – 391 in number (66%);
- Arson - 18 in number (3%);
- Natural - 38 in number (6%);
- Unknown - 148 in number (25%).

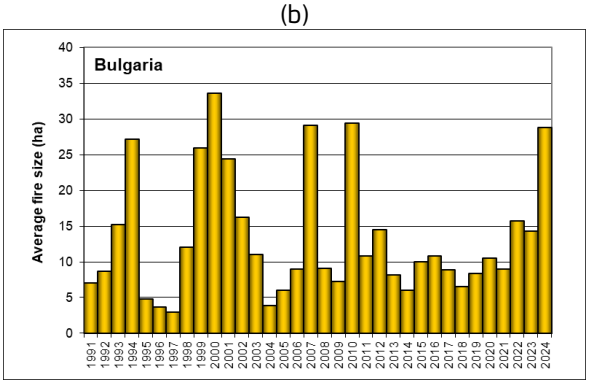
Figure 6. Burnt areas (a), number of fires (b) and average fire size (c) in Bulgaria from 1991 to 2024.



(a)



(b)



(c)

Source: JRC's elaboration of the country reports for Bulgaria.

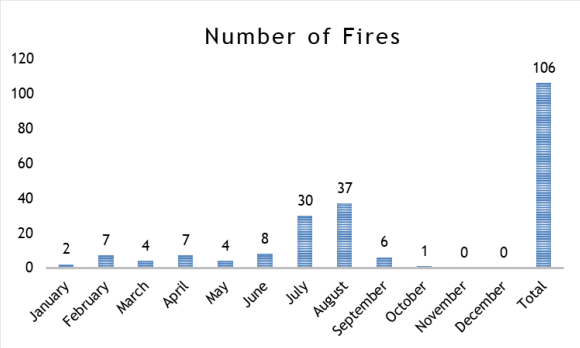
1.2.4. Croatia

Fire occurrence and affected surfaces

In the period from January 1 to December 31, 2024 (data entered in the Fire Register), a total of 106 fires burned 14.607 ha of forest and other land owned by the Republic of Croatia and private forest owners (state and private forests, as well as agricultural land affected within the scope of forest fires).

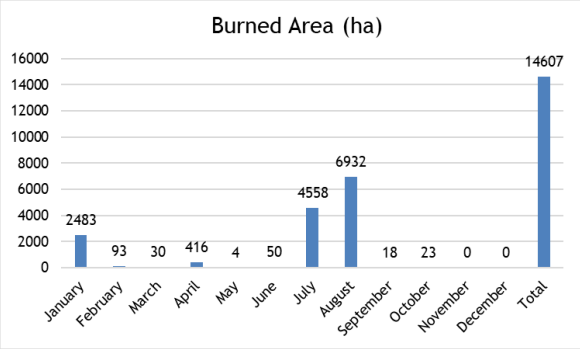
In the area of state forests managed by Croatian Forests Ltd. (HŠ d.o.o.), in 2024 there were also 106 fires, which burned 11.823 ha (see **Table 3**). A number of fires simultaneously affected both state and private forests, and are recorded under a single ID number, as one fire (therefore, the number of fires in state forests managed by HŠ and the total number of all fires is identical).

Figure 7. Number of fires by month in Croatia in 2024.



Source: Authors of the country report for Croatia.

Figure 8. Burnt area by month in Croatia in 2024.



Source: Authors of the country report for Croatia.

Table 3. Number of fires and burnt area in Croatia in 2024 by forest administrations in the karst and continental areas (State Forests Managed by Croatian Forests Ltd).

Forest Administration	Number of fires (pcs)	Burnt area (ha)
Delnice	4	18
Senj	3	39
Gospić	3	434
Buzet	5	76
Split	77	11 198
TOTAL – Karst	*92*	*11 765*
Vinkovci	0	0
Osijek	6	8
Našice	0	0
Požega	0	0
Bjelovar	1	2
Koprivnica	0	0
Zagreb	0	0
Sisak	1	29
Karlovac	2	15
Ogulin	0	0
Delnice (continental)	1	1
Senj (continental)	0	0
Gospić (continental)	1	1
Nova Gradiška	2	4
Slatina	0	0
TOTAL – Continent	*14*	*59*
TOTAL	**106**	**11 823**

Source: Authors of the country report for Croatia.

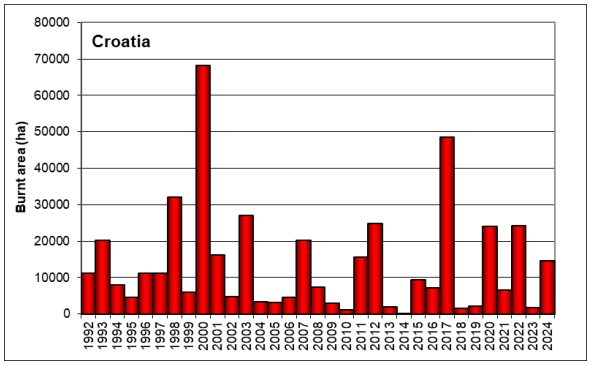
Most fires (77) occurred in the Split Forest Administration area (72.6% of the number of fires and 95% of the total burned area).

Damage Assessment

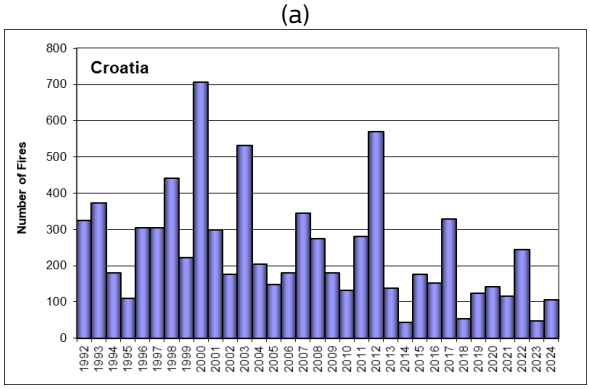
- Damaged timber volume – estimated damage value: 1 095 000 EUR
- Damage to non-wood forest functions (NWFF): 127 174 000 EUR
- Damage in the first age class: 2 396 000 EUR

The fire trends in Croatia for the years 1992 to 2024 are shown in **Figure 9**.

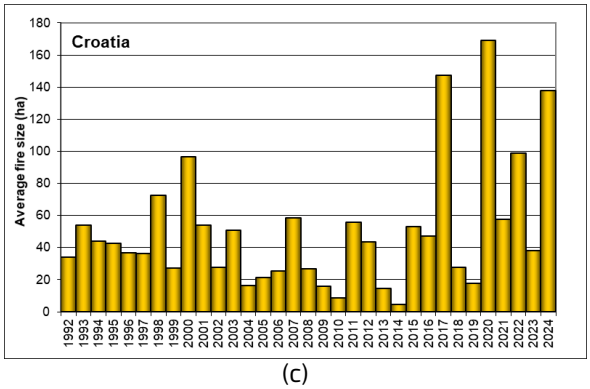
Figure 9. Burnt areas (a), number of fires (b) and average fire size (c) in Croatia from 1992 to 2024.



(a)



(b)



(c)

Source: JRC's elaboration of the country reports for Croatia.

Table 4 and **Table 5** present an overview of estimated damages to timber volume for all forests in Croatia, state and private. Calculated according to valid methodology. The Register rounds the amount "to thousands".

Table 4. Burnt Area by Vegetation Type – State Forests in Croatia in 2024.

Forest Vegetation Type	Total (ha)	Karst	Continent
High coniferous high forest	813	812	1
High broadleaved high forest	18	9	9
Low forest	98	97	0
Coppice forest	3 186	3 185	1
Scrubland	928	928	–
Maquis	17	17	–
Garrigue	525	525	–
Unstocked forest land	5 673	5 648	25
Conifer plantations	254	254	–
Broadleaved plantations	4	–	4
Other	309	290	19
TOTAL	11 823	11 765	59

Source: Authors of the country report for Croatia.

Table 5. Burnt Area by Vegetation Type – All Forests (State and private) in Croatia in 2024.

Forest Vegetation Type	Total (ha)	Karst	Continent
High coniferous high forest	890	889	1
High broadleaved high forest	128	118	9
Medium forest	–	–	–
Low forest	208	207	1
Scrubland	3 309	3 309	1
Thicket	932	932	–
Maquis	22	22	–
Garrigue	535	535	–
Unstocked forest land	5 682	5 657	25
Conifer plantations	254	254	–
Broadleaved plantations	4	–	4
Agricultural land	2 642	2 609	33
TOTAL	14 607	14 533	74

Source: Authors of the country report for Croatia.

(Source: Directorate for Forestry, Hunting & Wood Industry, Ministry of Agriculture; National Protection and Rescue Directorate, Croatia).

1.2.5. Cyprus

Review of the 2024 fire season

The 2024 fire season in Cyprus was severe and destructive. Following a prolonged period with below average precipitation, Cyprus experienced a hot and dry summer, with particularly favourable conditions for the ignition and rapid spread of forest fires. Heatwave conditions that prevailed during certain periods of summer months, worsened conditions and reflected negatively on the island's fire danger. The country experienced aggressive fire activity, an above average number of fires and burned area, and the ignition of several large-scale fire incidents that had severe impacts on communities and the environment.

Fire danger in the 2024 fire season

In January, the weather in Cyprus was warm and the precipitation near normal levels. The average temperature was about 2.3°C above normal and the area average precipitation was 103% of normal.

In February, the weather was dry and warm. The mean air temperature was 2.1°C above normal and the average precipitation was 48% of normal.

In March the weather was dry and warm. The mean air temperature was 2.3°C above normal and the area average precipitation was 36% of normal. A period with temperatures well above normal, affected Cyprus during the last days of the month.

In April the weather was exceptionally warm and the precipitation close to normal. The mean air temperature was about 4°C above normal and the average monthly precipitation was 28.9 mm or 97% of normal. During certain periods of the month the weather was very hot, with temperatures exceeding the normal by 10-12°C.

In May the weather was relatively warm and in terms of precipitation normal to wet. The mean air temperature was 1.2°C above normal and the area average precipitation was 110% of normal.

In June the weather was extremely hot and dry. The mean air temperature was 4.5°C above normal and the area average precipitation was 33% of normal. On mid-June, heatwave conditions prevailed throughout Cyprus, with temperatures around 45°C inland and 35°C in the mountains. The duration of the days in a month with a temperature greater than 40°C inland and greater than 31°C in the mountains, set a record, with 15 days and 13 days respectively.

In July the weather was extremely hot. The mean air temperature was 2.6°C above normal and the area average precipitation was 158% of normal. Heatwave conditions prevailed during certain periods of the month.

In August the weather was hot and dry. The mean air temperature was about 1.9°C above normal and the area average precipitation was 59% of normal. Heatwave conditions prevailed during certain periods of the month, that lasted for many consecutive days.

In September, the weather was hot and extremely wet. The mean air temperature was 1.7°C above normal and the area average precipitation was 458% of normal.

In October, the weather was extremely dry. The mean air temperature was 0.7°C above normal and the area average precipitation was 0% of normal.

In November the weather was extremely wet and near normal with regards to the temperatures. The mean air temperature was about 0.5°C above normal and the area average precipitation was 157% of normal.

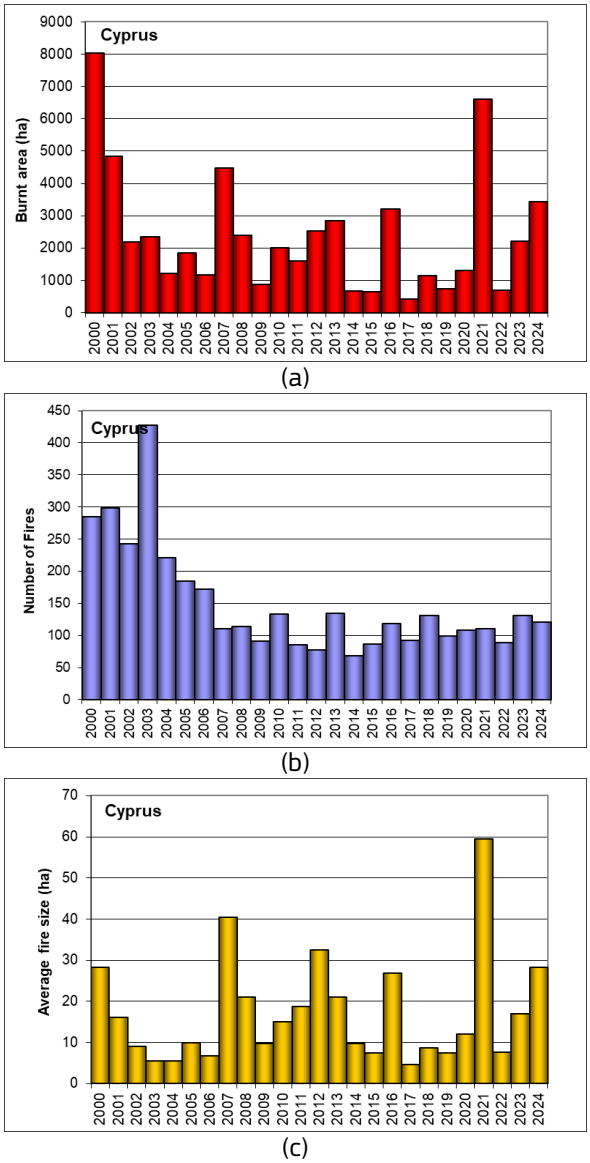
In December the weather was wet and near normal in terms of temperature. The mean air temperature was about 0.7°C above normal and the area average precipitation was 114% of normal.

Fire occurrence and affected surfaces

During 2024, Cyprus experienced 121 forest fires that burned 3425 hectares, mostly forest and other wooded land. Of these, 11 fires were over 50 ha in size.

The trends of the burnt areas, number of fires and average fire size in Cyprus for the years 2000 to 2024 are shown in **Figure 10**.

Figure 10. Burnt areas (a), number of fires (b) and average fire size (c) in Cyprus from 2000 to 2024.



Source: JRC's elaboration of the country reports for Cyprus.

Table 6. Number of forest fires and burnt areas in Cyprus from 2018 to 2024.

Year	*Number of fires*	*Burned area (ha)*		
		Total	*Forest and other wooded land*	*Agriculture and other artificial land*
2018	131	1136	997	139
2019	99	733	494	239
2020	108	1305	1002	303
2021	111	6612	4791	1821
2022	89	685	433	252
2023	131	2216	1974	242
2024	121	3425	2343	1082

Source: Ministry of Agriculture, Rural Development and Environment, Department of Forests, Cyprus.

Fire causes

Out of the 121 forest fires that occurred in Cyprus during 2024, a percentage of 16% (20 fires) were of unknown origin.

Most fires were intentionally set (48 fires) 40%.

A percentage of 8% (10 fires) is due to natural causes (lightning) and the remaining percentage, amounting to 36% (43 fires), is attributed to human negligence or accidents.

2024 major fires

Thrinia fire: The most destructive forest fire of 2024 started at 12:40 hrs of June 11, near Thrinia community, Paphos District. The blaze burned 1490 ha, covered with wild vegetation and agricultural land. Houses, farms and other infrastructure in the area were damaged. Four villages were evacuated and public roads in the area remained closed for traffic and safety purposes. The fire was supressed on the 13th of June.

Ypsonas fires: Two fires that occurred on May 9 and May 31 at Ypsonas Municipality, Limassol District, burnt an area of 257 and 411 ha, respectively.

Farmakas fire: The fire started on June 15, 2024 at around 16:45 hrs and burned 240 ha covered with forest, other wooded vegetation and agricultural land. The fire was supressed on the 16th of June.

Fire fighting means

The aerial firefighting means that were available during the 2024 fire season, consisted of 11 primary aerial assets of which, 7 light type firefighting airplanes and 4 medium type firefighting helicopters. In addition, light type helicopters were available for use as secondary aerial assets and for aerial coordination purposes.

Fire prevention activities and information campaigns

The fire prevention program consisted of various activities including, fire break construction and maintenance, fuel management and law enforcement. Preparedness and emergency response capabilities of the firefighting forces remained at the highest level, throughout the fire season. For fire detection purposes, 46 lookout stations operated throughout the fire season and air and ground patrol missions were executed. Moreover, enlightenment activities, aiming to raise public awareness, were implemented.

Injuries and loss of human lives

There were no casualties during the fire suppression operations of the year 2024.

Operations of mutual assistance

On June 11, Cyprus activated the EU Civil Protection Mechanism (UCPM), requesting assistance for the suppression of the massive fire at Thrinia community, Paphos District. Greece responded to the request with two Canadair aircrafts. Moreover, in the firefighting operation were involved 2 helicopters and 2 air tractors from the Hashemite Kingdom of Jordan, based on bilateral agreement and also 2 helicopters from the British Sovereign Base Areas.

During August 2024, Cyprus assisted North Macedonia through UCPM, in combating massive wildfires, with the deployment of the rescEU module that consisted of two firefighting airplanes, a crew of four and a ground support staff of six persons.

During October 2024, Cyprus assisted Greece, through UCPM, in combating massive wildfires at Peloponnese area, with the deployment of the rescEU module that consisted of two firefighting airplanes, a crew of four and a ground support staff of six persons.

(Source: Ministry of Agriculture, Rural Development and Environment, Department of Forests, Cyprus).

1.2.6. Czech Republic

Fire danger in 2024

Natural fires account for a quarter of all fires in the Czech Republic. They usually occur between March and September. Such fires have been caused mainly by severe drought and negligent human behaviour. These include not only fires in agricultural and open areas, such as orchards, gardens, meadows, parks, but especially forest fires.

Forest fires account for a third of natural fires. In 2022, there were 2 473 forest fires, the highest number in 10 years. In 2024, the number returned to the long-term average of 1 284. The likelihood of a forest fire is determined by natural conditions, drought, wind or even tree bark beetle infestation.

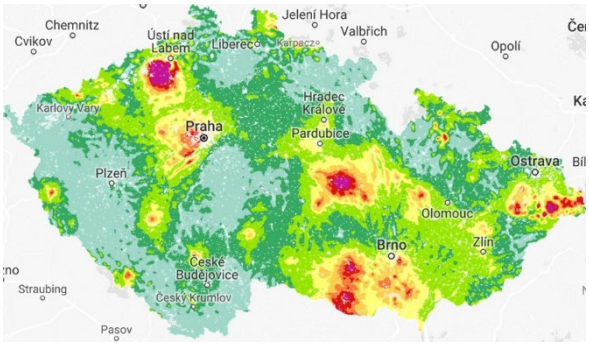
The area affected by the forest fires in 2024 was 140 ha, with damage of over CZK 10 million. During the 2024 10 people were injured in connection to forest fires. As a rule, most forest fires occur in the regions of Vysočina and Central Bohemia. The least forest fires occur in the capital city of Prague and in the Olomouc, Zlín and Pardubice regions.

Up to 96 % of forest fires do not exceed 1 ha and 94 % of forest fires are not attended by more than the first level of fire alarm. The largest fires tend to be in forests with grass, bracken, needles, leaves or peat.

The cause of forest fires can be a natural phenomenon (lightning), but half of the cases are caused by human negligence. In such cases, it is most often a failure to respect the prohibition of starting fires in the forest, their subsequent insufficient extinguishing or a discarded cigarette butt. Almost half of the causes of fires remain either unexplained or fall into the category of unproven culpability.

The most forest fires are usually started in April and in 2024 it was no exception. Depending on the time of occurrence, we can say that most fires occur in the afternoon, between 2 and 7 pm. Fires are very often concentrated according to the usual fire risk level over the country (**Figure 11**).

Figure 11. Forests with high risk level, usual situation.



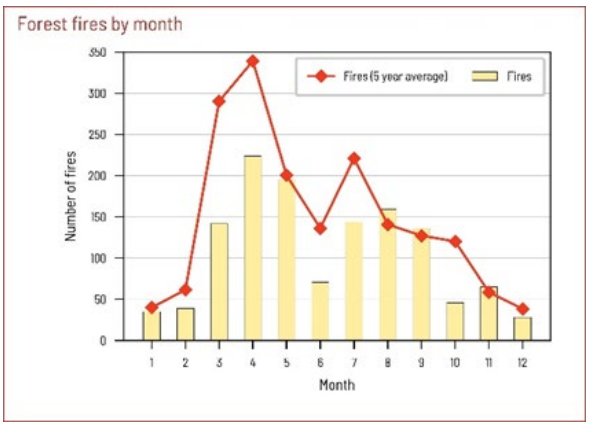
Source: Czech Academy of Sciences, project CzechAdapt.

Fire occurrence and affected surfaces

Forest fires fighting and prevention is covered by the Fire and Rescue Service of the Czech Republic.

In 2024 a total number of 1 284 forest fires were recorded and about 140 ha of forest areas were burned (compared with 2023 when the affected area was 217 ha, caused mainly by the large fire in the Czech Switzerland National Park).

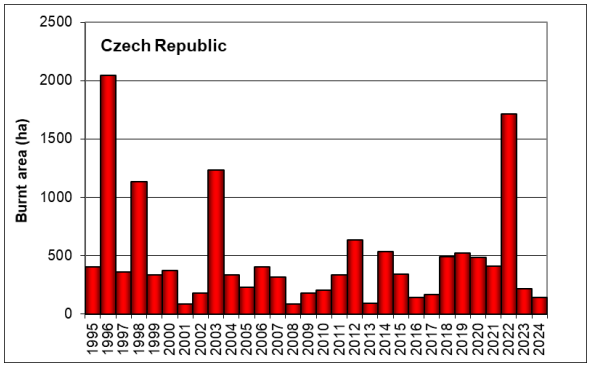
Figure 12. Forest fires by month in 2024.



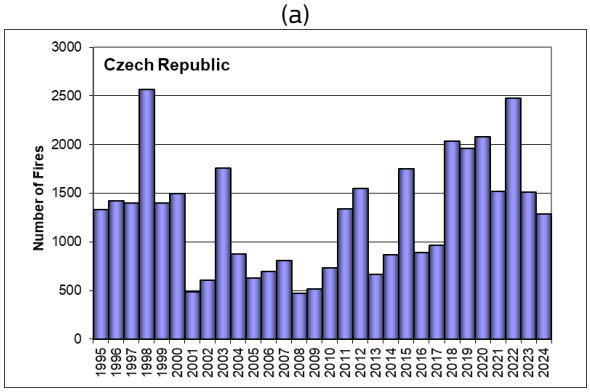
Source: Fire and Rescue Service, General Directorate, Czech Republic.

The trends of the burnt areas, number of fires and average fire size in Czech Republic for the years 1995 to 2024 are shown in **Figure 13**.

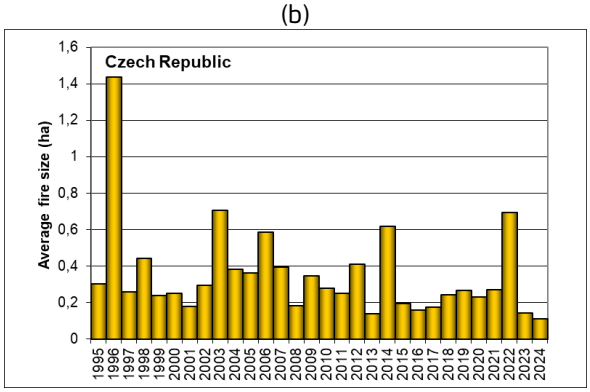
Figure 13. Burnt areas (a), number of fires (b) and average fire size (c) in Czech Republic from 1995 to 2024.



(a)



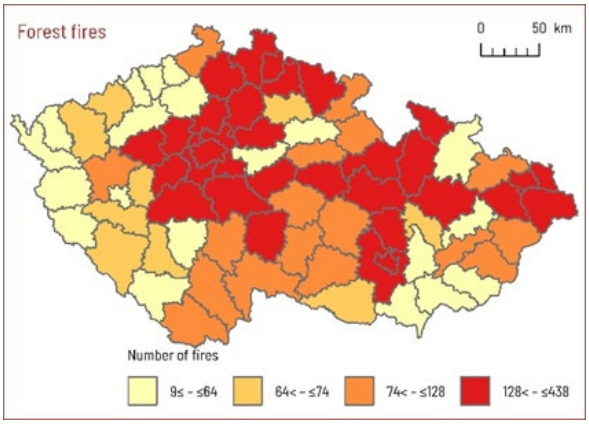
(b)



(c)

Source: JRC's elaboration of the country reports for Czech Republic.

Figure 14. Distribution of number of fires across the country in 2024.



Source: Fire and Rescue Service, General Directorate, Czech Republic.

Table 7. Number of fires, burnt area, economic losses and casualties in the Czech Republic since 2005.

Year	No. of fires	Burnt area (ha)	Damage caused m.EUR	Saved values m.EUR*	People killed	People injured
2005	626	227	0.8	4.9	0	12
2006	693	405	0.3	4.0	0	16
2007	805	316	0.7	13.3	0	20
2008	470	86	0.1	4.5	3	10
2009	514	178	0.3	6.2	0	20
2010	732	205	0.2	5.0	1	12
2011	1337	337	0.3	6.5	1	27
2012	1549	634	1.8	26.2	2	30
2013	666	92	0.2	3.0	0	7
2014	865	536	0.3	3.3	2	10
2015	1748	344	0.7	24.7	1	33
2016	892	141	0.2	7.8	0	15
2017	966	170	0.3	3.4	2	9
2018	2033	492	0.6	10.5	0	35
2019	1963	520	0.7	12	0	31
2020	2081	484	0.7	10	2	21
2021	1517	411	0.3	7.1	0	15
2022	2473	1715	2.1	12	0	63
2023	1512	217	0.6	7.8	0	22
2024	1284	140,4	0.4	5.2	0	10

*refers to the amount that would have been lost without intervention.

Source: Fire and Rescue Service, General Directorate, Czech Republic.

Deployment of aerial resources

The Aerial firefighting service (AFS) is provided year-round by the Aerial Service of the Police of

the Czech Republic (AS PCR) with two helicopters with 900 litre helibuckets. For the summer period of 2024, beyond the capacity of the AS of the Czech Republic, the AFS has been provided by private operators in cooperation with the Ministry of Agriculture and the Ministry of Environment with 2 UH-60A Black Hawk helicopters with a firefighting capacity of 3 410 litres. The provision of this service is co-financed by the European Commission, which finances 75% of the costs in the form of a grant. The helicopter primarily dedicated to aerial firefighting in forests under the responsibility of the Ministry of the Environment (which are mainly National Parks) was available from 21 June to 15 September 2024. The helicopter primarily dedicated to aerial firefighting in forests under the responsibility of the Ministry of Agriculture was available from 14 August to 15 September 2024. The aim is to cover the period when the risk of wildfires is the highest throughout the year.

In the period January-September the AS PCR was deployed 8 times. A total of 236 drops were carried out, mainly at forest fires in the Central Bohemia, South Moravia, South Bohemia and Vysočina regions. UH-60A Black Hawk helicopters were deployed in the Czech Republic 7 times and carried out a total of 81 drops at forest fires in the Ústí nad Labem Region, the Capital City of Prague and regions of Vysočina and Pardubice. The UH-60A Black Hawk helicopter was also deployed 1 time at a fire in an industrial warehouse, Ostrava, made a total of 286 drops and flew for 32.5 hours.

Operations of mutual assistance

One helicopter was deployed to extinguish forest fires in Greece, making a total of 49 drops.

Fire causes

The main causes for the forest fires over the last ten years are:

- Negligence 50%
- Human caused 36%

Half of the cases are caused by human negligence. In such a case, it is most often a matter of disrespecting the ban on starting fires in the forest, their subsequent insufficient extinguishing, or a discarded cigarette butt. The other half of the causes remain unexplained or fall into the category of unproven culpability.

Injuries and loss of human lives

There were no casualties but 10 people were injured due to forest fires in 2024. In total, there were 254 people injured and 5 people killed in the last 10 years due to forest fires.

(Source: Fire and Rescue Service, General Directorate, Czech Republic).

1.2.7. Estonia

Fire occurrence and affected surfaces

In 2024, 25 forest fires and wildfires were recorded, burning 16.58 ha in total.

Table 8. Fires in Estonia 2010-2024.

Year	*Num-ber*	*Area (ha)*			
		Forest	*Non-forest*	*Total*	*Average*
2010	30	20.7	4.1	24.8	0.8
2011	24	15.5	3.8	19.3	0.8
2012	5	2.5	-	2.5	0.5
2013	15	33.4	45.1	78.5	5.2
2014	91	67.0	9.8	76.8	0.8
2015	67	82.7	0.4	83.1	1.2
2016	84	117.7	5.2	122.9	1.5
2017	61	24.6	8.4	33.0	0.5
2018	230	418.5	11.0	429.5	1.9
2019	143	56.5	12.7	69.2	0.5
2020	24	119.8	70.7	190.5	7.9
2021	32	32.3	0.2	32.5	1.0
2022	26	19.8	-	19.8	0.8
2023	33	74.6	-	74.6	2.3
2024	25	16.3	0.3	16.6	0.7

Source: Estonian Environment Agency.

The fire season 2024 was the second lightest since the reporting started in 2000 and it was similar to the 2022 one.

The first forest fire in was recorded in March and the last one in September. The largest forest fire of the year occurred in May with an area of 3.04 ha and was one of the only five fires in 2024 with an area larger than 1 ha.

The burnt area, number of fires and average fire size in Estonia for the years 2000-2024 are shown in **Figure 15**.

Fire causes

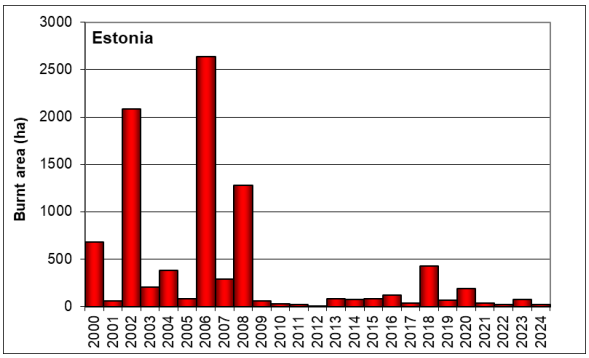
In 2024, 17 of the 25 fires were of unknown origin, one was due to lightning and the rest were of human origin; details are shown in **Table 9**.

Table 9. Fire causes in Estonia in 2024.

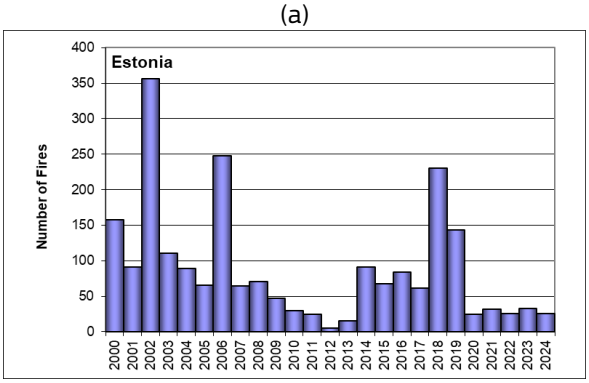
Cause code	Cause	Count
100	Unknown	17
201	Lightning	1
303	Vehicles	2
411	Vegetation management	1
414	Recreation	3
422	Cigarettes	1
Total		25

Source: Estonian Environment Agency.

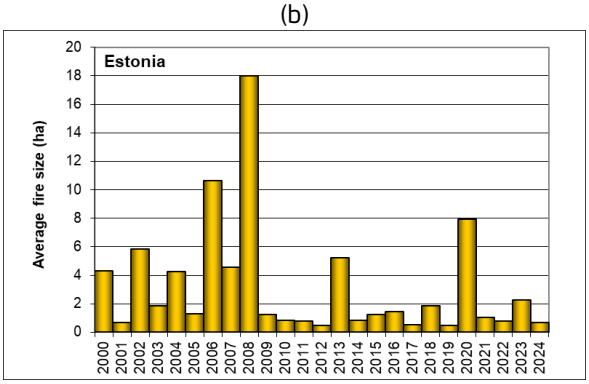
Figure 15. Burnt areas (a), number of fires (b) and average fire size (c) in Estonia from 2000 to 2024.



(a)



(b)



(c)

Source: JRC's elaboration of the country reports for Estonia.

Comment about the data collection routine in Estonia.

The Estonian Environment Agency is involved in two ways:

1. We carry out the on-site measurement of the forest fire areas (results are used in GHG reporting for LULUCF sector). We do it next spring (so this spring we measured the forest fire areas of 2024). We select for the field-work areas bigger than 0,1 ha but measure the burnt area on-site even if it happens to be less than 0,1 ha. Initial list of forest fires we get from open data source of Estonian Rescue Board. Until the year 2019 we had an access to the emergency call centre logs (it was possible to assess better what was burning and what was the cause). It provided the opportunity to include small-size forest fires as the result of the desktop analysis exercise. From the data you can see that this is not anymore the case for since 2020. Despite our efforts we have not been granted official access to rescue call logs until now.
2. We compile national statistics on forest fires and publish those in our Forestry Statistics Yearbook.

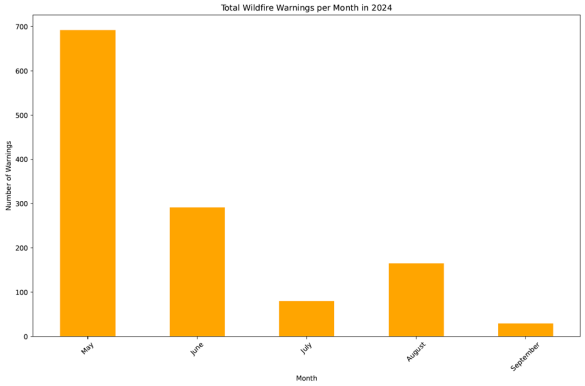
(Source: Estonian Environment Agency, Estonia).

1.2.8. Finland

Fire danger in the 2024 fire season

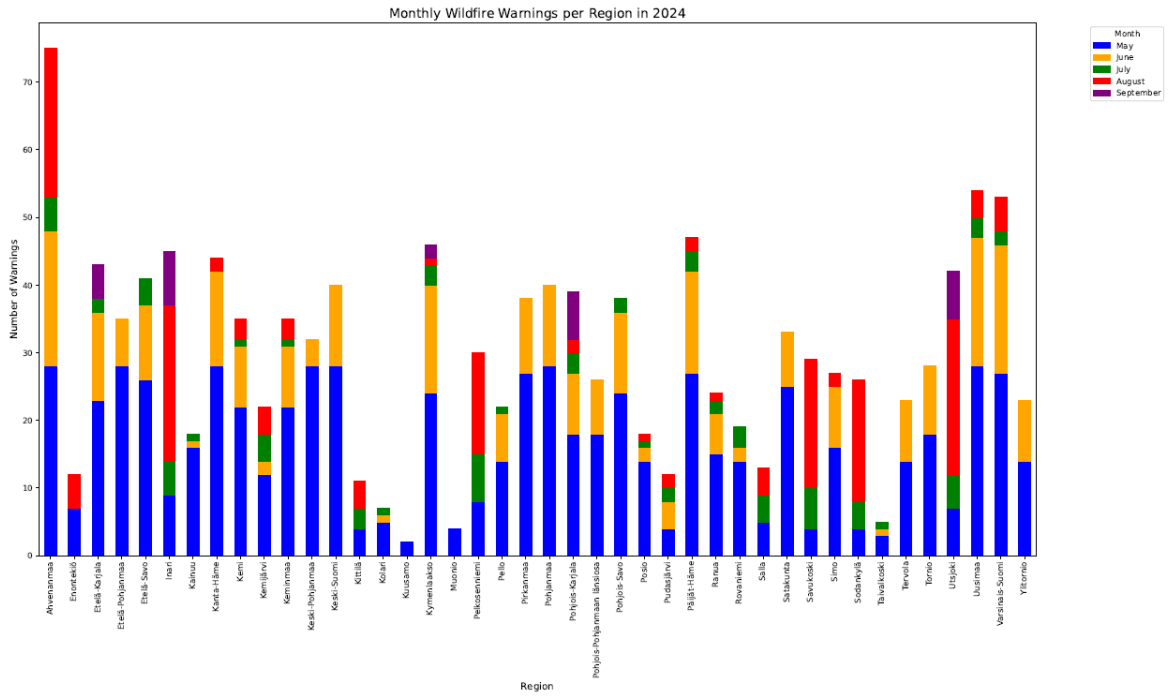
According to the Finnish Meteorological Institute, the forest fire warning season in summer 2024 started later than usual and continued later than usual in autumn. The month of May was dry and warm. From June to August, there were frequent showers with an average amount of lightning. The summer saw record high temperatures, with the temperature being average from June to August (70 days over 25 °C). Inari (in Lapland) set a record for the number of wildfire warning days. Fire warnings (number of Forest fire warnings) during the year 2024 is presented in **Figure 16** and **Figure 17**.

Figure 16. Wildfire warnings per month in 2024 in Finland.



Source: Ministry of the Interior, Finland.

Figure 17. Monthly wildfire warnings per Region in 2024 in Finland.



Source: Ministry of the Interior, Finland.

Fire fighting means

- Finnish military force NH 90 helicopters were available to the forest fire extinguish.
- More co-operations between other authorities like border guard.
- Forest fire aerial officer education for fire officers continues.
- Goal to improve HNS (Host Nation Support) systems for forest fires.

— Finnish Ground Forest Fire Fighting using vehicles (GFFF-V) module, referred to as FI GFFF-V, was completed.

— Fire & rescue services (strong volunteer fire brigade's force, 15 000 volunteers also in rural are-as), co-operation between rescue services (for example Arctic Rescue Team).

— New innovative equipment (harvesting machines with water tank and hoses etc.)

— Work continued in potential scooping areas (nationwide).

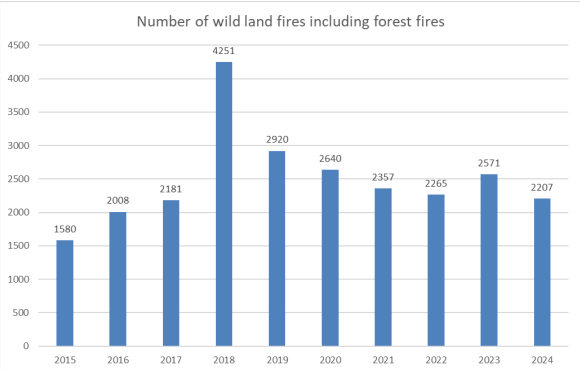
Fire occurrence and affected surfaces

The amount of forest fires in 2024 in Finland was normal average level.

There were 2 207 wildfires in Finland last year and 1 260 of them were reported as forest fires. The total burned area was ca. 510 ha of which ca. 390 ha forest area. The average burned forest area per fire was 0.31 ha.

The trends regarding the burnt areas, number of fires and average fire size in Finland are shown in **Figure 18** and **Figure 19**.

Figure 18. total number of wild land fires including forest fires in Finland 2015-2024.



Source: Ministry of the Interior, Finland.

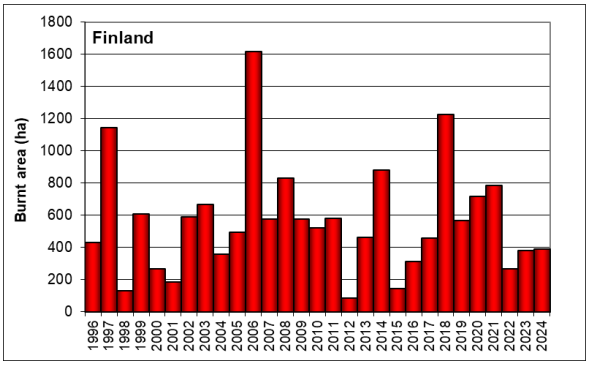
Fire prevention activities and information campaigns

— Legislation aims to reduce wildfires. It is prohibited to make an open fire during a wildfire warning.

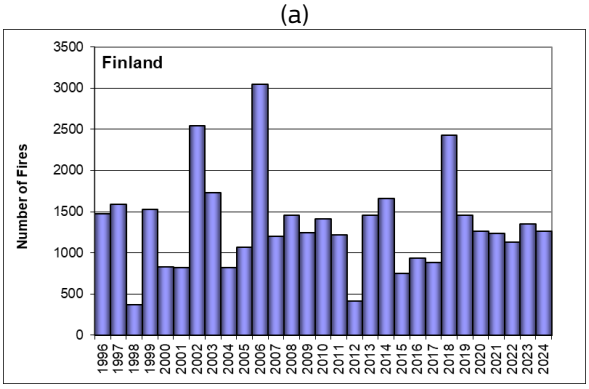
— Grass fire warnings & forest fire warnings were combined into a wildfire warning from the start of the 2024. Authorities and citizens were informed of the changes.

— More co-operation with other authorities and institutes like Finnish meteorological institute.

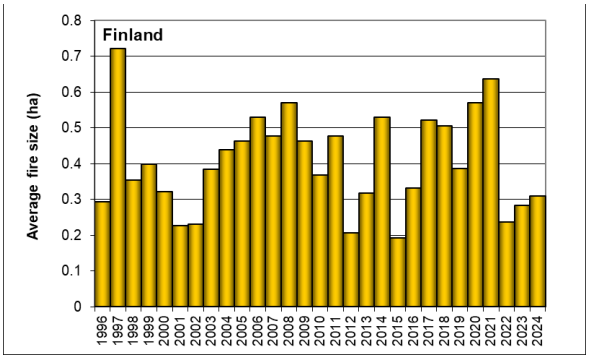
Figure 19. Burnt areas (a), number of fires (b) and average fire size (c) in Finland from 1996 to 2024.



(a)



(b)



(c)

Source: JRC's elaboration of the country reports for Finland.

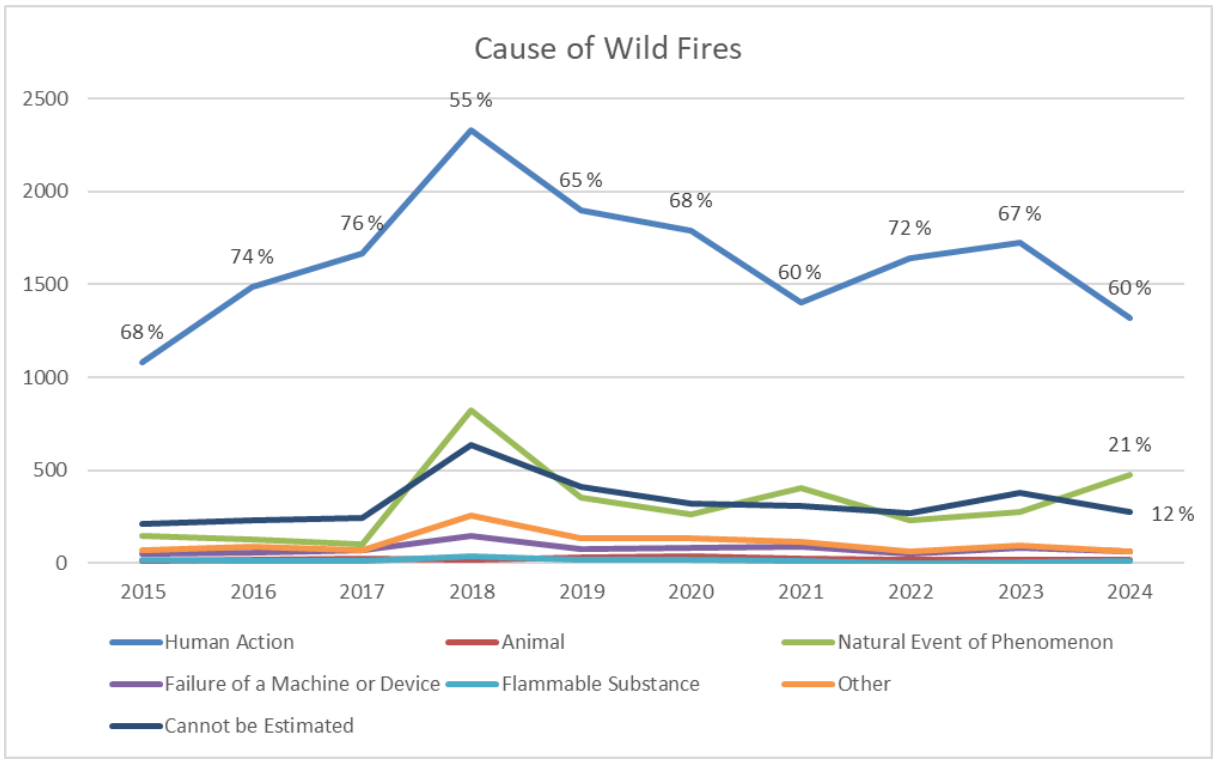
Figure 20. Wildfire with active ground flames in Finland.

Source: Timo Nyholm, Rescue Department of Lapland

Fire causes

The most common reason which causes wildfires in Finland was various human actions. Human action has been the cause of wildfires in about 65 percent of cases during the last years (60 % of wild-fire cases in 2024). The second biggest reason in 2024 was nature in 21 % of all wildfire cases (average is 13 %). The reason was unknown in 12 % of the cases. The rescue authorities have estimated that approximately 42 percent of wildfires caused by human action in 2024 are caused by negligence, 21 % intentionally and 20 % by accident.

Figure 21. Causes of wildfires in Finland from 2015 to 2024.



Source: Ministry of the Interior, Finland.

Injuries and loss of human lives

Totally one person was seriously injured and 15 persons slightly injured in the wildfires in 2024. No one died in the wildfires in 2024. Seven fire fighters got injured during wildfires in 2024. Injured people mainly got burns in fires.

Some of the wildfires caused damages to the buildings and other property, the average loss in 2024 was about 2 800 euros (varying between 1-40 000 euros). A few wildfires were caused by fires from buildings or vehicles.

Operations of mutual assistance

Information sharing between neighbour countries and EU.

Climate change

In the future, the forest-fire risk is expected to increase in Finland and elsewhere in Northern

Europe due to global warming. However, so far, annual burned areas in Finland have not increased noticeably.

Research activities aimed at improving fire management

— Some research and development projects were underway in 2024.

— The development of forest fire extinguishing activities will continue, through for example devel-opment work related to the use of aircraft.

— Other development goals in future:

- Northern European co-operation (Aerial Forest fire fighting with rescEU forces continues).
- ensure early warning systems.
- co-operation with rescue services.
- new innovative solutions and equipment.

Figure 22. Fire fighting with military force helicopter in Finland.

Source: Timo Nyholm, Rescue Department of Lapland

(Source: Ministry of the Interior, Finland).

1.2.9. France

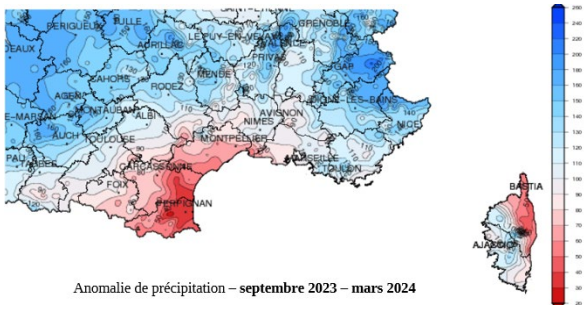
Fire danger in the 2024 season

The year was characterized by:

- a very wet winter season, allowing soil water to recharge across almost all of France, with the notable exception of the Occitanie coast and Haute-Corse. In the Pyrénées Orientales and Aude, the lack of rainfall over the past two years has caused significant vegetation mortality, including Mediterranean shrubs that are normally drought-resistant.
- a hotter-than-normal summer, with a heatwave peaking in mid-August. The season was very wet across the northern and western three-quarters, and more unevenly so in the Mediterranean. It was also not very windy in the Mediterranean, except for the Tramontane, with an exceptional episode lasting about ten consecutive days in September.

This resulted in a fairly limited risk outside the Mediterranean coast, where irregular rainfall concentrated the sensitivity of vegetation in space and time. After a rather slow start of the season, vegetation began to be sensitive in mid-July, first in Corsica and on the Provence-Alpes-Côte d'Azur (PACA) coast, before shifting to the Occitan coast towards the end of July. The peak of sensitivity was reached around mid-August at the time of the heatwave, with sensitivity beginning to rise towards the hinterland.

Figure 23. Precipitation anomaly in France.



Source: Authors of the country report for France.

New mixed rains brought a partial respite and then an end to the season at the very beginning of September in PACA and Corsica and at the end of September on the Occitan coast.

Figure 24. Example of mortality on Mediterranean shrubs in the Pyrénées-Orientales (France).

Source: Authors of the country report for France.

Fire occurrence and affected surfaces

The final balance (after correction of certain errors in the databases) is 6 869 ha affected by fire in France from a total of 10 821 fires (5 578 ha from 9 940 fires in mainland France alone). This is significantly below average, with 85% of the usual number of fires and only 40% of the usual surface area (indicating fires were both fewer and smaller than usual). Apart from overseas territories where other vegetation fires exceed the average (probably due to better database filling), this observation applies to all major regions and all types of fires.

The detailed distribution by zone and by type of fire can be found in **Table 10** and **Table 11**.

In **Figure 25**, showing the evolution over the last 19 years, 2024 represents a significant low point in forest fire activity: (i) the 2nd least burned year after 2013 in total area; (ii) the least burned year if only forest fires are considered.

Table 10. Burnt area in hectares in France.

	2024			Adjusted mean 2006-2021*		
	Forest fire	Other vegetation fire	Total	Forest fire	Other vegetation fire	Total
South-East	2778	1243	4021	7750	1975	9726
South-West	114	482	596	1023	902	1925
Rest of mainland France	56	904	961	1075	2998	4073
Overseas territories**	36	1255	1291	579	105	684
Total France	**2985**	**3884**	**6869**	**10427**	**5981**	**16407**

Source: Authors of the country report for France.

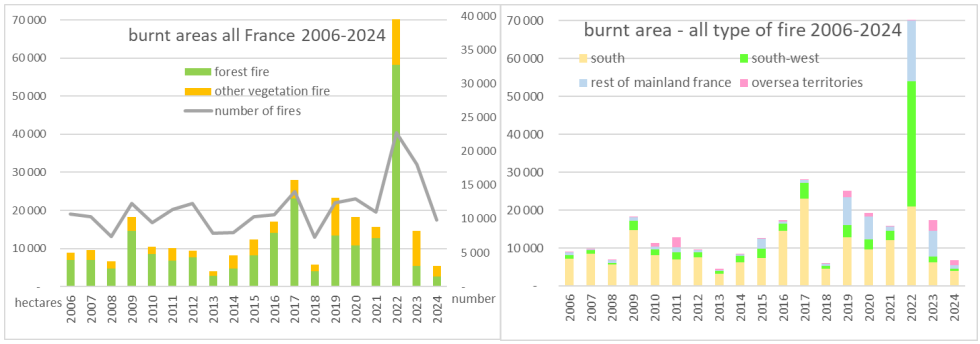
Table 11. Number of fires in France.

	2024			Adjusted mean 2006-2021*		
	Forest fire	Other vegetation fire	Total	Forest fire	Other vegetation fire	Total
South-East	1188	4309	5497	1843	7014	8857
South-West	98	961	1059	482	879	1361
Rest of mainland France	166	3218	3384	362	1721	2083
Overseas territories**	17	864	881	149	129	278
Total France	**1469**	**9352**	**10821**	**2835**	**9743**	**12578**

* Taking into account the unfilled year province by province; ** Oversea territories = Réunion, Mayotte, Guyane.

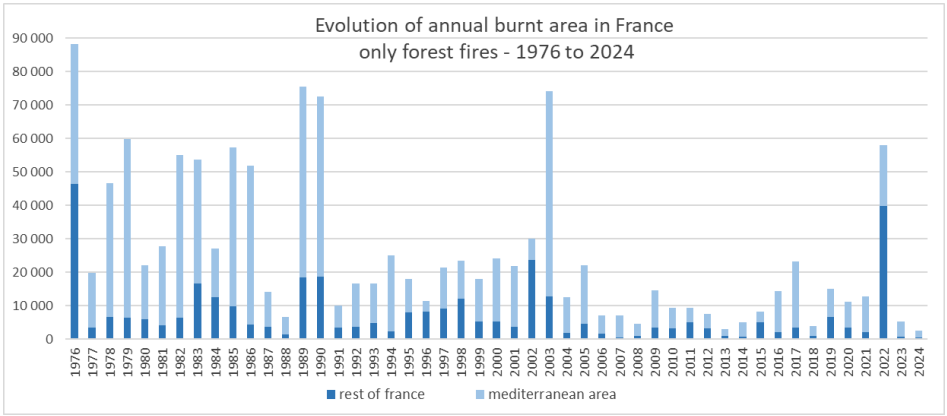
Source: Authors of the country report for France.

Figure 25. Burnt areas in France by vegetation type and type of fire, 2006-2024.



Source: Authors of the country report for France.

Figure 26. Burnt area evolution comparing Mediterranean area with rest of France.



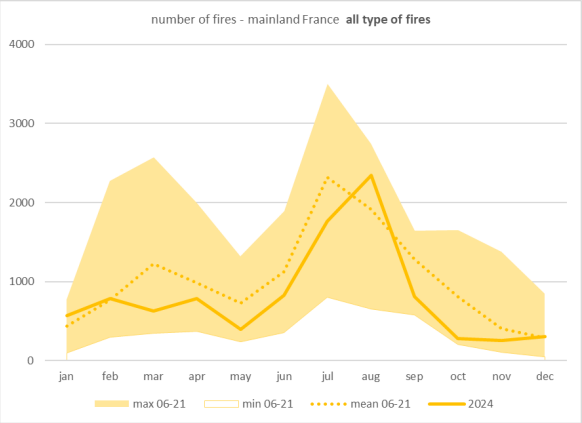
Source: Authors of the country report for France.

If we look at **Figure 26**, which concerns only forest fires, taken from less detailed but older databases, this record position is confirmed.

Seasonal distribution:

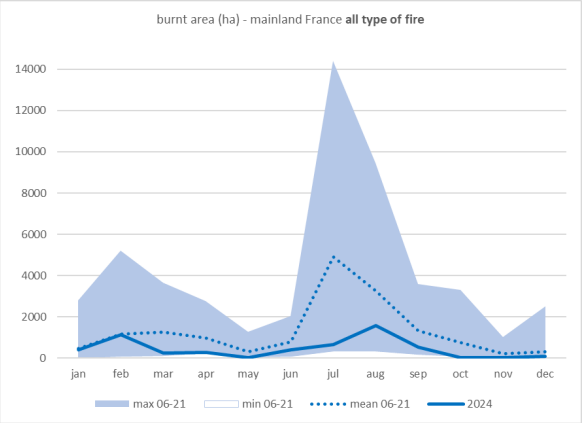
In 2024, the number of fires is below average throughout the year, with the exception of August. As in 2023, the usual peak in March is surprisingly shortened. The burnt area remains well below average all year.

Figure 27. Monthly numbers of fires in France in 2024.



Source: Authors of the country report for France.

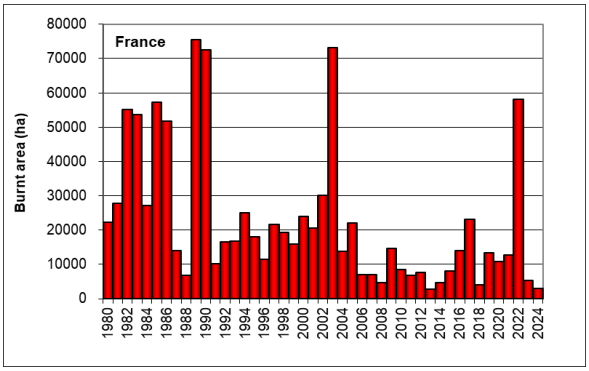
Figure 28. Burnt area in France in 2024.



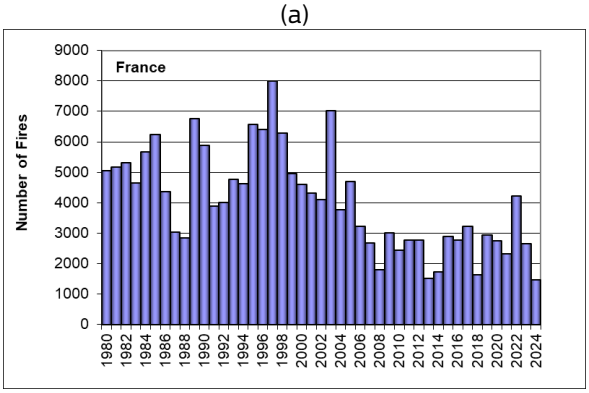
Source: Authors of the country report for France.

The trends of the burnt areas, number of fires and average fire size in France since 1980 (forest fires only) are shown in **Figure 29**.

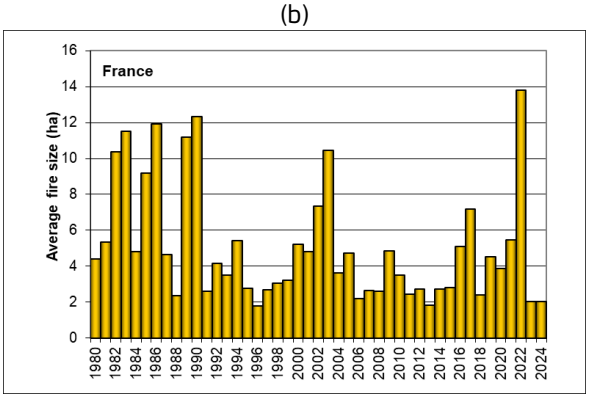
Figure 29. Burnt areas (a), number of fires (b) and average fire size (c) in France from 1980 to 2024.



(a)



(b)



(c)

Source: JRC's elaboration of the country reports for France.

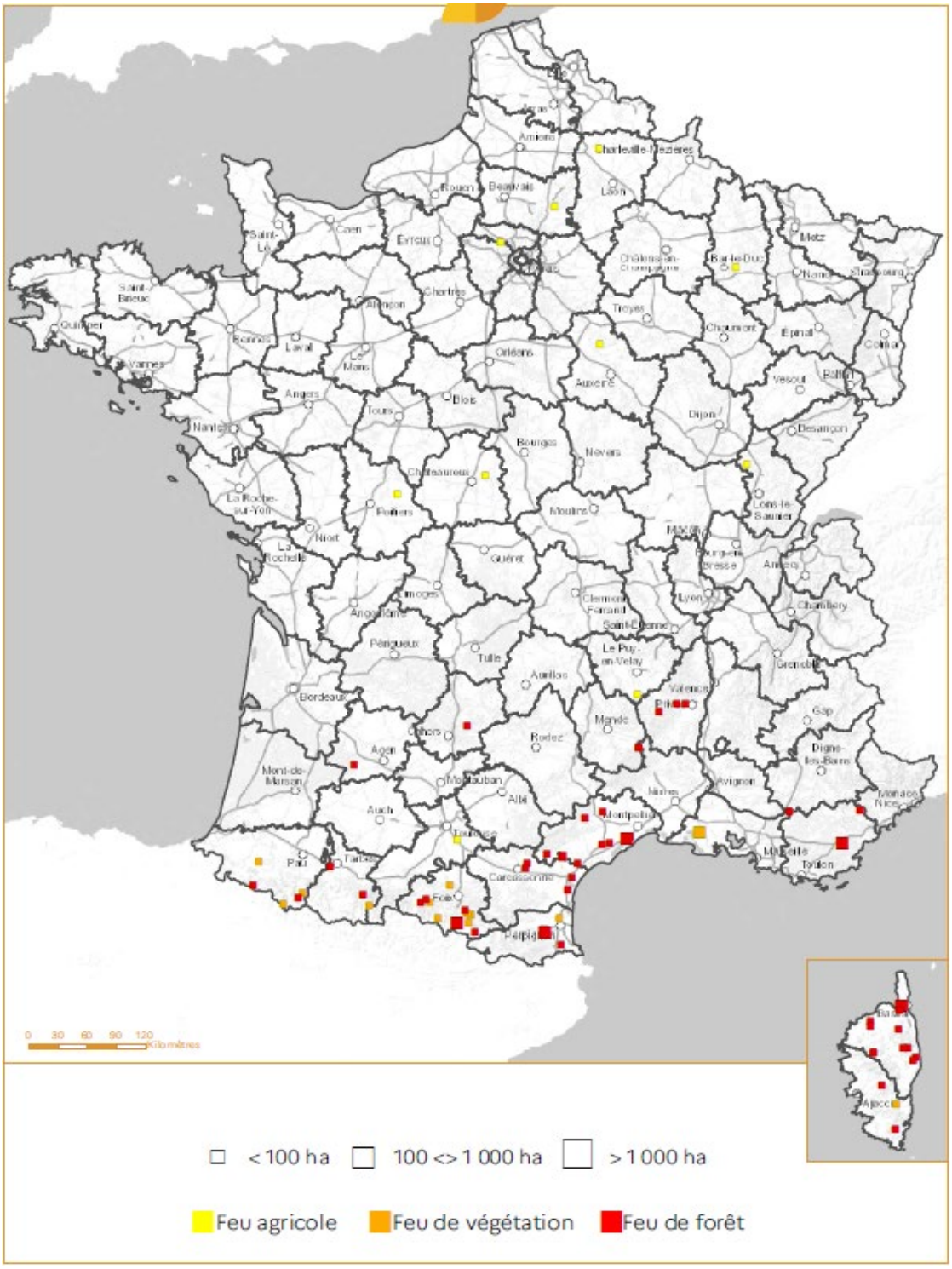
Large fires:

The fact that fires are generally smaller than usual is reflected in the low number of notable fires. Only 5 forest fires of more than 100 ha have been recorded (compared to more than a dozen per year on average): 2 in winter and 3 in summer (all in the Mediterranean), the most significant of which was the one in Gigean (Hérault department) on August 18, which destroyed 310 ha.

Spatial distribution of the largest fires (greater than 10 ha) by type of fire:

Figure 30 shows that the distribution of notable fires is quite concentrated, mainly on the Pyrenees range for winter fires and on the Mediterranean coast for summer fires.

Figure 30. Spatial distribution of fires greater than 10 ha by fire type in France.



Source: Authors of the country report for France.

Southeastern France:

Even though there was more activity than in other regions of France, the Mediterranean region experienced significantly lower activity than average in terms of both the number of fires and the area burned.

The largest fire occurred in the Hérault department (fire in Gigean on August 18th – 310 ha), in a coastal forested area. It spread completely through this area and reached urban-forest interfaces, where fortunately, the damage was limited.

Figure 31. Fire perimeter on satellite image in France.

Source: Authors of the country report for France.

Figure 32. Overview of affected vegetation at the edge of the wildland-urban interface. Saved buildings are visible, as well as some burnt structures (France).

Source: Authors of the country report for France.

The second-largest fire occurred in the Var department (Vidauban fire on June 11 – 300 ha). This fire was surprising due to its early timing (it's the second-largest fire for the first half of June since 1973, the largest dating back to 1986). It ignited at the beginning of a massif that has historically been affected by record fires (two fires exceeding 5 000 ha in summer 2003). Despite its initial speed and erratic behaviour, rescue services were able to stop it before it reached such a scale, thanks to the worst summer conditions not yet having been reached.

Figure 33. Vidauban fire (France).

Source: Authors of the country report for France.

Figure 34. Damage to vegetation in France.

Source: Authors of the country report for France.

Figure 35. Comparison of the outline of this fire in France (in black) with historical fires on the same massif.

Source: Authors of the country report for France.

Southwest France:

The year 2024 was particularly calm in the South-West of France, in terms of both fire outbreak and burned area. The annual report includes 1 059 fires that destroyed 596 hectares of vegetation, including 98 forest fires burning 78 hectares. There were 7 fires of more than 20 hectares, mainly winter pastoral fires located in the Pyrénées-Atlantiques, which represent about 53% of the burned areas of the neo-Aquitaine territory.

Analysis of fire outbreaks:

For the majority of the year, the number of fires remains relatively low and is even below the 2006-2023 averages. Exceptionally, the months of January, August, and December experience a higher-than-average number of fires. Despite this relatively calm year, two departments once again saw a significant increase in their fire starts compared to their annual averages (2006-2023):

- +71% in the Charente department,
- +126% in the Corrèze department.

This increase reflects a continuous improvement in fire data collection by firefighters in Southwest France.

Analysis of burnt areas:

In terms of burned areas, 2024 also turned out to be particularly calm. Values were slightly above average in February but well below average for the other months of the year. This observation stems from low wildfire activity in the Landes de Gascogne massif, an area usually prone to large-scale fire outbreaks.

The biggest fire recorded this year in Nouvelle-Aquitaine was on February 2, 2024, in the commune of Laruns (Pyrénées-Atlantiques), covering an area of 142 hectares. This was a controlled burn that overflowed.

Fire causes

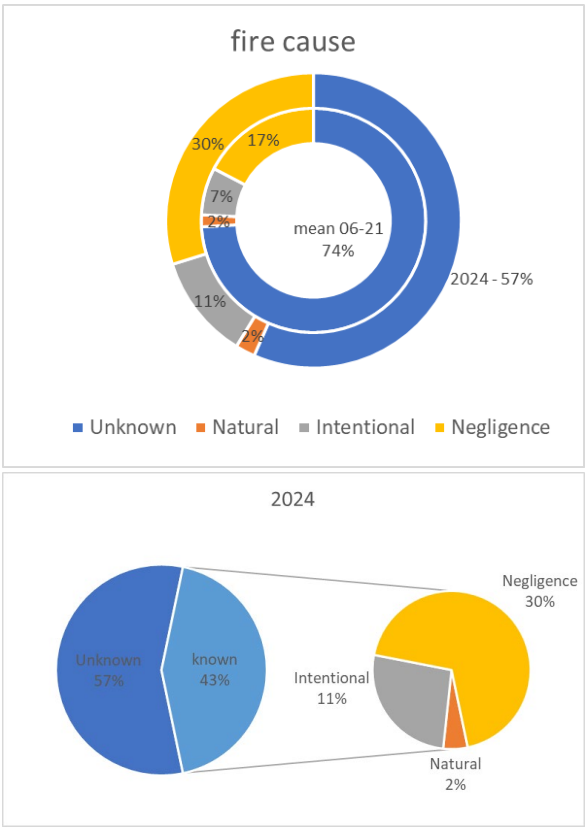
4 650 fires, or 43% of the total, have a known cause. This percentage, steadily increasing since some years, is higher than the 2006-2021 average of 26% of fires with a known cause and is even the best level of knowledge since the start of the national database in 2006. This reflects progress in the search for causes thanks to a proactive policy.

Of those fires with a known cause:

- 232 were attributed to a natural cause (lightning), 2% of all fires or 5% of fires with a known cause, which is slightly lower than the average (2006-2021) of 7% of fires with a known cause;
- 3 192 were accidental in nature, amounting to 30% of all fires or 69% of fires with a known cause, which is close to the average (2006-2021) of 67% of fires with a known cause;

— 1 226 fires were deliberate, i.e. 11% of all fires or 26% of fires with a known cause, which is at the same level of the average (2006-2021) of 26% of fires with a known cause.

Figure 36. Fire causes in France in 2024.



Source: Authors of the country report for France.

Fire fighting means

Land resources

To support the departmental fire and rescue services (SDIS), the general directorate of Civil Protection can call on a total of 51 preventive columns (3 500 firefighters and over 700 fire fighting vehicles), in addition to the resources deployed within the framework of the Olympic and Paralympic Games. Over the course of the summer, the number of reinforcements involved in the operational system is close to 11 000 man-days. Despite the Olympic and Paralympic Games, the mobilization of the SDIS, the principle of national solidarity, the cornerstone of operations during the summer control campaign, was not compromised in 2024. Provence, and more specifically Languedoc-Roussillon, required the deployment of 25 reinforcement columns.

In addition, 750 rescue engineers from military civil protection units were also involved in the summer operations.

As in 2023, France hosted several European modules as part of the ERCC-led principle of anticipation and knowledge exchange. From June to the end of August, forest fire groups with or without firefighting equipment (GFFF-UV or GFFF), from Austria, Greece, Italy, Romania, Slovenia and Slovakia were integrated into the operational systems of the SDISs in the southern zone.

Air resources

Comprising 12 Canadairs, 8 DASH and 3 Beech aircraft (2 of which are equipped with optronics), the national fleet has been bolstered by the rental of helicopters (6 heavy and 4 light, working in pairs) and 6 water-bombing aircraft (Air-Tractor).

In 2024, the national fleet of bombers with 39 aircraft has enabled the deployment of 2 permanent detachments of 9 aircraft (Bordeaux and Ajaccio).

Between July 2 and September 17 2024, 70 armed air watch (GAAR) were coordinated by the national coordination centre from Nîmes. 5 flew over the South-West quarter (Aquitaine and Midi-Pyrénées) and the majority concerned the Mediterranean coast. The GAAR brought some forty fires under control before they reached 5 hectares in size, despite adverse weather and drought conditions during 550 flight hours. In total, as part of the national system, the planes of the national fleet carried out 1 600 drops during 1 300 flight hours.

On the other hand, thanks to a finer mesh, the pre-positioning of helicopters at the heart of risk areas is the reason for the reduction in intervention times. The water bombing helicopters carried out 475 flight hours and 1 685 drops. The light aircraft were deployed on 10 sites and several GAAR circuits in the Landes

de Gascogne massif, representing 48 drops for 200 flight hours.

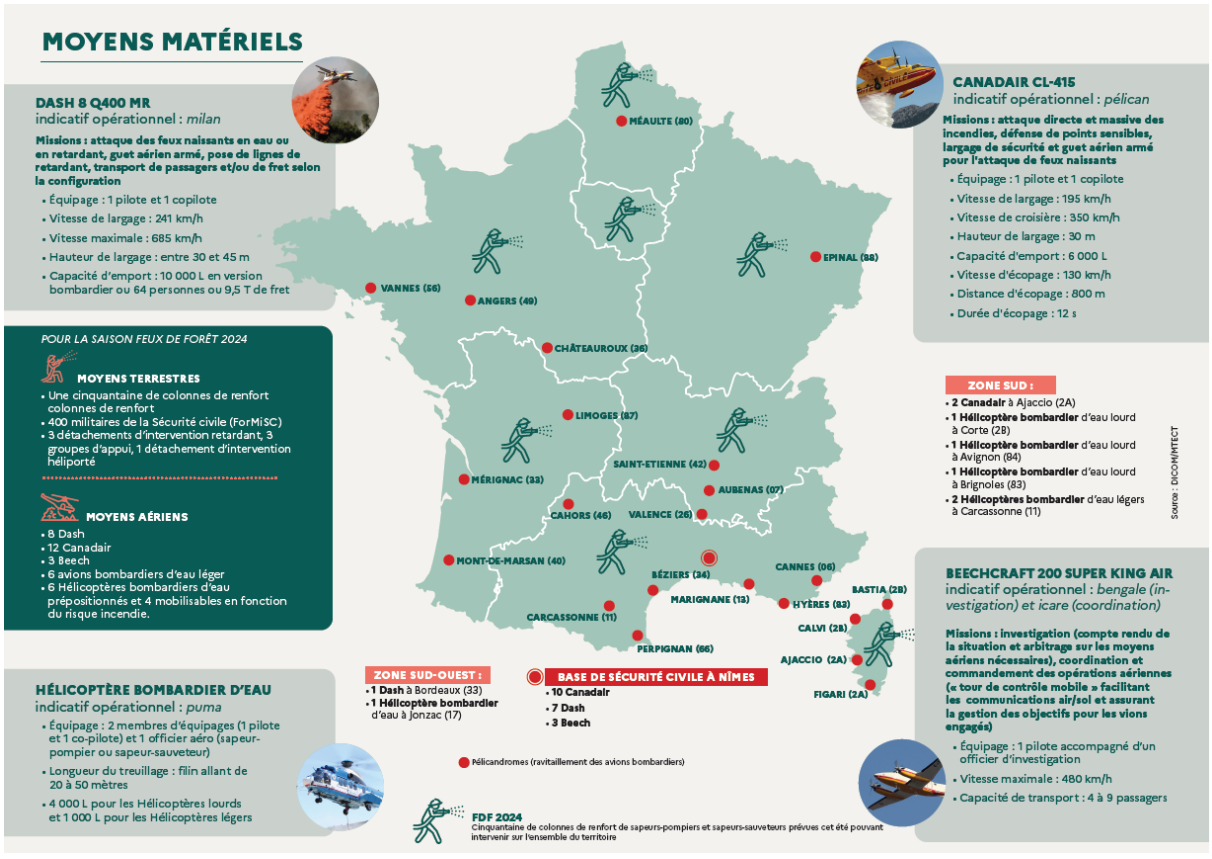
Other resources

To strengthen hazard analysis and anticipation capabilities, the expert professional weather service deployed in the Southern zone for many years has been extended to the Southwest zone in 2023 and the West zone in 2024, thus covering 55 departments. It allows determining the departments where the risk of forest fires will be greatest.

In accordance with the commitment made by the President of the Republic in his speech on October 28, 2022, the material resources of the SDISs have been strengthened. Drones and video surveillance cameras have been deployed. The end of 2024 saw the first deliveries of vehicles ordered in 2023. By 2027, 1 083 vehicles (forest firefighting tankers, light off-road vehicles, etc.) will be delivered throughout mainland France and overseas, including more than 300 between 2024 and 2025.

Finally, the water bombing aircraft were able to rely on a national network of pélicandromes (Canadair), extended to 21 stations.

Figure 37. Material resources in France.



Source: Authors of the country report for France.

Impact on human lives

The year 2024 was marked by two civilian deaths (fall from a cliff and heart attack) in February and April, following escaped prescribed fires.

Political consequences

Two strategic documents of national scope were the subject of significant work in 2024.

The 3rd National Climate Change Adaptation Plan (PNACC-3)

Published on March 10, 2025, the PNACC-3 constitutes France's roadmap for adapting our society to the already visible and future effects of climate change: heatwaves, forest fires, droughts, floods, coastal erosion, biodiversity loss, etc. This plan is based on the Reference Warming Trajectory for Adaptation to Climate Change (TRACC), a shared national climate scenario designed to guide all public adaptation policies.

Through 52 measures, the PNACC aims to prepare France for an anticipated global warming of +4°C by 2100 by strengthening the country's resilience to the effects of climate change.

Among these measures, measure 7, "Preparing for the expected increase in forest and vegetation fires", seeks to prevent the risk of forest and vegetation fires, build resilience, and limit damage in case they occur.

A national strategy for the defense of forests and non-wooded areas against fires

Provided for in Article 1 of the law of July 10, 2023, mentioned in the PNACC-3 and published on June 5, 2025, the strategy was the subject of extensive consultation during the first half of 2025. It aims to define major principles and major objectives to deal with the foreseeable evolution of risk due to climate change in the short, medium and long term.

It defines:

- four fundamental principles:
    1. Principle of a comprehensive approach involving a diversity of stakeholders and territories
    2. Principle of continuous development and coordinated knowledge sharing
    3. Principle of anticipation
    4. Principle of resilience to the consequences of climate change
- three major objectives:
    1. Manage territories in a resilient manner to prevent fires from breaking out
    2. Reduce burned areas
    3. Limit the human, material, environmental, and economic consequences

By bringing together all stakeholders in a coherent collective approach, the strategy will make it possible to:

- Better prevent fires in forests and non-forested areas;
- Reduce the number of fires;
- Control outbreaks and limit the area burned;
- Better protect people, property, and the environment from fires;
- Contain the impact of fires on natural areas, which are resources, carbon sinks, and biodiversity reserves, and play an important social role;
- Adapt the approach and means of prevention, protection and control to address the foreseeable consequences of climate change on fire risk.

(Source: GIP-ATEGERI; Office National des Forêts; Ministère de l'Intérieur, Direction de la sécurité civile et de la gestion des crises; Ministère de l'Agriculture et et de la Souveraineté alimentaire, Direction en charge de la forêt, France).

1.2.10. Germany

Fire occurrence and affected surfaces

According to the data supplied by the authorities, in 2024 a total of 563 forest fires were reported in Germany, corresponding to a burnt area of 334 ha (241 ha in deciduous forests and 93 ha in coniferous forests). The number of fires and the total burnt area were around half and one fourth of the respective values recorded in 2023.

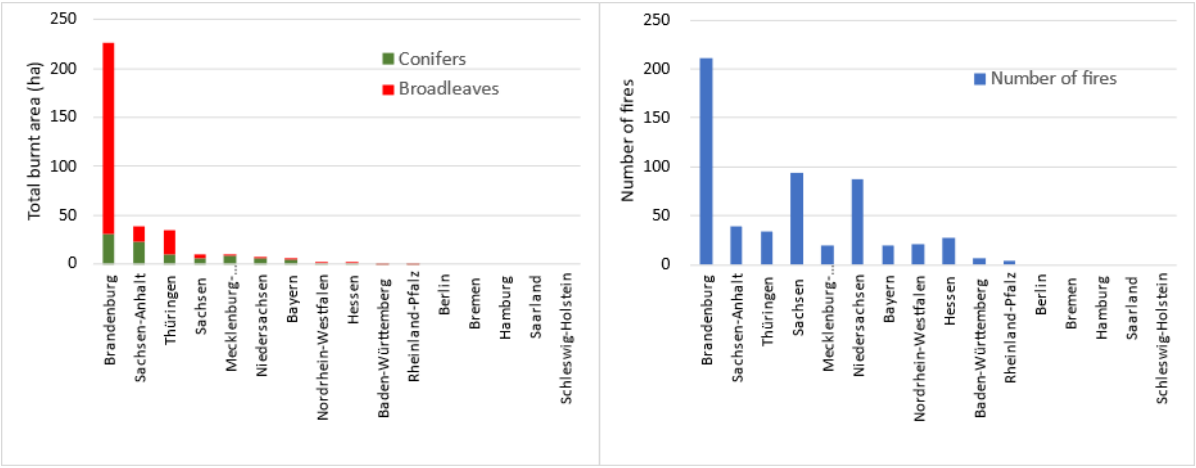
In 2024 the most affected province (Land) in terms of both numbers of fires and total burnt area was Brandenburg, amounting to nearly two-thirds of the total burnt area recorded in the year as a result of heavy losses in broadleaved forest. (**Table 12**, **Figure 38**). Five Länder (Berlin, Bremen, Hamburg, Saarland and Schleswig-Holstein) did not record any fires.

Table 12. Burnt area (total and by forest type) and total number of fires, ordered by total burnt area, Federal Republic of Germany, 2024.

	Burnt area (ha)			*Number of fires*
	Coniferous forest	*Broadleaved forest*	*Total*	
Brandenburg	31.16	194.56	225.71	211
Sachsen-Anhalt	23.60	15.71	39.31	39
Thüringen	9.71	25.37	35.08	34
Sachsen	6.82	3.18	10.00	94
Mecklenburg-Vorpommern	8.49	0.06	8.55	19
Niedersachsen	6.41	1.50	7.91	87
Bayern	4.86	0.06	4.92	20
Nordrhein-Westfalen	1.53	0.21	1.74	21
Hessen	0.39	0.20	0.59	27
Baden-Württemberg	0.14	0.00	0.14	7
Rheinland-Pfalz	0.02	0.06	0.08	4
Berlin	0.00	0.00	0.00	0
Bremen	0.00	0.00	0.00	0
Hamburg	0.00	0.00	0.00	0
Saarland	0.00	0.00	0.00	0
Schleswig-Holstein	0.00	0.00	0.00	0
Germany	**93.10**	**240.93**	**334.03**	**563**

Source: Federal Agency for Agriculture and Food, Germany.

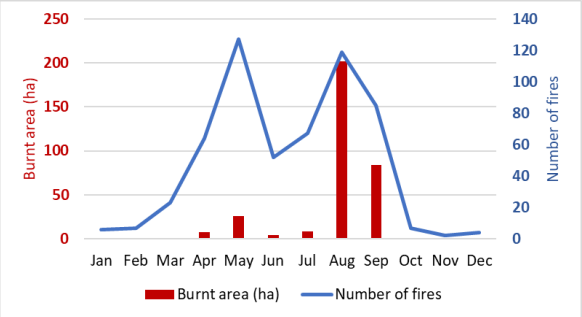
Figure 38. Burnt area and number of fires in Germany in 2024 by Land, ordered by total burnt area.



Source: Federal Agency for Agriculture and Food, Germany.

In 2024, almost all of the damage occurred between August and September (**Figure 39**).

Figure 39. Number of fires and burnt area by month in Germany in 2024.



Source: Federal Agency for Agriculture and Food, Germany.

The economic damage caused by forest fires in 2024 is estimated to be around 0.68 million Euro (**Table 13**). This is well below the long-term average from 1991 to 2024, which is 1.81 million Euro. The cost per hectare burnt in 2024 was estimated at 2036 Euro/hectare, close to the average of the last 3 years.

Table 13. Losses from forest fires in Germany in 2022-2024.

	Year	2022	2023	**2024**
Total volume of non-recoverable wood (1000m³ overbark)	Sawlog size	299	1662	**4**
	Other	226	1848	**6**
	Total	525	3509	**10**
Total value (1000 Euro)	Wood & other tangible losses[1]	4851	957	**680**
	Other[2)]	285	237	**2**
	Total	5137	1195	**682**

1 Estimate of the stand expectation value less the stumpage value plus consequential costs caused by fire (additional planting cost etc.) as well as other material damage.

2 Other damage according to material value method (Koch) or other comparable cost estimates.

Source: Federal Agency for Agriculture and Food, Germany.

In 2024, approximately 5.64 million Euro were spent on prevention and control measures (**Table 14**).

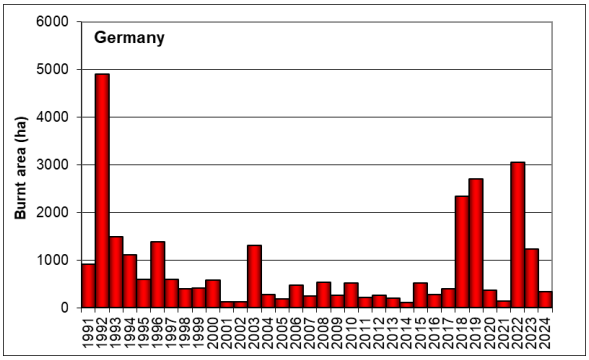
Table 14. Expenditure on forest fire prevention and control in Germany.

Expenditure (1000 Euro)	2022	2023	**2024**
Forest service	5537	5016	5502
Other (public and private)	633	501	135
Total	6170	5517	5637

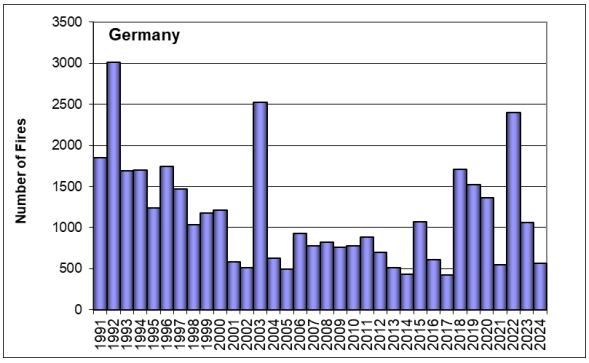
Source: Federal Agency for Agriculture and Food, Germany.

The trends of the burnt areas, number of fires and average fire size in Germany for the years 1991-2024 are shown in **Figure 40**.

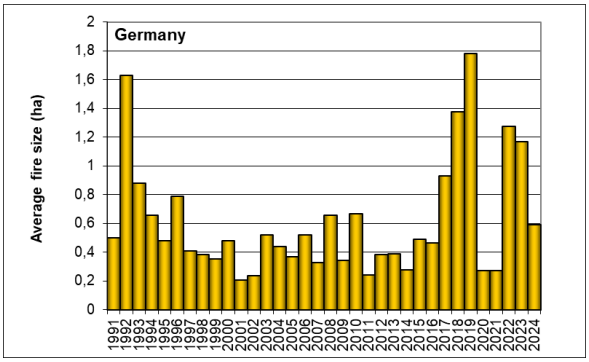
Figure 40. Burnt areas (a), number of fires (b) and average fire size (c) in Germany from 1991 to 2024.



(a)



(b)



(c)

Source: Federal Agency for Agriculture and Food, Germany.

Table 15 and **Table 16** show burnt areas and numbers of fires by land and ownership type.

Table 15. Data by type of land in Germany.

	2022	2023	**2024**
Non-wood land (ha)	-	88.03	**-**
Coniferous (ha)	1870.90	362.01	**93.10**
Non-coniferous (ha)	1187.06	790.24	**240.93**
Total (ha)	3057.96	1240.28	**334.03**
Number of fires	2397	1059	**563**

Source: Federal Agency for Agriculture and Food, Germany.

Table 16. Data by type of ownership in Germany.

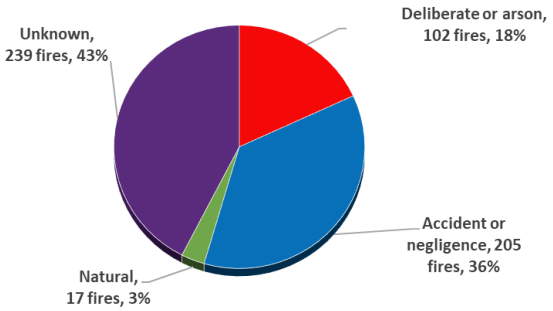
	2022	2023	**2024**
Public (ha)	1683.95	413.82	**77.84**
Private (ha)	1374.01	826.45	**256.19**
Total (ha)	3057.96	1240.28	**334.03**
Number of fires	2397	1059	**563**

Source: Federal Agency for Agriculture and Food, Germany.

Fire causes and impacts

The main causes of forest fires during 2024 are shown in **Figure 41** and **Table 17** Within the category of negligence fires (**Table 18**), the majority (88) were caused by the general public (campers, visitors, children etc.).

Figure 41. Main causes of forest fires in Germany in 2024.



Source: Federal Agency for Agriculture and Food, Germany.

Table 17. Main causes of fires in Germany in 2022-2024.

	Number of fires			Burnt area (Hectares)		
	2022	2023	**2024**	2022	2023	**2024**
Arson	467	165	**102**	1102.30	34.56	**15.09**
Negligence (total)	811	328	**205**	657.71	239.59	**213.13**
Natural causes (lightning)	41	27	**17**	7.59	6.45	**9.73**
Unknown causes	1078	539	**239**	1290.37	959.68	**96.08**
Total fires	2397	1059	**563**	3057.96	1240.28	**334.03**

Source: Federal Agency for Agriculture and Food, Germany.

Table 18. Detailed breakdown of negligence causes in Germany in 2022-2024.

	Number of fires			Burnt area (Hectares)		
	2022	2023	**2024**	2022	2023	**2024**
Agricultural operations	66	29	**4**	127.77	26.73	**6.71**
Logging and forest operations (including prescribed burning)	73	41	**29**	15.74	6.24	**4.55**
Other industrial activities	2	1	**4**	0.55	1.00	**0.25**
Communications (railways, electricity lines, etc)	20	13	**14**	6.99	1.27	**2.17**
General public (campers, other visitors, children)	363	141	**88**	157.70	14.20	**12.90**
Other (including military, etc.)	287	103	**66**	348.95	190.15	**186.55**

Source: Federal Agency for Agriculture and Food, Germany.

(Source: Federal Agency for Agriculture and Food, Germany).

1.2.11. Greece

Fire danger in the 2024 fire season due to climate change

Forest fire season for 2024 in Greece, started with slightly higher temperature values above than normal level prevailed in the most areas in Greece.

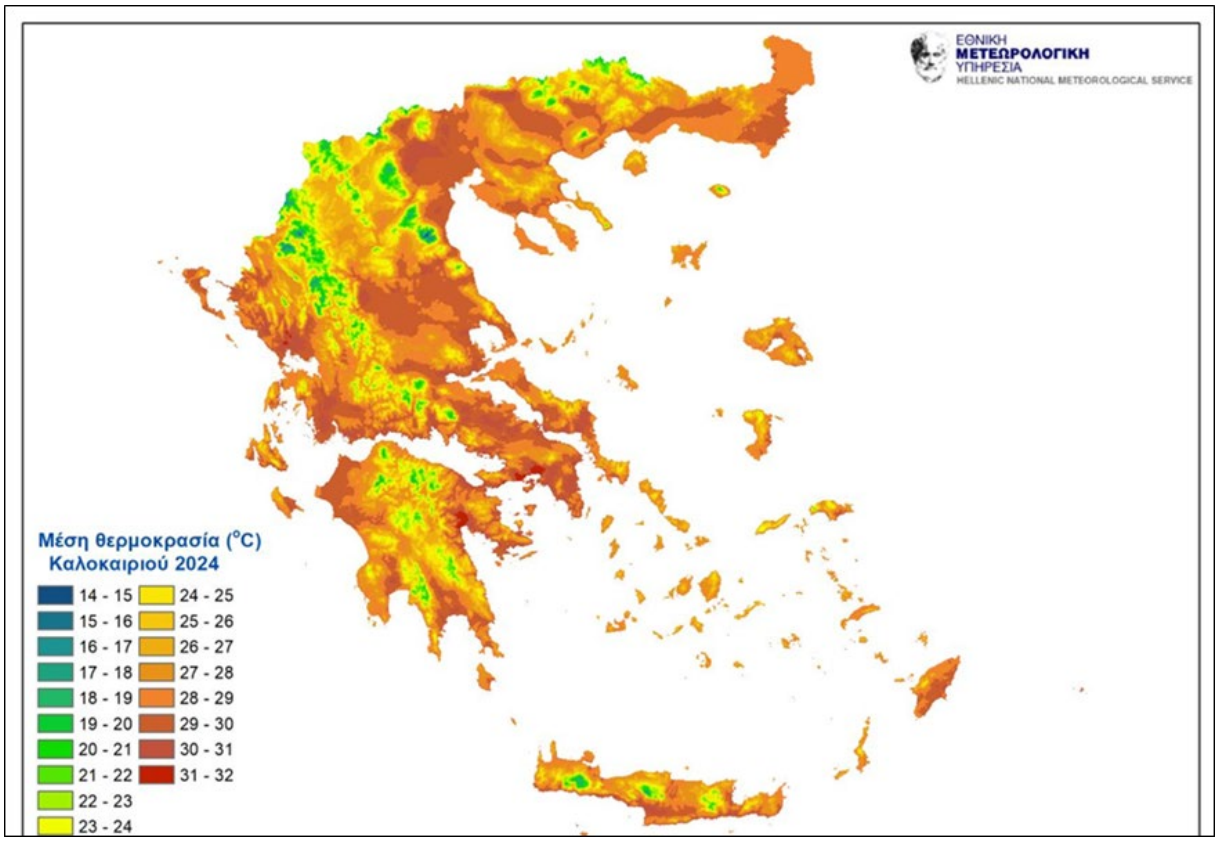
The summer of 2024 in total, was characterized by long-lasting heat waves and prolonged heat. The average seasonal temperature in Greece was on average 27°C. This was the warmest summer in Greece since 1960. The average seasonal temperature was on average 3°C higher than the normal values and 1°C higher than the previously warmest summer of 2012. The hottest months of the year were recorded in July, August and also in September.

It's been noticed an increasing seasonal temperature trend of about 0.33°C per decade in Greece.

In addition of that fact, the precipitation amounts specifically in May and June were lower enough in several areas of the country with the exception of the mountainous parts of Crete area. Precipitation amounts recorded were quite below normal levels throughout the country, with zero precipitation recorded in places in the eastern and southern parts, and even in the west. In Attica, it didn't rain for six months. The 2024 was the seventh driest year on record.

Moreover, some significant dust episodes took place causing discomfort conditions because of the long-lasting duration.

Figure 42. Spatial distribution of average temperature in summer 2024 in Greece with a spatial resolution of approximately 750m.



Source: National Meteorological Service

Fire occurrence and affected surfaces

According to data supplied by the local Forest Services, the most notable forest fires for 2024 are listed below:

- 21st of June in Achaia
- 11th of July in Corinthos area
- 18th of July in Falakro mountain at Drama area in 1 400m - 2 200m altitude
- 19th of July in Orvilos mountain at Serres area (burning for 32 days)
- 09th of August in Menoikio mountain at Serres area
- 11th August in Penteli at Attica area
- 22nd of August in Pagaio at Kavala area
- 29th of September in Xylokastro at Corinthus area-Peloponnese

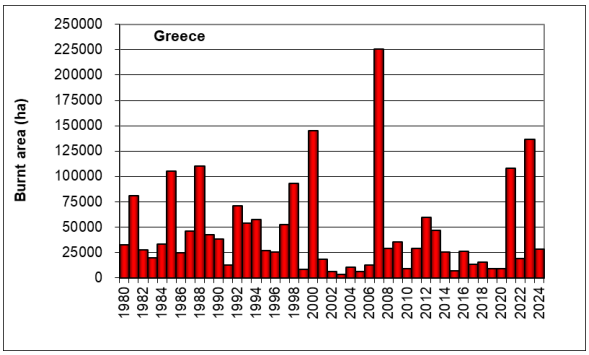
It is a fact that all Greek territory was extremely vulnerable in wildfires as it's being noticed that incidents occurred in very high altitudes, in coast areas, on mountains, in peri-urban areas, in urban groves and more. But, even though the numerous incidents from March to October, the burned areas in Greece have decreased during 2024 fire season, at about 30% compared to the average of previous years.

During forest fire season for 2024, a total number of 981 forest fires were recorded in Greece, with a total affected burnt area of 28 288.46 hectares on wooded and non-wooded forest land. More specifically, 24 975.2 hectares were burned on wooded forest land and 3132.25 hectares were reported on non-wooded forest land. The most fire incidents (652) resulted in less than 1.00 hectare of burnt area.

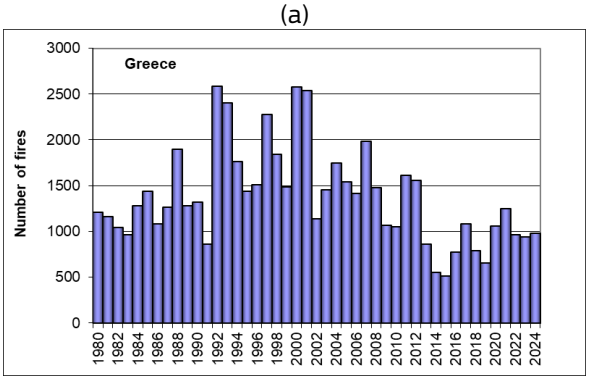
According to the current provisional results, there is a significant increase in the total number of fire incidents from 100 to 500 hectares of burned area with twenty- two (22) fire incidents compared to the previous fire season for 2023 with eleven (11) fire incidents, but also reduction in the greater of 500 hectares of burned area were recorded fourteen (14) fire incidents, in comparison with 2023 were recorded twenty-six (26) fire events (**Figure 43**, **Table 19**, **Figure 44**).

The trends of the burnt areas, number of fires and average fire size in Greece for the years 1980 to 2024 are shown in **Figure 43**.

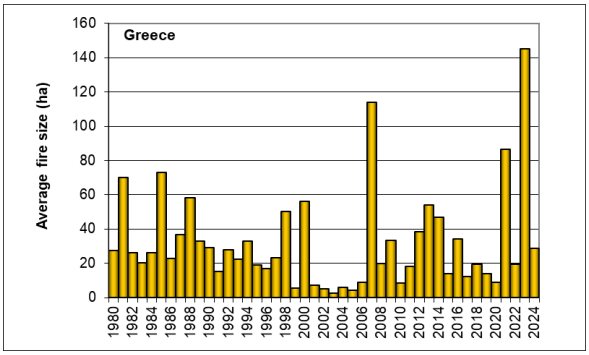
Figure 43. Burnt areas (a), number of fires (b) and average fire size (c) in Greece from 1980 to 2024.



(a)



(b)



(c)

JRC's elaboration of the country reports for Greece.

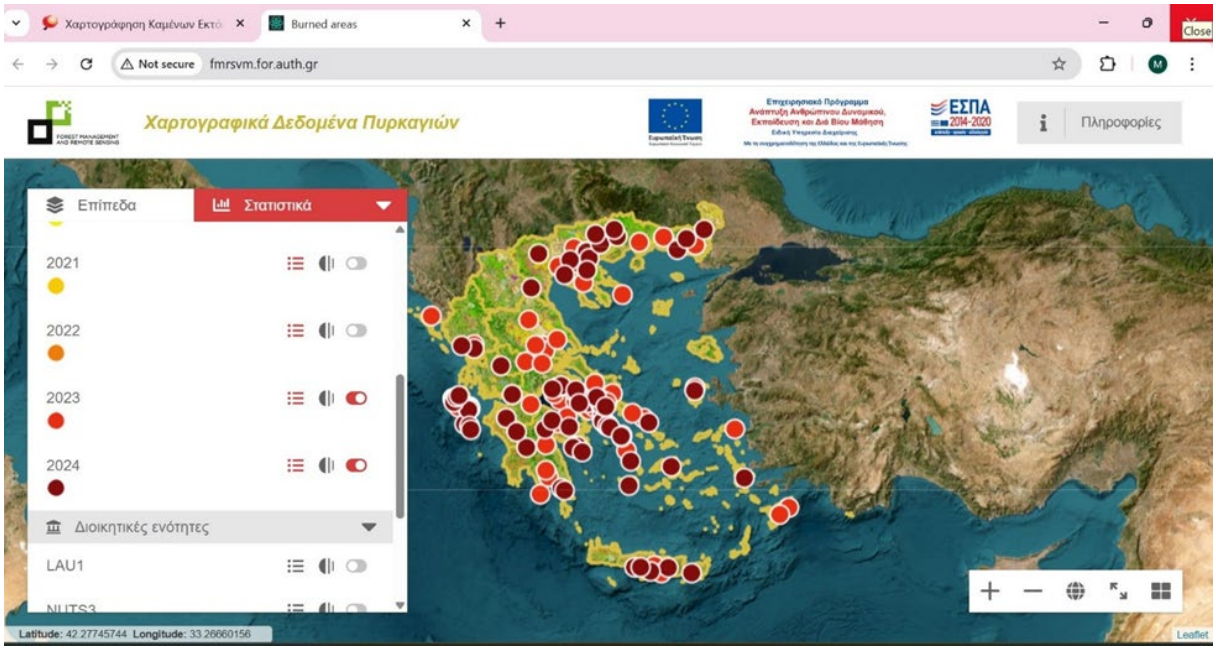
Table 19. Number of fires and burnt area in 2024 in Greece by Inspection of Forest Policy Implementation.

INSPECTION OF FOREST POLICY IMPLEMENTATION	Number of fires						Burned Area (ha)		
	Total	< 1 ha	1-5 ha	5-100 ha	10-500 ha	> 500 ha	Total	Wooded	Non-wooded
Macedonia – Thrace	231	127	55	38	6	5	8 621.6	8 130.8	490.79
Epirus & Western Macedonia	189	127	43	19	0	0	688.39	610.98	77.41
Thessaly & Central Greece	219	168	29	18	3	1	1 948.17	1 892.65	55.52
Peloponnese, Western Greece and Ionian Islands	199	136	36	16	7	4	12 582.33	11 338.46	1 243.87
Attica	22	8	7	4	1	2	845.92	729.83	116.09
Crete	92	75	8	6	2	1	1.515.6	552.08	963.52
Aegean	29	11	8	6	3	1	2 086.45	1 720.40	366.05
TOTAL	**981***	**652**	**186**	**107**	**22**	**14**	**28 288.46***	**24 975.20**	**3 313.25**

* Figures are still provisional and are likely to rise when the compilation of fire data will be completed.

Source: Authors of the country report for Greece.

Figure 44. Map with the most notable fire locations in Greece for 2023 and 2024.



Source: Aristotle University of Thessaloniki- Laboratory of Forest Management and Remote Sensing, http://epadap.web.auth.gr.

Fire fighting means and information campaigns

Fire brigade personnel

In 2024 the Fire Brigade consisted of 22 182 people, including 11 478 General and Special Duties firefighters (serving force 31.10.2024), permanent personnel of the Fire Brigade dealing also with structural fires, 2 319 people with a five-year contract (serving force 31.10.2024), 2 500 seasonal hired for the forest fire suppression activities with contract expired on 31.10.2024. Furthermore, 103 civil

service staff, 4 637 volunteer fire fighters of Law 4029/2011 (31.10.2024), and 1 145 Special Unit of Forestry Operations (EMODE) especially trained in forest fires, were involved.

Fire brigade vehicles

The Fire Brigade has a total of 3 646 vehicles of various types, distinguished as follows:

Table 20. Number of vehicles in Fire Brigade of Greece.

Firefighting vehicles (Waterfalls)	2 011
Support vehicles	1 331
Special vehicles	229
Motor cycles	75
Total	**3 646**

Source: Authors of the country report for Greece.

Aerial Fire brigade body

The aerial means used during the 2024 campaign are shown in **Table 21**.

Table 21. Aerial means in the 2024 campaign in Greece.

National fleet		
Type	Number	Availability 2024 (max)
Aircraft CL-415	7	6
Aircraft CL-215	10	7
Aircraft PEZETEL	21	16 +1surveillance
Helicopter SUPER PUMA AS 332 L1	2	1
Helicopter BK 117 C1	3	2
Helicopter CHINOOK	3	3
Helicopter SUPER PUMA of Greek army	1	1
Helicopter SUPER PUMA of Greek police force	2	2
Total	**49**	**39**
Leased air means		
Type	Availability 2024	
Medium Press Helicopters		19
Heavy Duty Helicopters		8
Lightweight Type of Aircraft		22
Total		**49**

Source: Authors of the country report for Greece.

Injuries and casualties in the fire-fighting period 2024

During the firefighting period of 2024, fifty-two (52) fire fighters and six (6) citizens were injured and unfortunately three (3) citizen and one (1) fire-fighter lost their lives.

Human activities that played a role in the 2024 wildfires

It is widely accepted that (i) human activities and negligence and (ii) the electricity distribution network passing through forests and forested areas are the main causes of the wildfires in the country. Indicatively, it is mentioned that the devastating fire of the 11th of August in Northeastern Attica started from a power transmission and the fire of the 29th of September in Xylokastro started from beekeeping work (smoking of beehives).

Moreover, there are the arson cases too that are being handled by the Crime Suppression Directorate under the Hellenic Fire Corps, within the framework of the maintenance and protection of public safety from arson crimes, throughout the territory.

National fire prevention activities

The key wildfire prevention program currently implemented in Greece is the AntiNERO program, that is funded by the Recovery and Resilience Facility with the objective of enhancing forest and fuel management for wildfire risk prevention. The project is implemented through the National Recovery and Sustainability Plan «Greece 2.0» framework with European Union funding – NextGenerationEU.

The programme, carried out by the Ministry of Environment through its Forest Service and overseen jointly with the Ministry of Climate Crisis and Civil Protection, aims to enhance the management of fuel loads in priority areas identified as particularly wildfire-prone.

The four main pillars of AntiNERO are (i) the forest and woodland clearings, (ii) the maintenance of forest roads (which is critical

and necessary for providing the needed access within the forest ecosystems, so that the fire service velicles would be able to early response to fire incidents), (iii) the maintenance and the opening of fire breaks and (iv) the development of forest protection Studies and Forest Management Plans aiming in providing open and clear data to all the stakeholders involved to forest fires.

In terms of fuel management, AntiNero entails vegetation removal in areas characterised by excessive fuel accumulation as well as preventive forest cleaning operations, including tree cutting and pruning and vegetation thinning. The design and implementation of the Antinero program focuses on the management, removal, and cleaning of forest fuel at:

- Peri-urban areas, where mixed zones of forests and settlements are located, to effectively deal with fires in these areas and protect human life.
- Areas of special environmental value (protected areas), but also of cultural heritage (archaeological sites).
- Road network (upstream and along the road) and dangerous facilities such as camps since these areas are considered as possible fire-starting points due to intense human presence or systems that could possibly cause a fire to start.

Peer Review of Wildlife Risk Management

The Greek Forest Service participated along with the Hellenic Fire Corps in the Peer Review of Wildlife Risk Management capabilities within the Union Civil Protection Mechanism (UCPM) Peer Review Programme 2020-2024, to support the review process. This was a thematic review focusing on the following key thematic areas of the wildfire risk management cycle: (i) governance of wildfire risk management, (ii) wildfire prevention, (iii) wildfire preparedness, and (iv) wildfire emergency response. Key focus areas concerning wildfire risk assessment, wildfire risk management planning, and recovery and lessons learned are covered only in terms of the legislative and institutional framework, as part of the overall governance of wildfire risk management.

The Peer Review process gave a lot of international good practices and opportunities for EU funding and capacity building tools that could be used by the Greek authorities to strengthen the national system. The results and the recommendations of the report constitute a road map for both of the above-mentioned Ministries to become more efficient and more organised in relation to wildfires in the future.

(Source: Ministry of Environment and Energy; General Secretariat of The Forests, Greece).

1.2.12. Hungary

Fire danger in the 2024 fire season

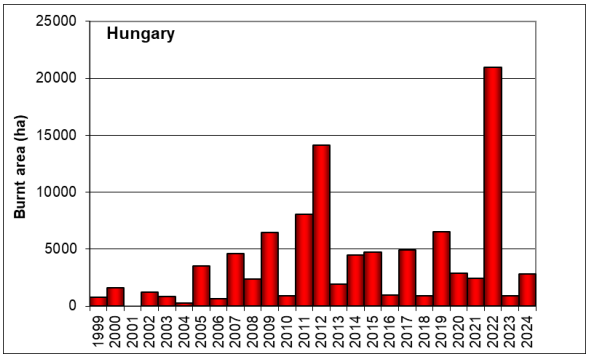
FWI-derived data and values were reported throughout the whole fire season by the forest authority (FA). FA has been using JRC's data service to monitor the daily fire danger situation. The spring of 2024 was warmer than in previous years. Distribution of precipitation was uneven. Significant precipitation only occurred in the western part of the country. In April a fire danger developed in the central part of the country. As a result, a fire ban was ordered for 39 days in the pine region. The average temperature in the summer of 2024 was 2.7 °C higher than the 1991–2020 climate norm, making it the warmest summer since 1901. A prolonged heatwave developed during the summer. There was significant rainfall in June, followed by two extremely dry months. The warm period lasted until mid-September. Due to the high fire danger, a fire ban was ordered between July 11 and September 15. The fire danger only decreased at the first week of October.

Fire occurrence and affected surfaces

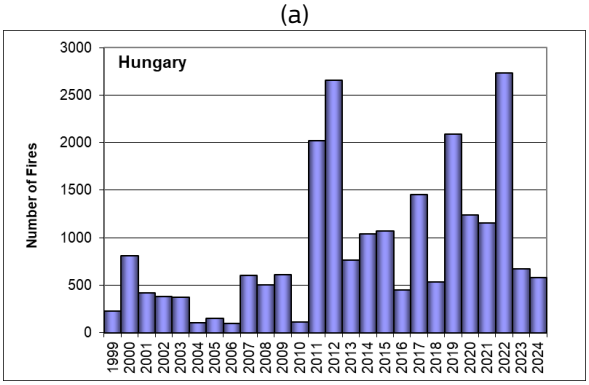
Forest fire data are collected in close cooperation with disaster management authorities. Data collected on the spot by firefighters. They have been uploading the database day by day. Forest fire data are produced and analyzed with a GIS method and checked on the spot by the forest authority. Gathered fire data are processed and evaluated by size, date, cause, and duration of fires.

Table 22 shows the total values between 2011 and 2024. The trends regarding the burnt areas, number of fires and average fire size in Hungary for the years 1999 to 2024 are shown in **Figure 45**. 40% of forest fires occurred during the spring fire season. Three big forest fires broke out during this period. In all three cases, fires started in agricultural areas spread to forest areas. In the high-risk region of northern Hungary, a total of 64 forest fires occurred between February and May. Only 8 fires affected areas larger than 5 hectares. During the summer fire season, there were 56 fires larger than 5 hectares. Most of the fires occurred in the sandy region of the central part of the country. The high-risk period lasted until mid-September. On September 5, a fire broke out in a pine forest in the western part of the country due to other use of glowing object. It took five days to extinguish the fire, which burned a total of 940 hectares.

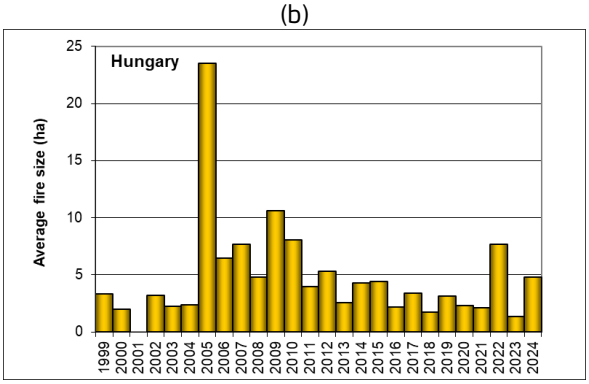
Figure 45. Burnt areas (a), number of fires (b) and average fire size (c) in Hungary from 1999 to 2024.



(a)



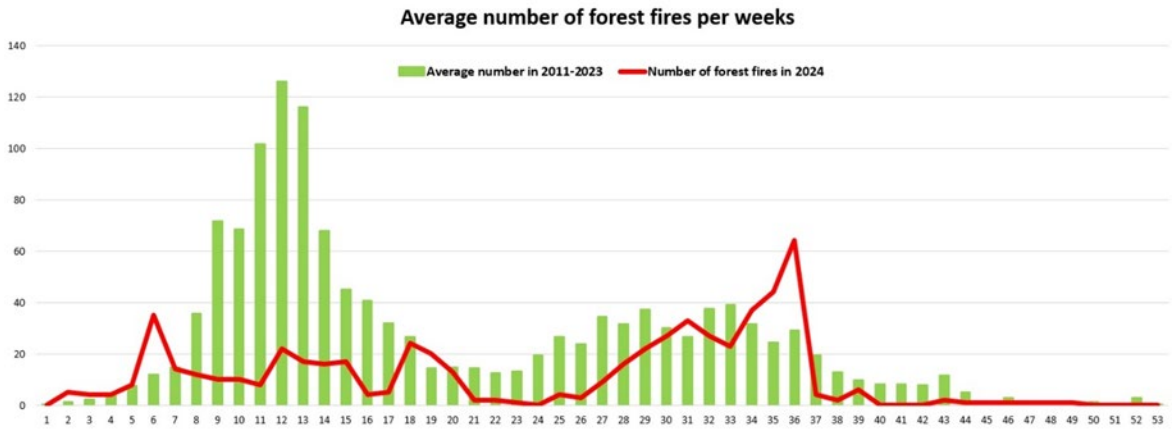
(b)



(c)

Source: JRC's elaboration of the country reports for Hungary.

Figure 46. Average number of forest fires per week in Hungary 2024.



Source: National Food Chain Safety Office, Directorate for IT and Development, Hungary.

Table 22. Number of fires and burnt area in Hungary from 2011 to 2024.

Year	*Total number of wildfires*	*Forest fires*		*Other land types*
		Number	*Burned area (ha)*	*Number*
2011	8 436	2 021	8 056	6 415
2012	15 794	2 657	14 115	13 137
2013	4 424	761	1 955	3 663
2014	5 535	1 042	4 454	4 493
2015	5 057	1 069	4 730	3 988
2016	2 531	452	974	2 079
2017	6 782	1 454	4 934	5 328
2018	2 981	530	906	2 451
2019	7 296	2 088	6 541	5 208
2020	4 339	1 239	2 895	3 100
2021	4 350	1 154	2 413	3 196
2022	8 687	2 731	20 947	5 956
2023	2 685	675	911	2 010
2024	**3 448**	**582**	**2 799**	**2 866**

Source: National Food Chain Safety Office, Directorate for IT and Development, Hungary.

The average burned area was significantly higher, nearly twice that recorded over the past 10 years.

Figure 47 shows the location of forest fires in Hungary. Most forest fires occur in northern Hungary and the central part of the country. Most part of spring fires burn in northern areas (Borsod-Abaúj-Zemplén County, Heves County, Nógrád County and Pest County) which indicates these areas as high forest fire danger zones. In these areas not only traditional grassland management methods, but other social-economic factors add to forest fire danger.

With GIS analysis, we can say that the majority of forest fires do not ignite inside the forest, but also in the agricultural area adjacent to it. We have found that 48% of the fires occurred in 500-meter zone around residential areas. 80% of all forest fires are no further than 2 km from residential areas in 2024.

Table 23. Classification of fires by size class in Hungary in 2024.

Classification of burnt area	Number of forest fires	Burnt area (ha)
less than 1 ha	385	121
1 – 50 ha	193	1376
50 – 100 ha	2	160
100 – 500 ha	1	200
more than 500 ha	1	941
Total:	**582**	**2 799**

Source: National Food Chain Safety Office, Directorate for IT and Development, Hungary.

98% of forest fires were surface fires this fire season when surface litter and other dead vegetal parts and smaller shrubs burnt down.

The average rate of fires smaller than 1 hectare is almost 35%. Statistical analysis shows that the number of forest fires under 0.5 ha has been increasing in the last decade. In particular, the increase in the number of spot fires under 1 000 m2 is significant.

The forest fire records shows that total of 803 hectares of forest land were burned or affected by forest fire during 2024.

In addition, more than 1 313 hectares of grass vegetation and 682 hectares of other wooded land were destroyed in forest fires. (**Table 24**).

Table 24. Fires in Hungary in 2024 by forest type.

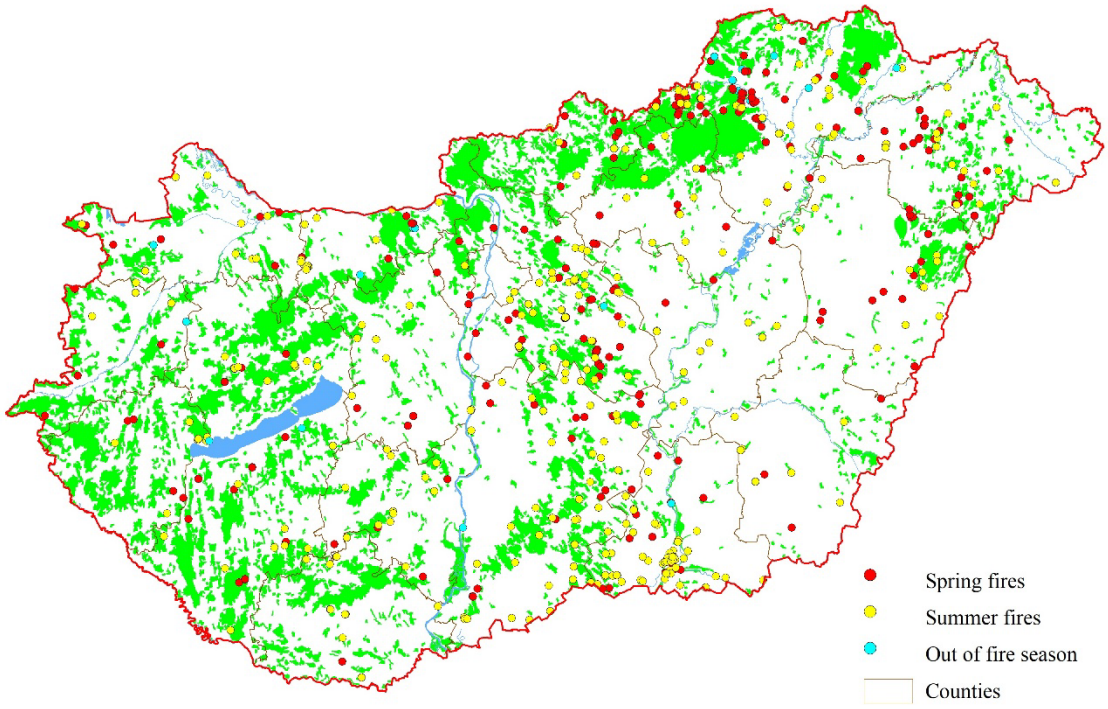
Forest type	Total burnt area (ha)
Forested land	803
Other wooded land	682
Other land	1 313
Total	**2 799**

Source: National Food Chain Safety Office, Directorate for IT and Development, Hungary.

Fire causes

99% of forest fires are human-induced (negligence or arson). Most fires are induced by (adults and infants) negligence and only a small proportion of fires are caused by arsonists. Typical forest fire causes are the incorrectly extinguished fires of hikers, and the illicit agricultural fires, throwing cigarette butt and sometimes slash burning.

Figure 47. Locations of forest fires in Hungary in 2024.



Source: National Food Chain Safety Office, Directorate for IT and Development, Hungary.

Fire fighting means

85% of forest fires were usually extinguished in less than an hour after arrival at place of fire. Fire service arrived at fire in 30 minutes on average.

Injuries and loss of human lives

No one was injured in a forest fire in 2024.

Operations of mutual assistance

Hungarian firefighters also helped extinguish forest fires in North Macedonia. National Directorate of General for Disaster Management, Ministry of the Interior offered a firefighting team consisting of 46 people and 13 vehicles to North Macedonia.

Fire prevention activities and information campaigns

Forest fire prevention is carried out in cooperation with the forestry authority and the National Directorate General for Disaster Management, based on community and domestic legislation.

The forestry authority also participates in the work of the Forest Fire Working Group of the National Fire Prevention Committee. National Food Chain Safety Office has delegated experts to the Disaster Risk Assessment System project, which is implemented by National Directorate General for Disaster Management. Forest fire plans have been reviewed at the forest management level.

At the beginning of December, the forestry authority organized a fire season evaluation conference. Forest managers, fire departments, the forestry authority, the Ministry of the Interior, and the Ministry of Agriculture were invited to the conference. The evaluation conference will be held every year from now on to review experiences.

Fire season summary

- total number of wildfires 3 448
- 582 forest fires with 2 799 ha burnt area
- 238 forest fires in Spring
- Total fire ban in Summer for 60 days (11.07 – 08.09)
- 1 large fire in the western part of the country

Figure 48. Forest fire in the municipalities of Csönge and Kenyeri (Hungary) September 5-9, 2024.

Source: National Food Chain Safety Office, Directorate for IT and Development, Hungary.

(Source: National Food Chain Safety Office, Directorate for IT and Development, Hungary).

1.2.13. Ireland

The Department of Agriculture, Food and Marine (DAFM) is the agency responsible for Forest Protection in Ireland.

Fire danger in the 2024 fire season

Fire risk conditions for 2024 were dominated by consistently wet and unsettled weather throughout the fire season. A change in conditions occurred in mid-August, where warm and dry conditions saw a brief increase in fire risk conditions confined to eastern areas of Ireland, including Dublin City.

The DAFM Forest Fire Danger Rating System was activated in early April 2024 with a Condition Yellow Notice. Only one Condition Orange notice was issued subsequently, and low fire risk conditions generally prevailed throughout the spring and summer months.

Fire occurrence and affected surfaces

Based on available Copernicus and data from DAFM assessments it is estimated that approximately 130ha of land was affected by fire, including approximately 12ha of forest lands, during 2024. The forest land affected comprised 12ha of state-owned forest land.

Table 25. Estimated total losses in Ireland in 2024.

Forest (ha)	Non-Forest (ha)
12	130

Source: Forest Service, Department of Agriculture, Food and the Marine, Ireland.

Figure 49. Urban Interface fire Dublin (Ireland), August 2024.

Source: Dublin Fire Brigade

Fire prevention activities

The Meteorological Fire Danger Rating system developed by Met Eireann (Irish National Weather Service) was used operationally to produce fire Danger Notices throughout 2024, in conjunction with Met Eireann. Helicopter-borne fire patrols were undertaken by the National Parks and Wildlife Service, during risk periods and during busy bank holiday weekends. Continued work on upland land management, fuels mapping and other risk reduction measures were supported through the network of European Innovation Partnership projects, most notably ACRES (Agri-Climate Rural environment Scheme) delivered by DAFM and Partners under Ireland's CAP Strategic Plan.

Fire activity

Fire activity in Ireland is primarily monitored through three Regional Emergency Control Centres covering Southern, Western and Eastern Regions. In contrast with recent years, very low levels of fire activity were noted throughout 2024, largely because of poor weather conditions.

During August 2024, during a brief dry spell, some notable fire incidents occurred close to Dublin City, requiring significant suppression efforts due to their location. These fires are significant in relation to their proximity to urban areas, Wildland Urban Interface factors, and the potential for smoke impacts on nearby populations and transport infrastructure. Most of these fires took place on unmanaged amenity lands adjacent to private dwellings and the largest of these fires required an interagency response led by Dublin Fire Brigade assisted by Coillte Teoranta (National Forestry Board) and the Electricity Supply Board to suppress.

Figure 50. Dublin Fire Brigade and Gorse Fuels, South Dublin (Ireland), August 2024.

Source: Dublin Fire Brigade

Significant difficulties were presented due to the nature of the terrain and access limitations. These included the proximity of the fire to dwelling houses at multiple locations, the presence of high voltage electrical transmission lines, the difficult nature of the shrub fuels involved (Ulex Europaeus), and challenges to the suppression of these fires in the prevailing weather. The successful response involved the use of combined wildfire tactics by Dublin Fire Brigade Crews over several sectors assisted by helicopter support (EC120 Light Helicopter) provided by Coillte Teoranta, and despite difficult conditions, suppression operations were completed quickly over several hours.

Fire suppression

Fire suppression activities are usually conducted and led by Local Authority Fire and Rescue Services. On state owned forest lands, National Parks and Nature Reserves, these services can be augmented by additional firefighting personnel, air support and ground equipment from Coillte Teoranta (State Forestry Board), National Parks and Wildlife Service, Bord Na Mona (Irish Peat Board) and the Irish Defence Forces where required.

Injuries and loss of human lives

There were no deaths or structure losses reported following forest fires during 2024.

International assistance

No international assistance operations took place during 2024.

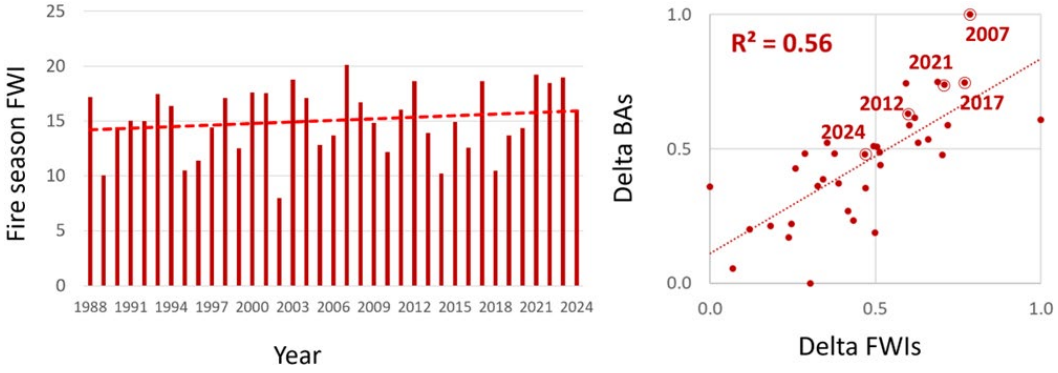
(Source: Forest Service, Department of Agriculture, Food and the Marine, Ireland).

1.2.14. Italy

Fire danger in the 2024 fire season

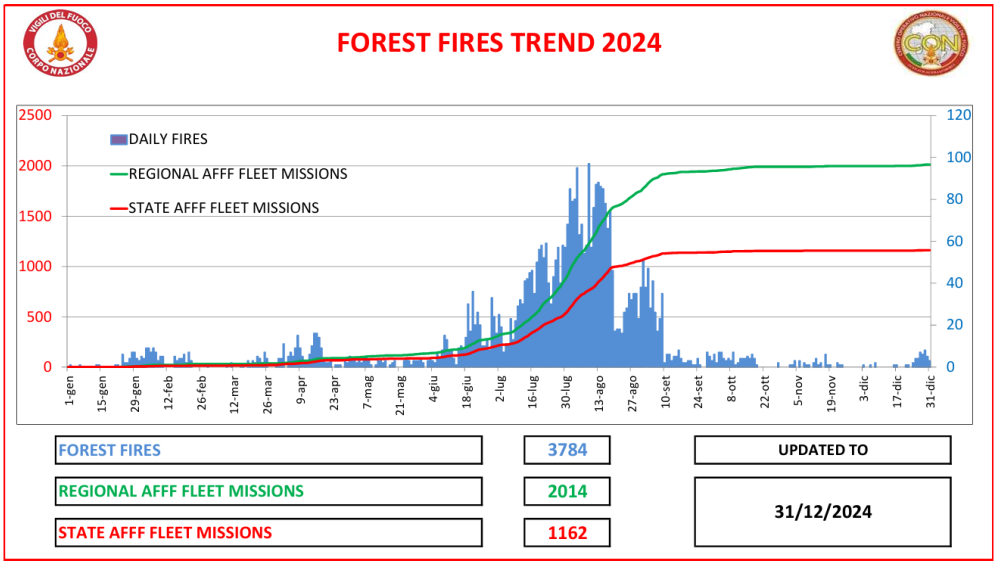
In 2024, the mean fire danger in Italy during the fire season (July to September) was above the average (period 1988-2023), corresponding to the 80% of the highest FWI in 2007 (**Figure 51**, left). Note that FWI displays a slight trend over the period of analysis (red dotted line - **Figure 51**, left). A significant proportion of the inter-annual change in total burnt area in Italy is explained by changes in fire weather (**Figure 51**, right). A change in FWI from one year to the next is correlated with the corresponding change in burnt area, with 2024 showing average changes for both FWI and burnt area.

Figure 51. Mean daily fire weather in Italy during the fire season (July-September) from year 1988 to 2024. The red dotted line indicates the linear trend over the period of analysis (left). Total burnt area in Italy for years 1988-2024 as a function of mean daily fire weather during the fire season (right). Calculations used the delta approach: a change in burnt area (Delta BAs) from one year to the next is correlated with the corresponding delta in FWI. Changes are standardized from 0 to 1. Year 2007 (highest FWI and largest burnt area), 2012, 2017, 2021 (larger recent burnt area), and 2024 are evidenced by a double circle. Fire weather was indexed using the FWI according to the Global fire danger re-analysis (Vitolo et al. 2019).



Source: Authors of the country report for Italy.

Figure 52. Daily number of forest fires in Italy in 2024; number of missions of forest fire fighting aircrafts.



Source: Authors of the country report for Italy.

2024 was the warmest year in the series both globally, with a land temperature anomaly of +1.03°C compared to the 1991-2020 average, and in Italy, with an average anomaly of +1.33°C compared to the same reference period. 2024 ranks first among the highest in the series for the number of tropical nights (+25.2 days) and for the number of hot days (+7.3 days) and second among the lowest values for the number of days with frost (+13.7 days). As for the WSDI-Warm Spell Duration Index (+29.3 days), representing the "periods of prolonged and intense heat throughout the year", it ranks fourth among the warmest.

Figure 53. Wildfire in a mountain area of Friuli V.G. (Italy).

Source: COAU-DPC.

Cumulative annual precipitation in Italy in 2024 was approximately 8% above the climatic average. The northern and central-northern areas were characterized by positive anomalies, while the rest of the country recorded widespread negative anomalies.

The analysis by geographic macro-area indicates that precipitation anomalies were negative in the South and Islands (-18%), positive in the North (+38%) where 2024 was the second wettest year since 1961, and close to average in Central Italy.

The Consecutive Dry Days (CDD) drought index, which represents the maximum number of consecutive dry days in the year, recorded fairly low values across much of the country.

High values were observed across much of Sicily and Sardinia (up to 146 consecutive dry days in Sicily and up to 101 in Sardinia), followed by the central-northern coast of Lazio (up to 100 days), the Ionian coast (up to 88 days), and southern Puglia, which, together with Calabria, are the regions with the highest

number of fires and the largest areas affected by fire.

The effects of drought began in May in Sicily, with an extension in the summer months to others southern regions (Calabria and Basilicata) and then to the central Adriatic regions (Abruzzo and Marche). For these 5 regions in 2024 there was the declaration of state of emergency for water crisis.

The trend of forest fires is well shown in the graphic: a few forest fires during the wintertime most of which were uncommonly registered in the southern regions.

The peak of the events was reached between the end of July and mid-August. After the first week of September the number of forest fires was drastically reduced; only a few events were registered in October.

Fire occurrence and affected surfaces

In 2024 Italy was affected by a total of 3784 forest fires.

The number was lower than the previous year: -11.3%. The same for the burnt area that has significantly decreased, from 88 805 of 2023 to 52 623 hectares of 2024 (- 41%). Consequently, the average area per fire has passed from 20.8 ha in 2023 to 13.9 ha in 2024.

Looking at the burnt areas we can put in evidence that the overall surface is split almost equally between forest and non-forest areas.

Table 26. Number of fires and burnt area in Italy by region in 2024.

	Num. fires	% share of fires	Forest ha	Non-forest ha	Total ha	Average fire size
ABRUZZO	55	1.45%	429.70	360.10	789.80	14.36
BASILICATA	192	5.07%	1 145.60	2 038.00	3 183.60	16.58
BOLZANO (2)	25	0.66%	0.31	1.52	1.83	0.07
CALABRIA	520	13.74%	5 862.70	1 255.70	7 118.40	13.69
CAMPANIA	460	12.16%	4 440.70	1 660.80	6 101.50	13.26
EMILIA ROMAGNA	42	1.11%	111.10	77.90	189.00	4.50
FRIULI V. G. (3)	37	0.98%	296.87	6.83	303.70	8.21
LAZIO	411	10.86%	5 281.50	2 216.90	7 498.40	18.24
LIGURIA	79	2.09%	403.60	89.80	493.40	6.25
LOMBARDIA	88	2.33%	35.50	32.20	67.70	0.77
MARCHE	48	1.27%	34.50	71.90	106.40	2.22
MOLISE	45	1.19%	165.70	220.90	386.60	8.59
PIEMONTE	70	1.85%	135.60	57.70	193.30	2.76
PUGLIA	307	8.11%	1 751.70	3 505.60	5 257.30	17.12
SARDEGNA (4)	345	9.12%	2 781.27	3 827.31	6 608.58	19.16
SICILIA (5)	770	20.35%	5 368.01	7 812.89	13 180.90	17.12
TOSCANA	187	4.94%	291.30	570.60	861.90	4.61
TRENTO (1)	15	0.40%	0.71	0.82	1.52	0.10
UMBRIA	40	1.06%	122.40	135.00	257.40	6.44
VALLE D'AOSTA (6)	4	0.11%	7.87	0.35	8.22	2.06
VENETO	44	1.16%	10.10	3.80	13.90	0.32
TOTAL	**3 784**	**100%**	**28 676.74**	**23 946.62**	**52 623.35**	**13.91**

Sources: Comando Unità Forestali, Ambientati e Agroalimentari dell'Arma dei Carabinieri - Geoportale incendi boschivi. (1) Provincia Autonoma di Trento- Department of Civil Protection, Forests and Fauna (Forest Service); (2) Provincia Autonoma di Bolzano – Forestry Service; (3] Regione Friuli Venezia Giulia - Regional Forest Corps; (4) Regione Sardegna - Regional Forest Corps (CFVA); (5] Regione Siciliana - Regional Forest Corps; (6) Regione Valle D'Aosta:- Regional Forest Corps.

Analysing data at the regional level, it is evident the strong reduction in terms of number of fires and burnt areas in Sicilia compared to the previous year: 770 events (- 34%) and 13 180

hectares burnt (-73%). Almost doubled the burnt areas of Lazio, Campania, and Sardegna compared to 2023.

Figure 54. Wildfires in a very impervious areas of the Eastern Alps (Italy); in these situations, it is difficult to work with the ground crews.

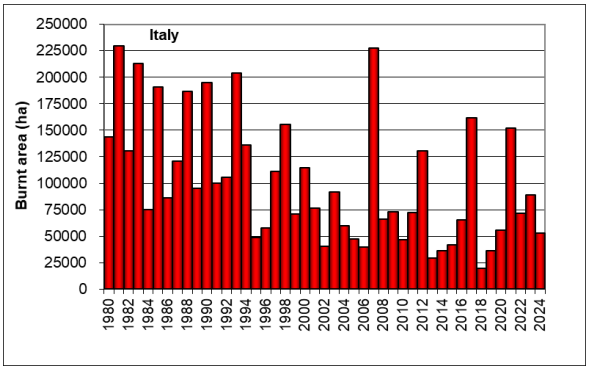
Source: Regional Forest Corps of Friuli V.G.

Figure 55. Burnt area in regione Calabria (Italy); as in the previous years, in 2024 this region was one of the most affected areas by wildfires of the Country.

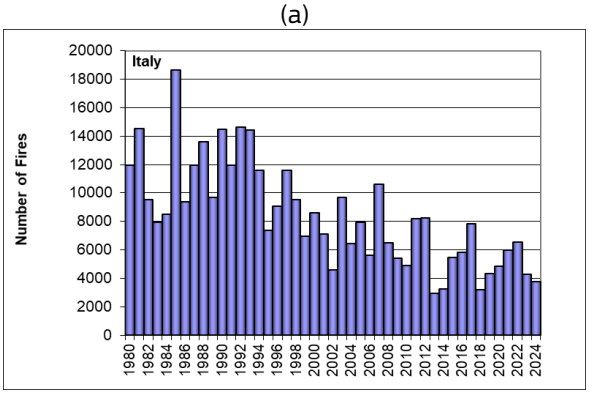
Source: CNVVF.

The trends regarding the burnt areas, number of fires and average fire size in Italy for the years 1980 to 2024 are shown in **Figure 56**.

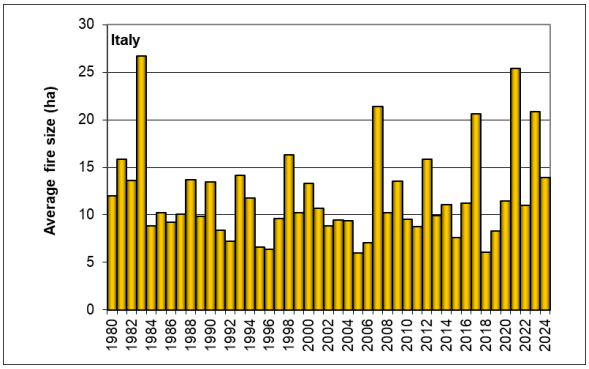
Figure 56. Burnt areas (a), number of fires (b) and average fire size (c) in Italy from 1980 to 2024.



(a)



(b)



(c)

Source: JRC's elaboration of the country reports for Italy.

Fire causes

The ignitions are distributed uniformly throughout all the days of the week, with greater frequency during the hottest hours of the day (12.00 – 17.00).

Fires affected mainly hilly territories with vegetation characterized by Mediterranean shrub. Often these areas have been already affected by fires in the previous 5 years.

With regard to the man-made and intentional fires, the most frequent motivations are the

renewal of pastures, disagreements between hunters, vandalism, retaliation against private individuals and public administration.

Unintentional causes are mainly due to activities of burning plant debris generated by agriculture activities as well as to recreational activities. 1% of forest fires is due to natural causes (lightings).

Figure 57. Wildland Urban Interface (WUI) fires in Sicilia (Italy).

Source CNVVF.

Fire fighting means

According to the National law, the local Authorities "Regione" have the task to extinguish forest fires with ground crews, composed by volunteers and forest workers, as well as Regional Forest Corps in the autonomous regions and provinces. Ground crews are supported by light and medium helicopters rented by the "Regioni".

Each regional system is managed by a Unified Operational Room where during the fires campaign all the actors involved in forest fire fighting work together.

Regions can sign specific agreements with the National Fire and Rescue Service (CNVVF) to carry out the activity of forest firefighting.

Figure 58. One of the Italian Canadair CL 415 managed by National Fire and Rescue Service during the operations on a wildfire close to a Wind farm in Italy.

Source: CNVVF.

The State coordinates, through the Unified Air Operational Center (COAU), the National Forest Firefighting Air Fleet: 18 Canadair CL415 and 6 heavy helicopters Erickson S-64F, all of them owned and managed by the National Fire and Rescue Service. During the summer campaign, some military helicopters, and other medium-sized helicopters from CNVVF are available too. Two of the Canadair CL415 are assigned to the Italian RescEU AFFF Module. During the forest firefighting campaign, one of the S-64F helicopters, assigned to the Reggio Calabria base, had a serious accident, luckily without casualties.

Figure 59. Canadair CL415 in action to protect infrastructures in Italy.

Source: CNVVF.

Figure 60. Regional Forest Corps of Valle d'Aosta (Italy) in action on a wildfire.

Source: CFR Valle d'Aosta.

Figure 61. CNVVF Forest fire truck in Italy.

Source: CNVVF.

Regional air fleets include some 60 helicopters operated by private companies. Sardegna rented a Super Puma helicopter with the bambi-bucket; the Regional Forest Corps used it also to move the back-fire crews. In 2024, regional aircrafts were engaged on 2014 missions; national assets received 1 162 requests (over 50% of which submitted by Calabria, Lazio and Sicilia).

In Italy ground crews (hand crews and engine crews) make a large use of pick-ups with small water tank (400-600 litres) apt to move on the

narrow roads of the Italian network covering hills and mountains. The National Fire and Rescue Service usually employs pick-ups too and Fire Trucks (up to 4 000 litres) and provides also heavy Fire Engines to refill smaller means.

Hand crews and engine crews work in close collaboration with the small and medium helicopters under the coordination of the Incident Commander. Often, in the mountain areas, ground crews set up mobile water points for helicopters using removable tanks refilled by heavy fire engines.

If the road network is not dense enough to allow for the use of hoses, the crews use hand-tools like, rakes, beaters, shovels, hoes, etc.

Blowers are frequently used especially in the pastures and in broadleaves forests during the winter fire season.

When the road network doesn't allow to reach the wildfire front with trucks, especially in the northern part of the country, some Regions have special crews that work using also mountaineering techniques. For example, the Friuli V.G. Regional Forest Corps (**Figure 62**, **Figure 63**, **Figure 64**) use helicopters to move equipment and specialized personnel to high altitudes where they set up small water pipes fed by removable tanks supplied with water by the same helicopters. These techniques were developed to tackle wildfires at high altitudes in inaccessible areas, where fires are often caused by lightning.

Figure 62. Friuli V.G (Italy). Regional Forest Corps special team in action in impervious areas using water.

Source: Regional Forest Corps of Friuli Venezia Giulia.

Figure 63. Friuli V.G. (Italy) Regional Forest Corps special teams in action in impervious areas; the helicopter is used to refil small removable water tanks for specialized ground crews.

Source: Regional Forest Corps of Friuli Venezia Giulia.

Figure 64. Friuli V.G. (Italy) Regional Forest Corps special teams in action in impervious areas; the helicopter transports fire fighters and special equipment to the high altitudes.

Source: Regional Forest Corps of Friuli Venezia Giulia.

When possible, according to the safety conditions, and in particular to the knowledge of the places, ground crews work during the night with hand-tools and hoses too, taking advantage of the lower temperature ang higher air humidity.

Starting from 2021, special agreements were signed between the most affected Regions of the South (Sicilia, Sardegna, Calabria, Puglia) and the northern Regions of the Country (Friuli V.G., Veneto, Lombardia, Piemonte, Liguria) and some National Volunteers Organization. These agreements are aimed at enhancing the response capacity of the local Forest Fire Fighting System in patrol and first attack during the high-risk period.

Figure 65. Firemen from CNVVF and Forerst Fire Fighting Volunteers of the region working together on mop-up operations.

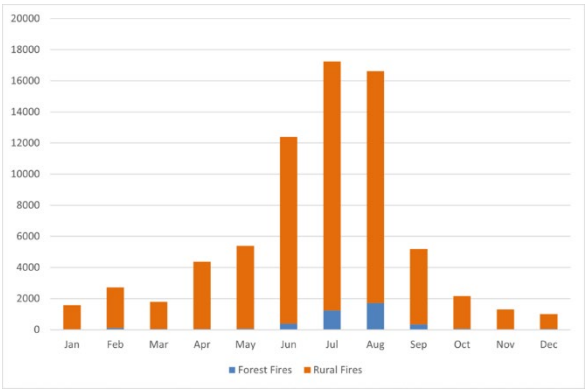
Source: CNVVF.

During the summer campaign, in periods of maximum activity, over 800 CNVVF operators are exclusively engaged daily in Forest Fire Fighting activities based on agreements with the Regions. In addition to these, on the basis of the National fire susceptibility bulletin issued daily by the Civil protection Department, almost 1 000 firefighters from the FFF modules of CNVVF national mobilization device, can be moved very quickly throughout the National territory in case of a crisis. It should also be considered that the 6000 operators of the CNVVF's ordinary daily service intervene, where necessary, in support of the regional FFF Systems as well as on all non-forest vegetation fires which, often underestimated, constitute a very heavy commitment for the National Fire and Rescue Service.

It is worth highlighting that, in the last years, wildfires campaigns were no more well defined in terms of time and space, and often complicated by contemporary hydrogeological events. The borderlines between forests and agricultural lands are no longer well draw. In the marginal areas, fields are no longer cultivated, and transition shrubs stands are growing, so that becoming apt for fast spreading fires. For these reasons, the protective effect of cultivated areas is decreasing and, in the worst years, agricultural areas cannot be considered anymore as lines to stop wildland fires, on the contrary, they become areas which allow a faster spread of fires to the forests. Fires involving agricultural areas, including those uncultivated and with transition shrubs stands, are growing and their number exceeds forest fires. This evolution increasingly challenges the response system too.

Figure 66 shows the comparison between rural fires (the sum of forest and non-forest vegetation fires corresponding to code 301 of the CNVVF statistics) and forest fires (according to the definition of law 353/2000). The number of non-forest fires is much higher: of more than 67 000 rural fires, some 3 800 are forest fires.

Figure 66. Montly distribution of rural fires (forest and non-forest vegetation fires) in Italy in 2024.



Source: Authors of the country report for Italy.

2024 was characterized by large and dangerous fires in wildland-urban interface areas. Rome in particular, as in 2022, was affected by several WUI fires which spread directly into the city (Monte Mario, Ponte Mammolo, Torre Spaccata, la Pisana, etc.). During Torre Spaccata Fire in Rome 4 first responders were seriously injured.

Figure 67. WUI fire of Torre Spaccata – Roma (Italy) ; 60 hectares of green area burned into the city.

Source: Photo by Regione Lazio – Civil Protection).

Fire prevention activities and information campaigns

Fire prevention in Italy involves several actors both at regional and national level. The individual regional administrations prepare the "Regional Fire Management Plan (RFM-Plan) for their territory of competence in which fire prevention activities are planned, normally for the next 5/10 years (Art. 3, Law 353/2000). The planned activities include: i) the maintenance of the road and water network to support firefighting; ii) the implementation of management and pyroforestry interventions (i.e., collection of potentially combustible biomass, mowing, pruning, prescribed burning) to increase the resistance and resilience of forests and improve forest ecosystem services; iii) information campaigns targeting citizens with both short-term (e.g. fire hazard assessment) and long-term (e.g. increased risk awareness) objectives.

The RFM plan is completed with the Specific Fire Prevention Plans, identifies the territories at high risk of fire and defines the spatial-temporal distribution and resources for management and prevention activities, including extraordinary interventions with the aim of improving the structures of forest vegetation and its resistance and resilience to fire disturbances.

With the introduction of the Territorial Forest Management Plans, provided for by Legislative Decree No. 34 of 2018, regional administrations are taking steps to implement integrated planning for large, homogeneous territorial areas, capable of coordinating sustainable forest management interventions, grazing and agricultural management activities with the prevention measures provided for in the Regional Fire Management Plan and Specific Fire Prevention Plans.

The main funding scheme to finance forest fire prevention interventions in Italy, as defined by both the RFM Plans and the Specific Fire Prevention Plans, remains made up of the measures and interventions co-financed by the European Commission with the EAFRD fund of the Common Agricultural Policy (CAP) for Rural Development (https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/rural-development_en).

For the new CAP programming phase 2023-2027, Regulation (EU) No. 2115 of 2021 defines the new implementation model for interventions eligible for EU co-financing. The tool for outlining this new approach is the National Strategic Plan (NSP) of the CAP, which is implemented in the individual regions with the Regional Programming Complements (CPR).

The new EU Regulation has re-proposed, in a single measure - SRD12 Investments for the

prevention and restoration of forest damage - direct support for interventions for prevention and restoration of damaged forests.

Sub-measure SRD12.1 provides for investments aimed at carrying out prevention interventions, essential to ensure the maintenance of the national forest heritage and its protection from natural disasters, adverse weather conditions or catastrophic events, including fires, hydrogeological instability, storms, floods, attacks by harmful organisms and plant diseases.

Sub-measure SRD12.2 provides for investments aimed at carrying out interventions for the ecological and functional restoration and/or recovery of forest ecosystems affected by natural disasters, adverse weather conditions or catastrophic events, including fires, hydrogeological instability, storms, floods, attacks by harmful organisms and plant diseases.

The initial financial resources already committed to SRD12 by the Italian regions, except for the Autonomous Province of Trento and the Campania Region, relate in particular to support for governance and planning actions aimed at improving the coordination and effectiveness of prevention measures in the territory.

From 2025, however, support will begin to be provided for operational actions and measures implementing the provisions of the Plan.

Figure 68. A fireman in action on a wildfire in Italy.

Source: Authors of the country report for Italy.

With regards to the information campaigns, as in the previous year, in 2024, in the framework of the project "I don't risk" of the Civil Protection Department, there is a special section on forest fire risk.

Figure 69. Information campaign on forest fire in Italy in 2024 (internet web sites of Italian Civil Protection Department).

Source: Authors of the country report for Italy.

In 2024, during the summer, ANAS (Italian National road works company), with the collaboration of the Department of Firefighters, Public Rescue and Civil Defence of the Ministry of Interior, launched he information campaign

"The road is not an ashtray". The concept of the campaign was to raise awareness among the citizens to protect the environment from wildfires caused by burning cigarette butts thrown by motorists: fires near roads and highways are very dangerous for safety and cause extensive damage to the environment.

Figure 70. A post from the information campaign of ANAS "Road is not an ashtray".

Source: Authors of the country report for Italy.

Injuries and loss of human lives

In 2024, even if the wildfire season was not particularly intense, 5 casualties and many injured were registered among First Responders. The incidents affected Fire Fighters from different Organizations: Regional Forest Corps, Forest workers, National Fire and Rescue Service.

International Assistance Operations in 2024

During 2024 four forest fire fighting missions were carried out by the Italian AFFF module on request by the EU Civil Protection Mechanism.

Two aircrafts Canadair CL-415 of the National Fire and Rescue Service (CNVVF) were engaged in the missions reported in **Table 27**.

Table 27. Forest fire fighting missions carried out by the Italian AFFF module on request by the EU Civil Protection Mechanism.

DATE	COUNTRY	AREA	TYPE AND NUMBER OF AIRCRAFT	FLIGHT HOURS	DROPS	MISSION TYPE
30-31/07/2024	ALBANIA	LEZHE DISTRICT – SHENGJIN MUNICIPALITY	2 CANADAIR CL-415	24:30	47	RAPID INTERVENTION
13-14/08/2024	GREECE	NEA MAKRI', MARATONA	2 CANADAIR CL-415	25:34	52	rescEU AFFF
17-20/09/2024	PORTUGAL	SOUTELO - PALMAZ AND SABROSO-SOUTELO	2 CANADAIR CL-415	47:20	29	rescEU AFFF
01-04/10/2024	GREECE	XILOCASTRO	2 CANADAIR CL-415	37:30	75	rescEU AFFF

Source: Authors of the country report for Italy.

In 2024, Italy participated in the summer pre-positioning campaign of the European Mechanism with 1 GFFFV capacity in France.

The capacity was a mixed team with Firemen from CNVVF and Forest Fire Fighting Volunteers from the Regions (**Figure 71**, **Figure 72** and **Figure 73**).

A further GFFFV capacity from CNVVF was sent in Greece during the emergency for forest and WUI fires registered in the area of Mandra, in the eastern Attica region, from 13 to 20 August 2024.

This capacity too was deployed in the framework of EU Civil Protection Mechanism.

Figure 71. Italian and French Fire Fighters during a briefing.

Source: Authors of the country report for Italy.

Figure 72. Italian and French fire fighters during mop-up operations.

Source: Authors of the country report for Italy.

Figure 73. Italian and French vehicles during mop-up operations.

Source: Authors of the country report for Italy.

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Corpo Nazionale dei Vigili del Fuoco (CNVVF)

Dipartimento di Protezione Civile - Centro Operativo Aereo Unificato

Regione Friuli Venezia Giulia - Corpo Forestale Regionale

Regione Valle d'Aosta – Corpo Forestale Regionale

Regione Lazio – Protezione civile

(Sources: Italian National Fire and rescue Service – Forest fire Fighting Service; Ministry of Agriculture, Food Sovereignty and Forests – General Directorate of Mountain Economy and Forests; Comando Unità Forestali, Ambientali e Agroalimentari dell'Arma dei Carabinieri; Regione Siciliana – Regional Forest Corps; Regione Friuli Venezia Giulia – Regional Forest Corps; Regione Valle d'Aosta – Regional Forest Corps; Regione Sardegna – Regional Forest Corps (CFVA), Italy).

1.2.15. Latvia

Fire danger in the 2024 fire season

In 2024, the forest fire-fighting period was set from 3 May and lasted until 14th of October.

Fire occurrence and affected surfaces

Overall, the fire season 2024 was calm, with relatively low fire weather index values. In total, 222 forest fires were detected and extinguished during the fire season, affecting 63ha of forest land, including 8ha of young forest. Additionally, the State Forest Service (SFS) registered and extinguished 14 fires with total area 0.53ha outside forest areas.

The largest forest fire occurred on May 5, 2024, in Vidzeme Forestry District, Zvārtava Parish, where 14.5 ha of forest land were affected.

The average forest fire area in 2024 was 0.27 ha, which is one of smallest values during the last decades.

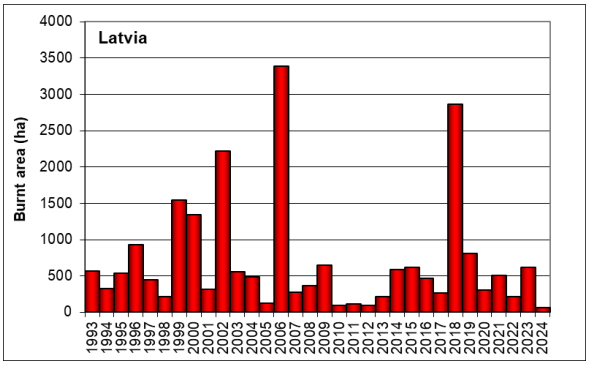
Table 28. Number of fires and burnt areas by month in Latvia in 2024.

Month	Number of forest fires	Burnt area (ha)
January	0	0
February	0	0
March	6	0.1891
April	13	7.0798
May	60	29.6663
June	34	4.3254
July	25	7.6728
August	25	1.0485
September	38	12.7784
October	16	0.1748
November	3	0.0118
December	2	0.0107
Total	**222**	**62.9576**

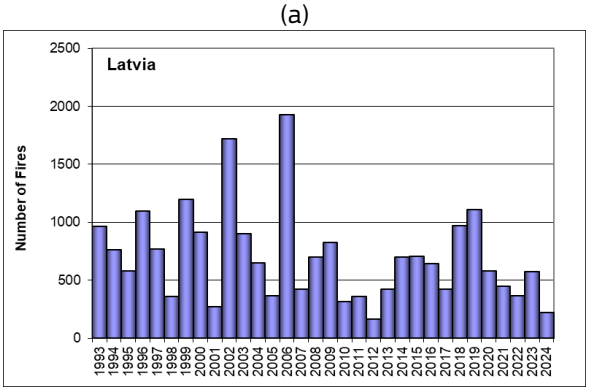
Source: State Forest Service, Environmental and Forest Protection Department, Latvia.

The trends of the burnt areas, number of fires and average fire size in Latvia for the years 1993 to 2024 are shown in **Figure 74**.

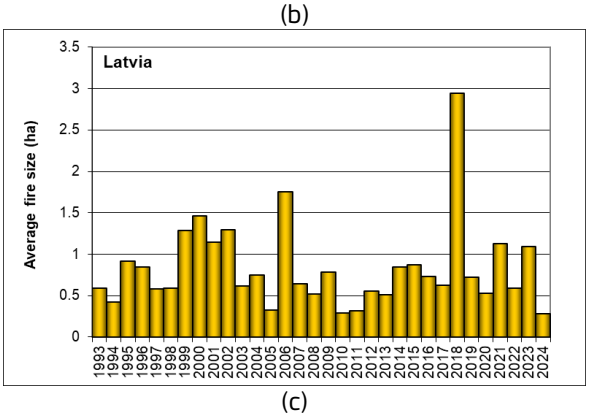
Figure 74. Burnt areas (a), number of fires (b) and average fire size (c) in Latvia from 1993 to 2024.



(a)



(b)



(c)

Source: JRC's elaboration of the country reports for Latvia.

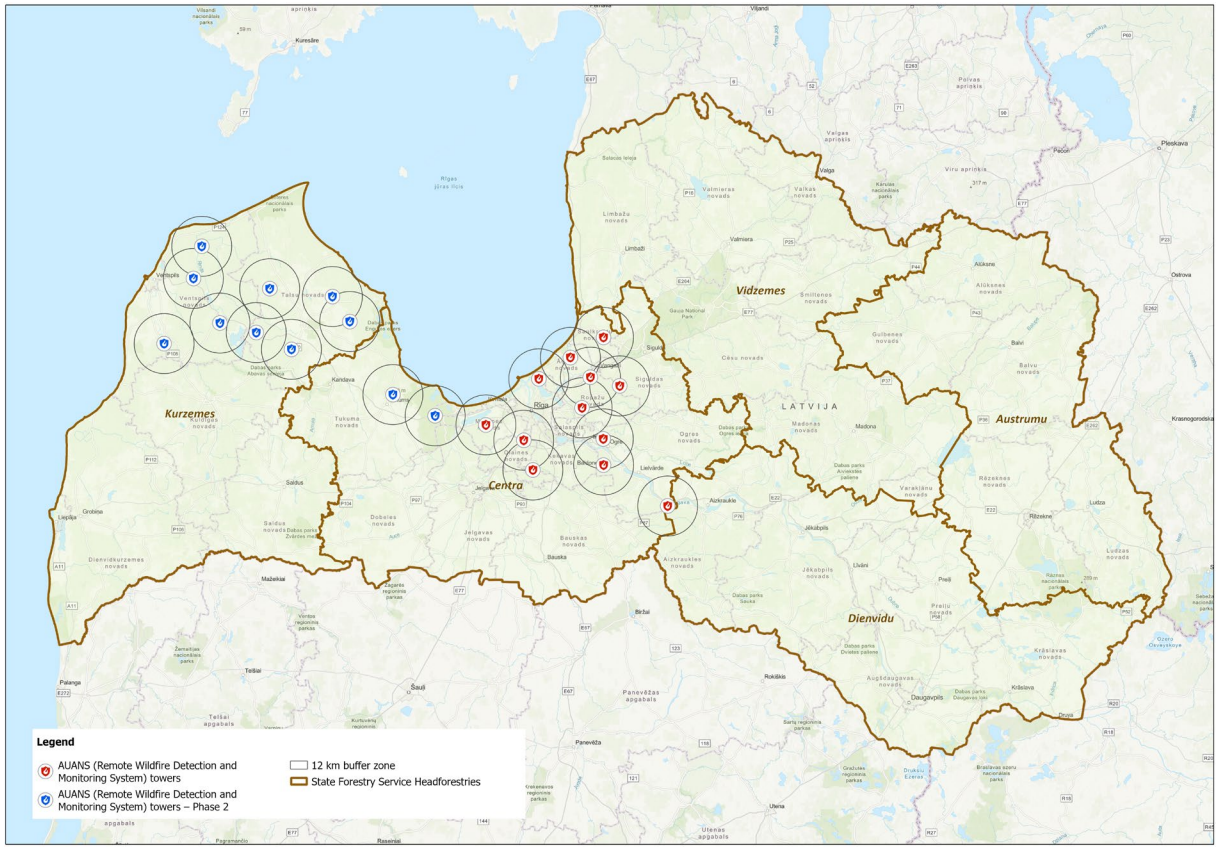
Preventive measures

The service uses a network of fire observation towers (177 fire observation towers) to ensure fire protection. In 2020, SFS installed the Remote Fire Detection and Monitoring System (RFDMS) in 12 fire observation towers in the Riga suburban area; in 2024 the RFDMS system network was expanded to 23 fire observation towers in the Kurzeme region and the Riga suburbs (**Figure 75**, **Figure 76**).

Figure 75. Fire detection from an observation tower.

Source: State Forest Service, Environmental and Forest Protection Department, Latvia.

Figure 76. Network of observation towers.



Source: State Forest Service, Environmental and Forest Protection Department, Latvia.

Fire prevention measures in 2024 costed 153 767 Euro (**Table 29**).

Table 29. Expenditure on fire prevention measures in Latvia in 2024.

Title	Costs, EUR
Latvian State forest	
Existing fire break cultivation, 2979 km.	85 359
Water point, warning sign renovation	68 408
Total	**153 767**
Riga City Forest	
Creating new fire breaks, 0 km	
Existing fire break cultivation, 521km	

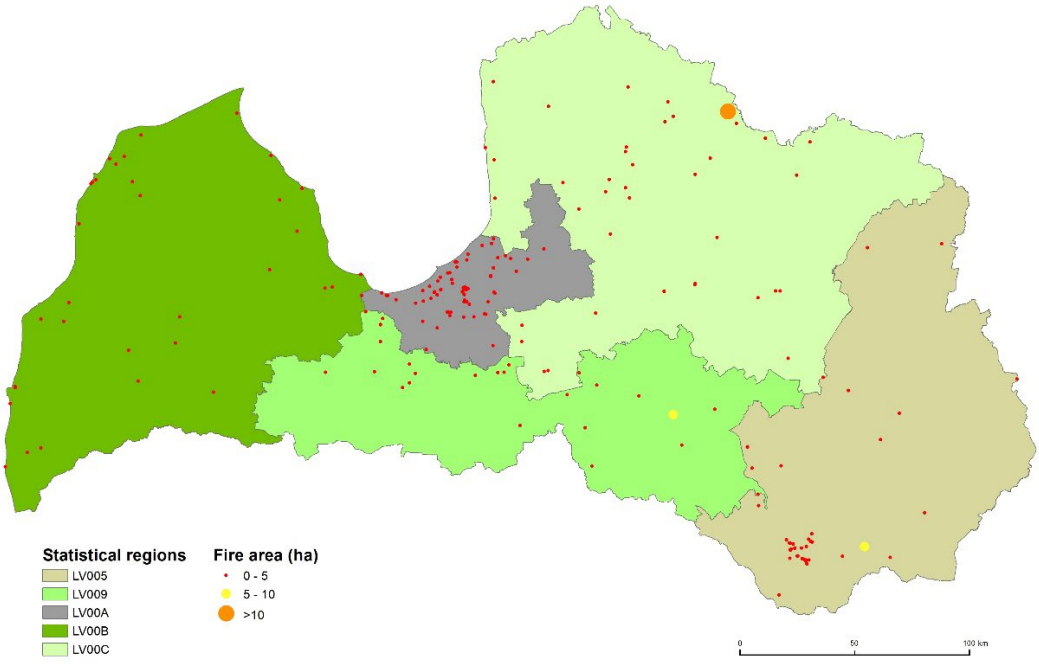
Source: State Forest Service, Environmental and Forest Protection Department, Latvia.

Fire fighting means

During the 2024 forest fire season, the SFS provided jobs for seasonal employees in 400 positions (tower duty officers, forest firefighters, drivers of specialized fire trucks, RFDMS operators).

The SFS has 83 Toyota Hilux off-road vehicles equipped with firefighting equipment; 20 Utility Terrain Vehicles (UTVs) for initial response; 35 firefighting trucks Mercedes Unimog 4x4; 5 water tenders Volvo FMX 6x6 with a water capacity of 10 000 litres for extended fire fighting operations.

Figure 77. Map of forest fire locations in Latvia in 2024.



Source: State Forest Service, Environmental and Forest Protection Department, Latvia.

(Source: State Forest Service, Environmental and Forest Protection Department, Latvia).

1.2.16. Lithuania

Fire danger in the 2024 fire season

The number of wildfires and the total burnt area was less than in 2023. The first fire in 2024 was recorded in January, the last one in December. Fire danger during the fire season 2024 was characterized by high temperatures levels. The average air temperature in Lithuania in 2024 was 9.5 °C, i.e. 2.1° higher than the 1991–2020 standard climate norm (SKN), which is 7.4 °C. This is the warmest year during the period of meteorological observations. The driest month of the year was March, with an average of 22 mm of precipitation. Dry weather prevailed also in August and October, with less than half of the precipitation norm, 48 and 44%, respectively. The most notable forest fires for season 2024 are listed below.

Table 30. The biggest forest fires in 2024 in Lithuania.

Date	Burnt area, ha
2024-05-28	3.41
2024-05-28	7.21
2024-09-08	5.75
2024-09-09	3.78

Source: Authors of the country report for Lithuania.

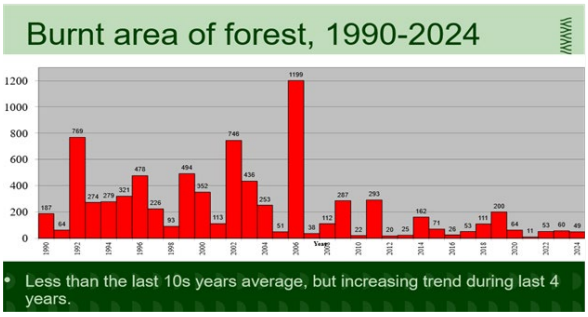
Fire occurrence and affected surfaces

In 2024, according to the data of the State Forest Enterprise, 110 forest fires occurred and damaged 49.47 ha of forest of which State forest 36.11 ha, forest fires in private forests cover 13.36 ha. In 2024, 11 forest fires was bigger than 1 ha, with total burnt area over 32.55 ha. The highest number of forest fires occurred in May -34, September - 29, the most burned forest area in May. The yearly trends in terms of number of fires and burnt area during the last 30 years in Lithuania are shown in **Figure 78**, **Figure 79**, **Figure 80** and **Figure 86**.

Fire causes

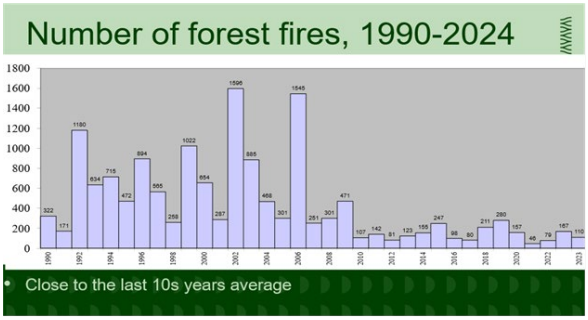
In many cases, the ignition source for fires is linked to traditional agricultural burning practices, although the fire causes for the majority of fire incidents remained unknown. Fire departments of the regional units and forest officials have reportedly visited fireplaces more than 273 times, according to reports of forest fires.

Figure 78. Burnt area in Lithuania, 1990-2024.



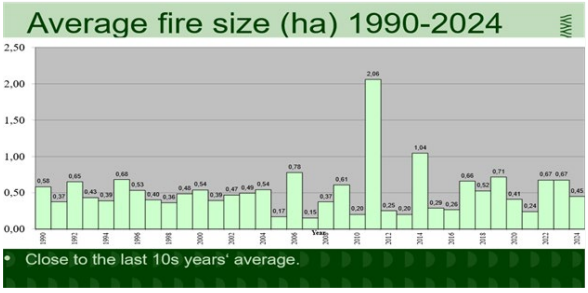
Source: Authors of the country report for Lithuania.

Figure 79. Number of fires in Lithuania, 1990-2024.



Source: Authors of the country report for Lithuania.

Figure 80. Average fire size in Lithuania, 1990-2024.



Source: Authors of the country report for Lithuania.

Economic costs

The total damage was estimated in 79 070.70€.

Fire prevention activities

The State Forests Enterprise organizes the establishment of the uniform system of state fire prevention protection measures. Annually contracts between Lithuanian Hydro meteorological Service and State Forests Enterprise is being signed concerning calculations of complex forest fire figures and pronouncements of classes of fire rates in each territory of state forest enterprise. Forest Fire Danger Map is updated daily (at 12 a.m.) from April to September and can be found on http://www.meteo.lt/lt/web/guest/misku-gaisringumo-klases-prognozes. Every year state forest enterprises together with Fire and Rescue Services and Armed Forces organize educational trainings in the forest in order to check, how organizations are able to organize forest fire extinction, manage difficult situations, control the actions, collaborate with each other and keep the connection. In order to sustain the system of general state fire protection measures state forest enterprises budgeted 4,50 mln. Eur from their own funds in 2023, 11 600 km of firebreaks were mineralized. The total damage to the forest was estimated to be 79 000 Euro (only value of wood).

Automatic early warning systems for forest fire prevention "Fire Watch" are used in 25 regional division of State Forest Enterprise having forests with high fire risk (total 24 central stands and 84 detectors). Forest fire detection systems help to detect forest fire focus coordinates with better precision, for fire brigades to arrive to fire place quicker, extinct the fire more operatively.

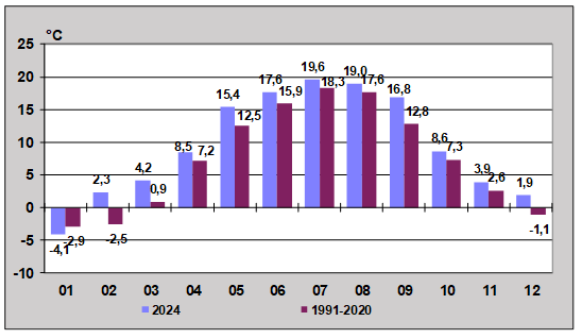
Operations of mutual assistance and loss of human lives

No operations of mutual assistance were taken and no casualties were reported in Lithuania during the fire season of 2024.

Climate change

The coldest month of the year was January, the only month this year with a negative average air temperature of -4.1 °C (**Figure 81**). On the contrary, February was particularly warm – the average monthly temperature reached 2.3 °C, ranking fourth since 1961. This year, the lowest air temperature was recorded on the night of January 8 – Zarasai AMS measured -28.0 °C. The entire May–September period was very warm. May became the second warmest May (together with 2013), and September – the warmest September since 1961, respectively 15.4 and 16.8 °C. This year, the highest air temperature was measured on July 11. Druskininkai AMS – reached 34.9 °C.

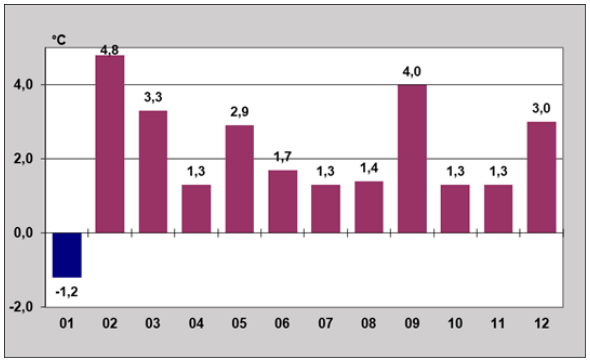
Figure 81. Average air temperature and SKN for the months of 2024 in Lithuania.



Source: Authors of the country report for Lithuania.

Based on the monthly average air temperature deviation data from the SKN, the only month was January, which was colder than the norm with a negative anomaly of 1.2° (**Figure 82**). The average air temperature of April, July, October and November differed the least from the SKN (positive anomaly of 1.3°). Meanwhile, a very high positive anomaly, in addition to the previously mentioned months of February and September, was distinguished by March, May and December, with an anomaly of 3.3°, 2.9° and 3.0°, respectively.

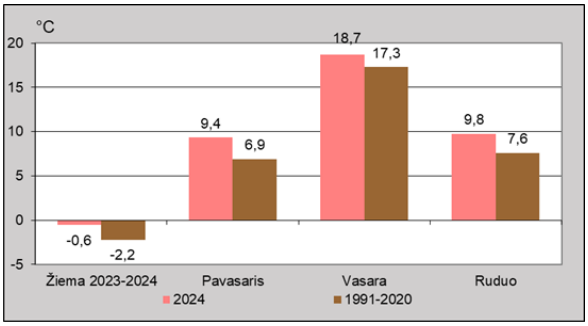
Figure 82. Deviation of the average air temperature from the SKN for the months of 2024 in Lithuania.



Source: Authors of the country report for Lithuania.

For the third year in a row, winter was warmer than normal – the average air temperature for this season was -0.6 °C (positive anomaly of 1.6°, **Figure 83**). All other seasons were also warmer than normal. The spring temperature average deviated the most from the SKN – a positive anomaly of as much as 2.5°. This was the warmest spring season since 1961. Autumn also stood out in warmth (positive anomaly of 2.2°), coming in second place after 2020. The summer deviation from the SKN was the smallest, a positive anomaly of 1.4°.

Figure 83. Seasonal average air temperature (°C) and SKN for 2024 in Lithuania.

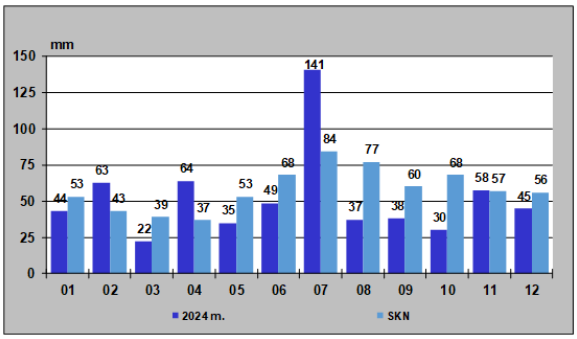


Source: Authors of the country report for Lithuania.

The year 2024 in Lithuania was slightly drier than usual - the average precipitation was 624 mm, i.e. 90% of the SKN (in 1991-2020 the SKN of precipitation is 695 mm). The annual precipitation in the country ranged from 431 to 922 mm, i.e. 69–112% of the SKN.

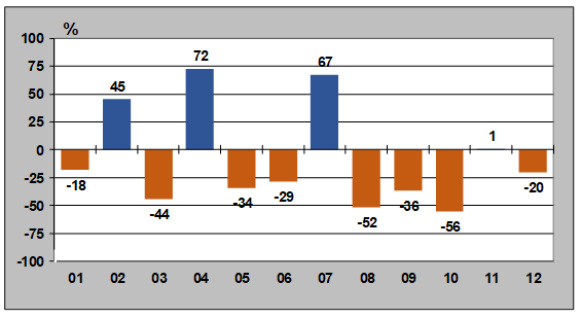
Only three months in 2024 were distinguished by a higher amount of precipitation than the norm. These were February (about 1.5 SKN, in fourth place in terms of humidity since 1961), April and July (both 1.7 SKN). The highest amount of precipitation (141 mm) was recorded in July and it was the third wettest July since 1961. On the contrary, the driest month of the year was March - an average of 22 mm of precipitation fell, i.e. about 56% of the SKN (**Figure 84** and **Figure 85**). Dry weather prevailed in August and October, with less than half of the normal precipitation, 48% and 44% respectively. The period from August to December (except for November, which was near normal) was significantly drier than normal.

Figure 84. Monthly precipitation (mm) and SKN for 2024 in Lithuania.



Source: Authors of the country report for Lithuania.

Figure 85. Deviation (%) of precipitation amounts for the months of 2024 in Lithuania from the SKN (0 – norm, below 0 – less than the norm, above 0 – more than the norm).

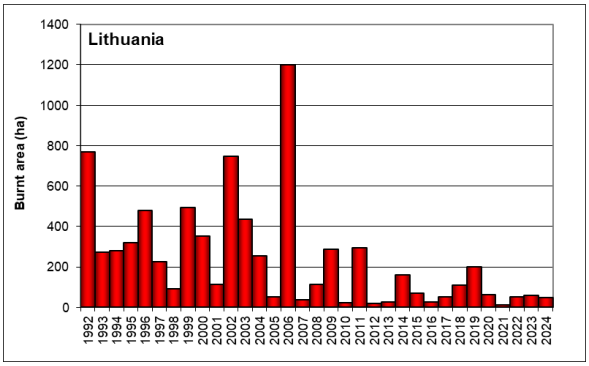


Source: Authors of the country report for Lithuania.

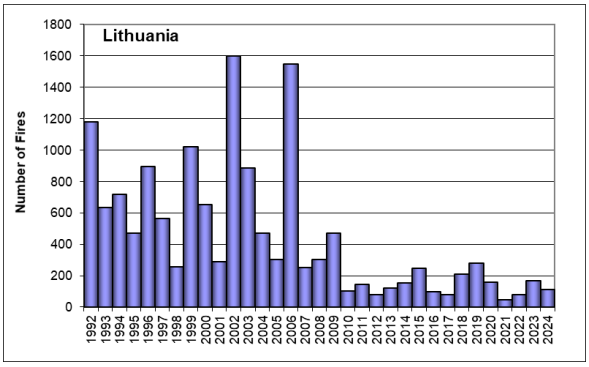
This year, 17 natural and 2 catastrophic meteorological phenomena (hereinafter referred to as SMR and KMR) and 25 natural hydrological phenomena (hereinafter referred to as SHR) were recorded, of which 7 were related to river flooding and 18 to very high water levels. The largest number (10) of SMRs occurred in summer, only 1 in winter, and 3 cases each in spring and autumn. Local SMRs were most often related to heat waves, drought during the vegetation period of plants in the southern part of the country, while frosts, convective storms with heavy summer rains, and squalls were recorded in many regions of the country. Unusually large losses were caused by winter phenomena that returned in the last ten days of the month after the warm first half of April, such as heavy snowfall, wet snow cover, a sudden drop in air temperature and strong winds. A similar case of winter-specific phenomena was also recorded in autumn (a new SMR - winter phenomena complex was legalized).

This SMR was recorded on November 22 in the western outskirts of the country, where considerable damage was caused to forests, power grids, etc. It is worth mentioning the powerful tornado (F1–2 class) that raged in Šiauliai County on July 13: several houses were destroyed, cars were damaged, trees were broken, and several people were injured. However, the country suffered the most damage during the passage of an active cyclone, more typical of autumn, through Lithuania on July 28–29. It brought very heavy rain (in some places in the western regions reaching the KMR indicator (80.7–110.1 mm/12 hours), which was accompanied by strong and very strong wind gusts (Vente AMS up to 31 m/s). The rains caused flash floods, especially in the west of the country, and the winds broke trees, which cut off power lines and residents (even in Vilnius) were left without electricity for several days.

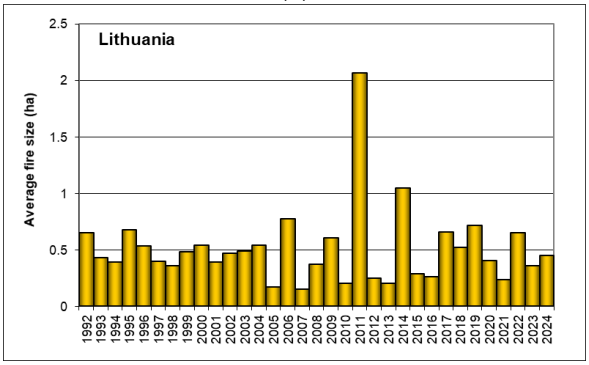
Figure 86. Burnt areas (a), number of fires (b) and average fire size (c) in Lithuania from 1992 to 2024.



(a)



(b)



(c)

Source: JRC's elaboration of the country reports for Lithuania.

(Source: State Forest Enterprise; Lithuanian Hydrometeorological Service; Forest Policy Group, Ministry of Environment of the Republic of Lithuania, Lithuania).

1.2.17. The Netherlands

Fire danger in the 2024 fire season

In 2024, wildfire danger was generally low to moderate. The year was characterized by record warmth combined with very high precipitation, making it one of the wettest years on record. Despite the wet conditions, a number of wildfires occurred. No wildfires with large societal impact were reported.

Fire occurrence and affected surfaces

In 2024, 222 wildfires were reported. This is substantially fewer than the average between 2017 and 2022 (611 per year, Stoof et al, 2024). All wildfires are included in this count, regardless of their size or the fuel type they burn in (Stoof et al, 2024).

Similar to 2023, also in 2024, even the more detailed MODIS/SENTINEL2 product detected none of the wildfires that occurred. This product did detect two larger management burns (**Figure 87**) at a military site where larger management burns take place. The MODIS & VIIRS NRT burned area product in EFFIS did not record these management burns, two other 'burned areas' that this product detected in 2024 did not match with on-the-ground reported wildfires and were therefore classified as false positives.

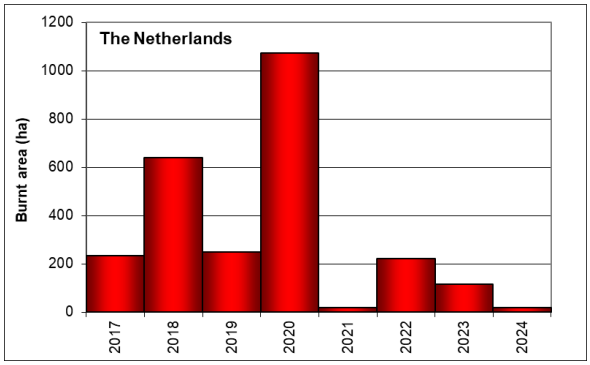
Figure 87. In 2024, the EFFIS burned area product derived from MODIS/SENTINEL2 recorded two fires in the center of The Netherlands (left), on 9 and 14 March 2024 on the military site ASK near the village of 't Harde (right).

Source: Authors of the country report for The Netherlands.

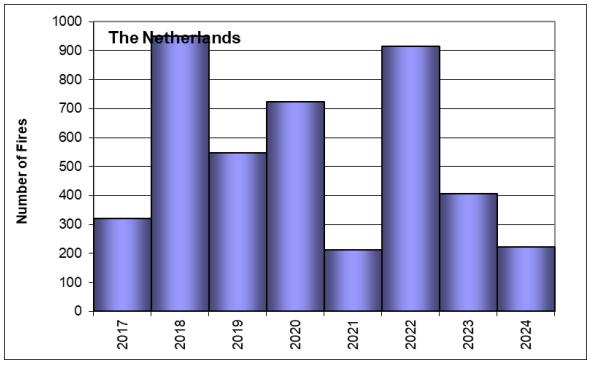
Ground estimates of the total burned area by wildfires for 2024 was only estimated for 73 out of the 222 wildfires (33%) and amounted to approximately 17 ha. The way that burned area is determined varies, it is either estimated from photo and video material, or in the field. The average area burned between 2017-2022 is much higher (405 ha, Stoof et al, 2024), but given the low number of wildfires for which size was recorded the actual total is likely higher. That being said, no wildfires were recorded by MODIS/SENTINEL2 which indicates that larger fires did not occur.

The trends for burnt areas, number of fires and average fire size in The Netherlands for the years 2017 to 2024 are shown in **Figure 88**.

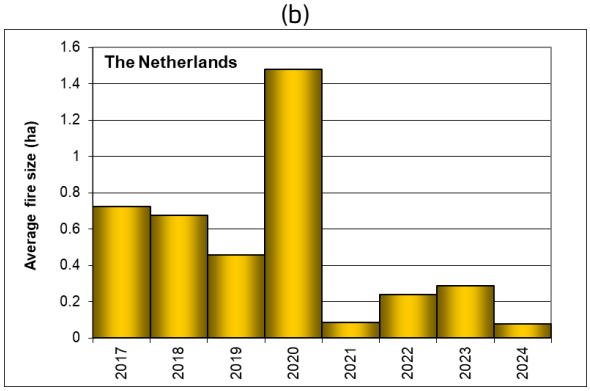
Figure 88. Burnt areas (a), number of fires (b) and average fire size (c) in The Netherlands from 2017 to 2024.



(a)



(b)



(c)

Source: JRC's elaboration of the country reports for The Netherlands.

Fire causes

Fire cause investigation is not yet systematically conducted for wildfires in The Netherlands, and no official fire cause investigations took place in 2024. Available information for 2024 is therefore based on informal assessments and estimates:

- 12 fires were classified as arson-caused;
- 7 fires were categorized as 'other', e.g. a campfire;
- 59 fires were caused by shooting exercises.

For all other fires no cause was assessed. As in previous years, lightning or purely natural causes were negligible. Most wildfires can therefore be explained by human activity, whether accidental or intentional.

Fire fighting means

In 2024, at least 314 fire engines were requested for wildfire suppression, as well as a minimum of 106 water tenders. These numbers reflect the substantial logistical efforts required even in a relatively wet and mild fire season. Other specialized resources such as Uncrewed Aerial Vehicles, Wildfire Tactical Advisors, Fire Bucket Operations and Handcrews were not deployed.

Fire prevention activities and information campaigns

Wildfire management activities in the Netherlands continued at both the political and operational levels. The Taskforce Wildfire Management, established earlier, continued to shape national strategy. The National Action Center Wildfires (Landelijk Actiecentrum Natuurbranden) further developed its role in coordinating emergency management, monitoring fire danger, and organizing expert support. The Ministry of Agriculture, Nature and Food Quality (LNV) continued its budget program of €70 million for the years 2024–2029 (see below).

Injuries and loss of human lives

No injuries or fatalities were reported in 2024.

Operations of mutual assistance

The Netherlands Fire Service did not provide mutual assistance abroad in 2024, nor was there a need for formal assistance from neighbouring countries, apart from regular cross-border support in the border areas with Germany and Belgium.

Climate change

Climatic conditions and how they impacted fire season

According to the Royal Netherlands Meteorological Institute (KNMI), 2024 was, with an average temperature of 11.8 °C in De Bilt (**Table 31**), equally as warm as 2023, making both years the warmest ever measured in the Netherlands since 1901. It was also an exceptionally wet year, with a national average of approximately 1 054 mm of precipitation (the second wettest year on record, after 2023). Between the wet conditions, several dry spells allowed wildfires to occur.

Table 31. Summary of weather conditions in The Netherlands in 2024.

Weather conditions	2024	Normal
Ice days (max. temp. < 0°C)	0	8
Frost days (min. temp. < 0°C)	23	53
Warm days (max. temp. > 20°C)	102	93
Summer days (max. temp. > 25°C)	28	28
Tropical days (max. temp. > 30°C)	4	5
Hours of sunshine	1 748	1 774
Precipitation (mm)	986*	795*

* This is the average amount of rainfall over the whole of The Netherlands.

Source: Koninklijk Nederlands Meteorologisch Instituut, 2025.

National adaptation strategies

The Ministry of LNV continued to coordinate national wildfire management strategies in 2024, through structural meetings between stakeholders at administrative and operational levels. The reserved €70 million budget (2024–2029) supports provinces, land managers, and other organizations in reducing the risk of uncontrollable wildfires. These efforts are targeting the three pillars of integrated fire management as defined by the Dutch government (**Figure 89**): risk management, crisis management, and knowledge and innovation. Under the third pillar, a national Center of Expertise for integrated fire management is currently being shaped. In 2024, the Netherlands Fire Service launched a new specialist team of Fire Behavior Analysts (FBAN). These analysts regularly produce comprehensive assessments of expected conditions, depending on the current wildfire risk. They also provide firefighters in the field, such as national wildfire advisors, with information about (high-risk) conditions.

Figure 89. The three pillars of integrated fire management adopted by the Dutch government.

Source: Authors of the country report for The Netherlands.

Research activities aimed at improving fire management

Practical and applied research

The Netherlands Institute for Public Safety (NIPV) continued to participate in research activities, including data collection and experiments on wildfire spread and intensity. In 2024, NIPV launched the wildfire safety programme, a new knowledge hub for applied research and knowledge dissemination.

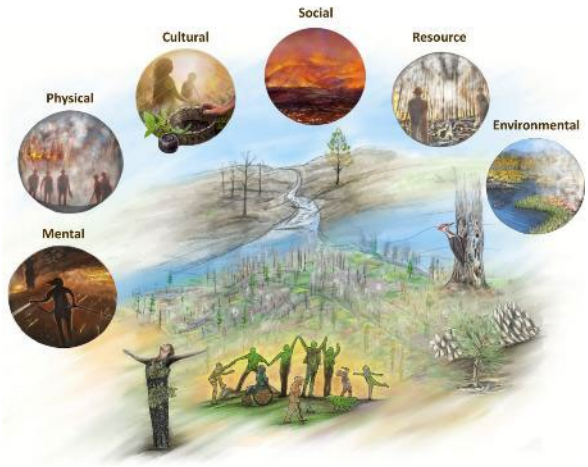
Scientific research focused on The Netherlands and NW Europe

Increasing fire danger in the Netherlands due to climate change. Using historical weather data, fire records and future climate projections along with FWI calculations, Lambrechts et al (2024a) assessed current and future trends in fire danger, showing that the number of days at high fire danger has increased, particularly during the period 2011-2020. In the future, further increases are highly likely, stressing the urgency of strengthening fire management.

Remotely sensed vegetation phenology drives large fire spread in northwestern Europe. Quiñones et al (2025) analysed the effect of phenology and weather conditions on fire spread rate in 58 large fires across north western Europe, using remote sensing. Results show that fires spread slow in green vegetation and fast outside the growing season. This highlights the need to include vegetation greenness when modelling fire behaviour and considering fire danger.

Addressing wildfire suffering to proactively manage health and wellbeing. Acknowledging the important role of fire in landscapes and culture, Newman Thacker et al (2025) identified six themes of potential wildfire suffering: mental, physical, cultural, social, resource and environmental (**Figure 90**). This framework is currently used to assess future fire risks and adaptation strategies, in the reassessment of climate risks for the new version of the Dutch Climate Adaptation Strategy.

Figure 90. The three pillars of integrated fire management adopted by the Dutch government.



Source: Authors of the country report for The Netherlands.

Climate information services supporting wildfire management in NW Europe. To understand how professional stakeholders across northwest Europe consider wildfires, Lambrechts et al (2024b) conducted an online survey. Respondents are experiencing wildfires and demonstrate high awareness of current wildfire conditions. Surprisingly, 40 % of a total of 91 of respondents did not know about the services offered by EFFIS, indicating that there is a strong potential to increase the reach of these valuable services in the region. Results furthermore highlight the need for stakeholders to improve preparedness for future conditions, as well as a need to develop locally relevant climate information services.

PhD thesis Between fire and water: towards integrated fire management in northwestern Europe (Lambrechts, 2025). This thesis encompasses the research done by Hugo Lambrechts, funded by the PyroLife project, an EU Marie Curie Innovative Training Network. PyroLife focuses on Northwest Europe and The Netherlands by making connections between integrated fire management and integrated water management, learning across disciplines and regions. The full text of this thesis is available open access at https://doi.org/10.18174/681210.

SparkleFire project for fire risk awareness through games and play. The EU-funded DG ECHO project SparkleFire (https://civil-protection-knowledge-network.europa.eu/projects/sparklefire, 2025-2027) aims to explore, design and implement games to increase awareness of wildfire risk, applicable in the four European bioregions. The project is coordinated by Dr Stoof at Wageningen University, and partners with CTFC and Pau Costa Foundation (Spain) and VOST and the Municipality of Paredes de Coura in Portugal.

Student projects

In the fire laboratory FLARE, at VU Amsterdam, two student research projects supervised by Hans Cornelissen led to interesting findings about the vulnerability of NW European tree species to wildfire. They showed which bark traits were the most important for fire resistance and protecting the cambium from damage due to high temperature. Bark thickness was the most important factor, but high resin content can lead to the outer bark catching fire and helping the fire to spread.

Also in in FLARE, an MSc thesis demonstrated how the flammability of leaf litter of birch and oak in the soil surface litter layer (of fire prone forests) depends not only on the moisture content per se (less flammable at higher moisture), but also that, via interactions between the two species in mixture, pine needles can help birch leaves to burn at rather high moisture content, even when the latter cannot burn when alone on the litter layer. These findings have important implications for fire spread in mixed forest versus forest dominated by single tree species.

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(Source: Netherlands Fire Service, Netherlands Institute for Public Safety; Wageningen University, The Netherlands).

1.2.18. Norway

Fire danger in the 2024 fire season

Norway transitioned from the WBKZ-system to the FWI (Fire Weather Index) in 2021. The system is adapted to Norwegian conditions. Weather parameters encompass a range of factors, including air temperature, humidity, precipitation, wind, and snow.

The standard fire season typically spans from March to September. However, variations are anticipated given the length of the country, stretching 1750 km from south to north. This diversity can result in divergent conditions, such as flooding in one region of Norway while another area contends with a high forest fire index.

Initiating in the south-west during March and April, the fire season gradually extend southward and eastward as the season progresses. The western regions primarily encounter brush fires, while in the southern areas, swiftly drying pine trees on impoverished soil constitute the most prevalent fire risk. The largest forested regions are concentrated in the eastern part of Norway.

The classification of precipitation shows that most of Southern Norway had a "Very Wet" summer. In some areas, particularly in Western Norway, the season was classified as "Extremely Wet." In most of Troms and Finnmark, the summer was normally wet, while it was mainly "Very Wet" in Nordland. Nationally, there was 35% more precipitation than normal, making the season, together with 1964, the wettest in the measurement series that began in 1901.

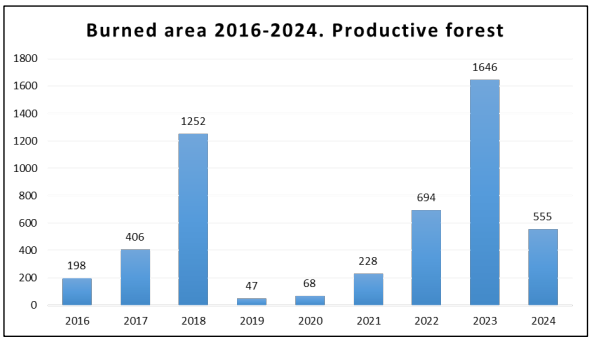
The temperature classification shows that the summer was "Very Warm" or "Extremely Warm" in most of Northern Norway, and mainly around normal in Southern Norway. The national average temperature was 1.2°C above normal, and 2024 became, together with 2014, the 4th warmest summer season recorded in a series dating back to 1901.

For the 2024 season, there was a period of high forest fire danger in late May for central and southern part of Norway. In the second half of July and the first half of August, there was a period of high forest fire danger in the northern parts of Norway (Finmark and Troms). Summary, it was a low forest fire season for Norway, which is also reflected in the statistics on the number of fires.

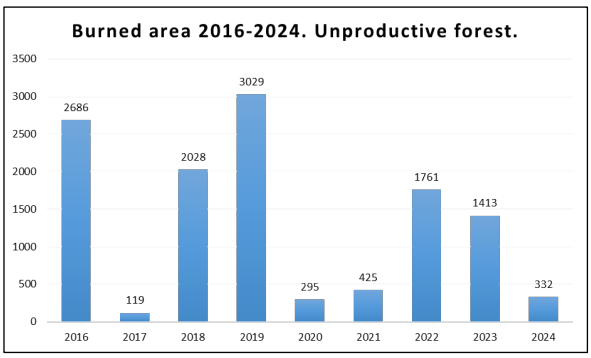
Fire occurrence and affected surfaces

In 2024 there were 776 wildland fires recorded in Norway. 555 ha of productive forest and 332 ha of other wooded land. The statistics for the period 2016-2024 are shown in **Figure 91** for all fires, regardless of size.

Figure 91. Burnt area of productive(a)/unproductive(b) forest in Norway 2016-2024.



(a)

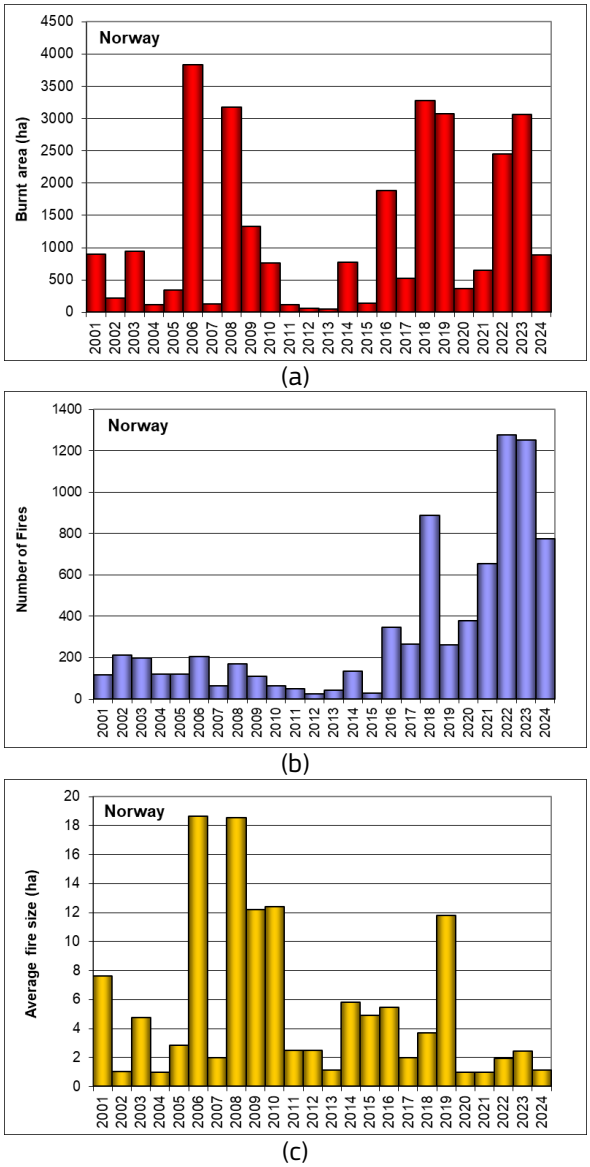


(b)

Source: Directorate for civil protection (DSB), Norway.

The trends of the burnt areas, number of fires and average fire size in Norway for the years 2001 to 2024 are shown in **Figure 92**.

Figure 92. Burnt areas (a), number of fires (b) and average fire size (c) in Norway from 2001 to 2024.



Source: JRC's elaboration of the country reports for Norway.

Causes of forest and wildland fires

The primary causes of forest and wildland fires are typically man-made. Examples: burning debris or grass in the spring, activities related to forestry, ignition by purpose etc.

The primary natural cause is lightning during thunderstorms. These events can lead to fires either immediately, or they might ignite the following day as a result of drying processes.

Fire fighting means

The Directorate for Civil Protection have a partnership with a private helicopter company. From April 15 to September 15, one helicopter is on standby in the eastern part of Norway (Torp). With eight strategic bases nationwide and agreements with other entities, the company's reach is extensive. The number of standby helicopters increases during high fire risk periods.

In 2024, helicopters were deployed in 36 fires (total 38 helicopters).

To ensure effective response during major forest fire outbreaks, the Directorate for Civil Protection has established a proficient expert team to support local fire chiefs upon request for helicopter assistance.

Norwegian fire services have approximately 3 700 full-time and 7 750 part-time firefighters, operating as an all-risk service. Municipalities with significant forest fire risk have dedicated groups managed by the fire services for forest fire suppression.

Figure 93. Prescribed burning in Norway.

Source: Haugaland fire service.

Fire prevention activities and information campaigns

In Norway, municipalities are responsible for the Fire Services, which encompass both prevention and preparedness concerning forest fires. Nevertheless, certain activities are on a

national level and are followed up by the Directorate for Civil Protection.

The responsibilities of the Directorate of Civil Protection include:

- Framing regulations and legislation for the population in generally and Fire Services particularly. Using fires in forests or wildlands is prohibited by law from April 15th to September 15th in Norway.
- Manage and maintain agreements with air resources, coordinating the deployment and quantity of helicopters.
- Managing and upholding agreement with the forest fire management support group.
- Developing and sustaining a statistical reporting system for fires known as BRIS.
- Facilitating the Norwegian Forest Fire Committee, comprised of members representing the Directorate for Civil Protection, Fire Services, The Norwegian Meteorological Institute, Insurance agencies, Aerial resource providers, and Fire Associations.

The responsibilities of the Norwegian Meteorological Institute include:

- Providing information on forest fire index through the internet and provide information through television (Forecast) when the forest fire index is high.

Figure 94. Prescribed burning in Norway.

Source: Haugaland fire service.

The responsibilities of the Fire Service and municipalities include:

- Preparedness: focusing on effective handling of fires, particularly emphasizing initial attack approaches, considering the fire's potential impact.
- Prevention: risk analysis, aerial and ground monitoring, skill building exercises, information campaigns and controlled prescribed burning. Prescribed burning is an important for maintaining forest and heathland areas, thereby reducing the occurrence of forest fires and the risk of spreading towards urban areas.
- For controlled prescribed burning there have been 51 activities and 600 hectares of wildland is burned. The controlled prescribed burning is mainly for the maintenance of the pasture areas/vegetation, but there is also a biodiversity effect.

Injuries and loss of human lives

None.

Operations of mutual assistance

None.

Figure 95. Prescribed burning in Norway.

Source: Haugaland fire service.

Climate change

Climatic conditions and how they impacted the fire season.

Climate changes in Norway leads to higher air temperature and it is expected more precipitation, but also droughts due to increased temperature. The consequences of this are

increased growth in grass, shrubs and trees. This leads to overgrowing of cultural landscapes, longer fire season and larger fires while as a result of more fuel.

National adaptation strategies / plans and in particular regarding plans to adapt the forest sector to climate change in order to limit forest fire risks.

The Directorate for Civil Protection is still working with analysis to adapt the national preparedness to large forest fires. It will on a later stage be made a preventive analysis.

Research activities aimed at improving fire management

Project: Reducing fire disaster risk through dynamic risk assessment and management (DYNAMIC)
Period: October 2019 – September 2024
Owner: Western Norway University of Sciences
Contact: Maria-Monika Metallinou Log, prof.
Description:The project "Reducing Risk of Fire Disasters through Dynamic Risk Modeling and Management (DYNAMIC)" aims to understand parameters leading to catastrophic fires. Methods to detect and forecast risk peaks will be developed. Research includes fostering volunteer heath fire teams, risk-reducing measures, and public alert systems to mitigate future fire risks. Knowledge dissemination ensures enhanced safety.

Project: Treeads, funded by EUs Horizon 2020
Period: December 2021 – May 2025
Owner: Rise Fire Research as
Contact: Kemal S. Arsava, project coordinator
Description: TREEADS aims to increase environmental sustainability and urban/ rural ecosystems safety through redefining and reinforcing forests protection and management by developing and validating an innovative, sustainable and applied holistic wildfire management approach.

Project: Prediction of ignition and spread of wildfires in Scandinavia: from experiments to models (PREWISS)
Period: October 2021 – September 2025
Owner: Western Norway University of Sciences
Contact: Maria de Las Nieves Fernandez Anez, Associate Professor
Description: Global warming induces hotter, drier conditions, increasing wildfire risk in Northern Europe. PREWISS aims to predict and mitigate wildfires by studying vegetation flammability and developing a mathematical model with geospatial data. Understanding ignition conditions is crucial. The project addresses the need for effective wildfire management in Scandinavian vegetation.

In addition, there are several projects in Europe that have Norwegian partners (e.g. Fire Res).

(Source: Directorate for civil protection (DSB), Norway).

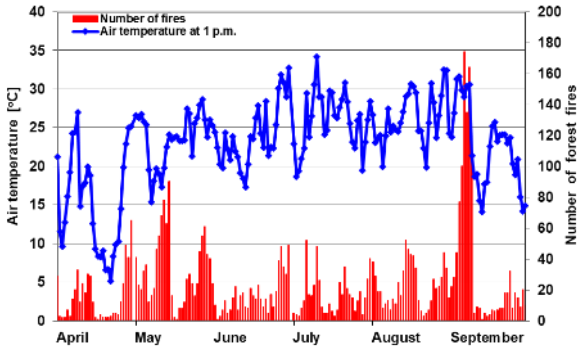
1.2.19. Poland

Fire danger in the 2024 fire season

The meteorological conditions determined the forest fire danger risk trend in the year 2024 and favoured the occurrence of forest fires, especially in the second half of the fire season. The diagrams (**Figure 96** - **Figure 101**) show the variations of air temperatures, precipitation, pine (Pinus sylvestris L.) litter moisture, relative air humidity, and the national degree of forest fire danger risk (NDFFDR) in the 2024 fire season (April-September) and average degree of forest fire danger for the forecast zones. They also present the number of fire outbreaks.

The average air temperature in the 2024 fire season was 17.5°C at 9.00 a.m. and 22.9°C at 1.00 p.m. It was much higher than the average temperature of the last decade (2013-2022), which was 16.4°C and 21.3°C respectively. In 2023, it was 16.5°C and 21.7°C respectively. In April, the coolest month of the 2024 season, the average temperature was 10.5°C at 9.00 a.m. and 15.2°C at 1.00 p.m. These temperatures were 1.7°C higher at 9.00 a.m. and 2.1°C higher at 1.00 p.m. than in 2022.

Figure 96. Air temperatures and number of forest fires in Poland in fire season 2024.



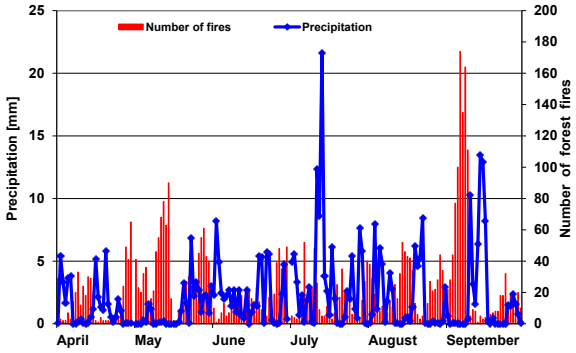
Source: Authors of the country report for Poland.

In May, the average air temperature increased to 18.1°C at 9.00 a.m. and up to 23.6°C at 1.00 p.m. In June, July and August were similar in terms of temperatures, which were respectively 19.7°C, 21.2°C and 20.2°C at 9.00 a.m. and for 1.00 p.m. it was 24.0°C, 25.9°C and 26.3°C.

The warmest month of the 2024 season was July. In September, the air temperature dropped to 15.3°C at 9.00 a.m. and 22.6°C at 1.00 p.m. The maximum air temperature occurred on 10 July at 1.00 p.m. and was 34.2°C.

The average daily precipitation in the 2024 season was 2.1 mm (0.3 mm less than in the 2023 season). By comparison, the mean daily rainfall in 2014-2023 was 2.1 mm. The highest mean daily rainfall occurred in July, amounting to 3.4 mm/day. The maximum value of precipitation (16.0 mm/day) in the 2024 season was recorded on 13 July.

Figure 97. Precipitation and numbers of forest fires in fire season 2024 in Poland.

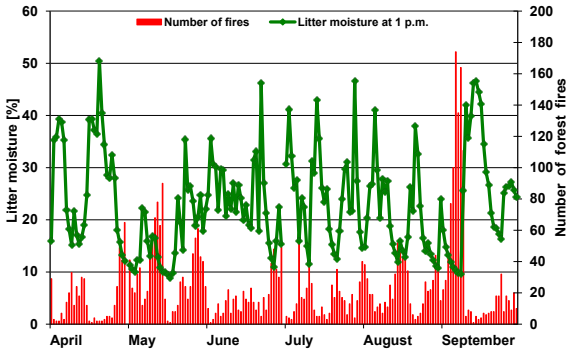


Source: Authors of the country report for Poland.

The average relative humidity in the 2024 season was 76.5% at 9.00 a.m. and 52.9% at 1.00 p.m. It was similar than the value of the average relative humidity in 2014-2023 for 9:00 a.m. and 1.00 p.m. (73.9% and 53.0%, respectively). For comparison, in 2023 it was 76.7% and 53.9% respectively.

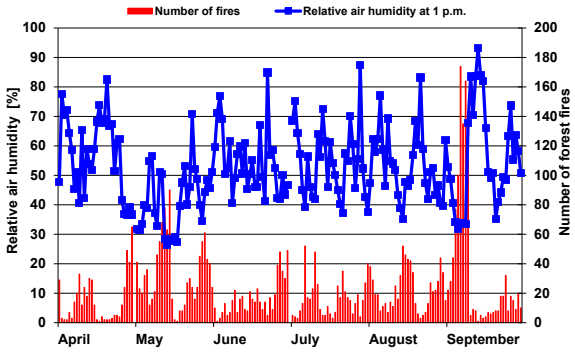
The lowest values (below the average for the 2024 season) at 9.00 a.m. were recorded in May, June and July (62.3%, 73.6% and 76.3%). The highest morning relative humidity values for the season occurred in August (80.4%) and September (86.2%). In the afternoon observation period, air humidity below the average for the season were in April (41.5%). The highest afternoon values of relative air humidity occurred in April (57.3%).

Figure 98. Litter moisture and number of forest fires in Poland in fire season 2024.



Source: Authors of the country report for Poland.

Figure 99. Relative air humidity and numbers of forest fires in fire season 2024 in Poland.



Source: Authors of the country report for Poland.

The average moisture content of pine litter (Pinus sylvestris L.), an indicator combustible material in for Polish forests, was 29.0% at 9.00 a.m. and 23.2% at 1.00 p.m., which is below the flammability threshold for dead ground cover, which is 30%. In the 2022 and 2023 seasons, they were 28.5% and 23.3% and 29.9% and 24.3%, respectively. For comparison, in the last decade, covering the years 2014-2023, they were at the level of 30.8 and 25.4%, respectively. In May 2024, the lowest values were recorded (22.5% and 16.8%, respectively). In April, June, July and August, the litter moisture was above the average for the 2024 season. The highest average litter moisture was in April (33.1% and 32.4%) and September (29.8% and 25.3%) respectively.

In Poland, the degree of forest fire danger is determined for 60 prognostic zones, which have been separated on the basis of, among others, the presence of large dense forest complexes, homogeneity in terms of climate, habitat conditions, frequency and size of forest fires and the presence of large urban agglomerations. This degree is determined at 9.00 a.m. and 1.00 p.m. on the basis of measurements of meteorological parameters:

- air temperature and relative humidity,
- daily precipitation total,
- moisture content of the pine litter.

The determination of the degree of forest fire danger is carried out by the organisational units of the State Forests using their own automated network of meteorological measuring points in the forest areas.

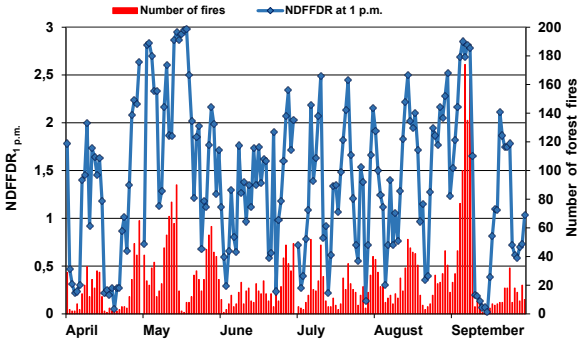
The average national degree of forest fire danger (NDFFDR) in the four-degree scale (0, 1, 2, and 3) reached 1.0. at 9 a.m. and 1.4 at 1 p.m. It was identical in compared to the 2023 season, when it was 1.0 and 1.4 respectively. This means that the fire danger in the whole analysed period was low.

The greatest forest fire danger appeared in May, when NDFFDR reached 1.6 at 9 a.m., and 2.1 at 1 p.m.

The percentage of occurrence in the third level of forest fire danger in the afternoon was 42.8% in May, 16.7% in August.

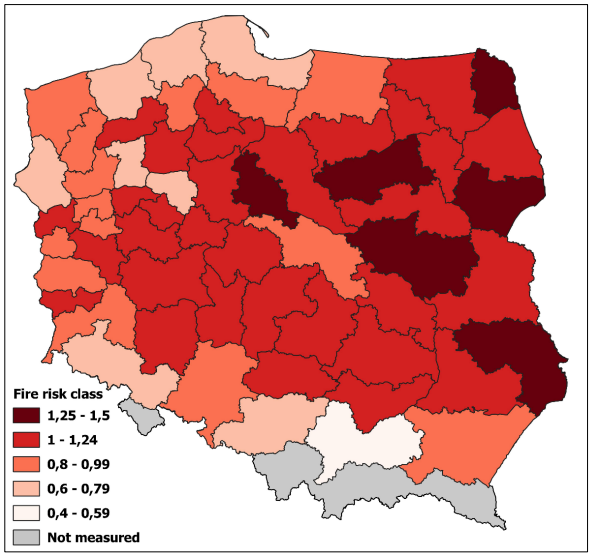
The lowest forest fire danger was in April, when NDFFDR reached 0.7 at 9 a.m. and 1.0 at 1 p.m., and the percentage of occurrence in the third level of forest fire danger was 0.1 in the morning, and 6.3% in the afternoon.

Figure 100. The National Degree of Forest Fire Danger Risk and numbers of forest fires in fire season 2024 in Poland.



Source: Authors of the country report for Poland.

Figure 101. Average degree of forest fire danger for forecast zones in the fire season in 2024 in Poland.



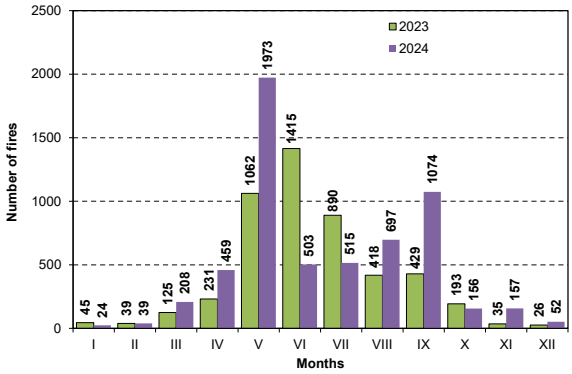
Source: Authors of the country report for Poland.

Fire occurrence and affected surfaces

In 2024 in Poland, a total of 5 857 fires broke out (3 537 in forest, 340 other wooded land and 1 980 in other non-wooded natural land), 949 more than in 2023 (4 908 fires), with a surface area of 1 357.80 ha (884.97 ha forest, 48.53 other wooded land and 424.30 ha other non-wooded natural land), over 229.05 ha more than in the last year (1 128.75 ha) - **Table 32** and **Figure 104**.

The greatest proportion of fires occurred in May (33.69%; i.e. 1 973 fires) - **Figure 102**. This was followed by September (18.34%) and August (11.90%). The lowest number of fires in the fire season (April - September) occurred in April (7.89%), June (8.59%) and July (8.79%). 89.14% of fires occurred in the fire season.

Figure 102. Distribution of number of forest fires by months in 2023 and 2024 in Poland.



Source: Authors of the country report for Poland.

The largest number of fires in 2024, similar to last year, occurred in Mazowieckie Province (1 683 – 28.73%).

The lowest number of forest fires occurred in Opolskie Province (75 – 1.28%) and Małopolskie Province (140 – 2.39%). These data are illustrated in **Figure 105**, **Figure 106**, and **Figure 108**.

The largest burnt forest areas, other wooded land and other non-wooded natural land were recorded in:

- Mazowieckie Province (324.33 ha),
- Podkarpackie Province (111.69 ha),
- Warmińsko-Mazurskie Province (110.53 ha).

The smallest area was in Opolskie Province (13.80 ha) and Małopolskie Province (18.37 ha).

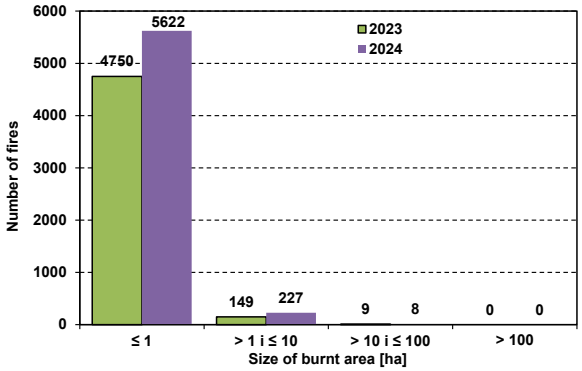
Small fires; i.e. with a surface area of less than or equal to 1 ha, represented 95.99% of all the fires in 2024 (**Figure 103**), with the burnt area amounting to 48.33%.

Fires with a surface area of between 1 ha and 10 ha represented 3.88% of all the fires, with the burnt area representing 40.58%.

Large fires with a surface area of between 10 ha and 100 ha represented 0.14% of all the fires, with the burnt area representing 11.10%.

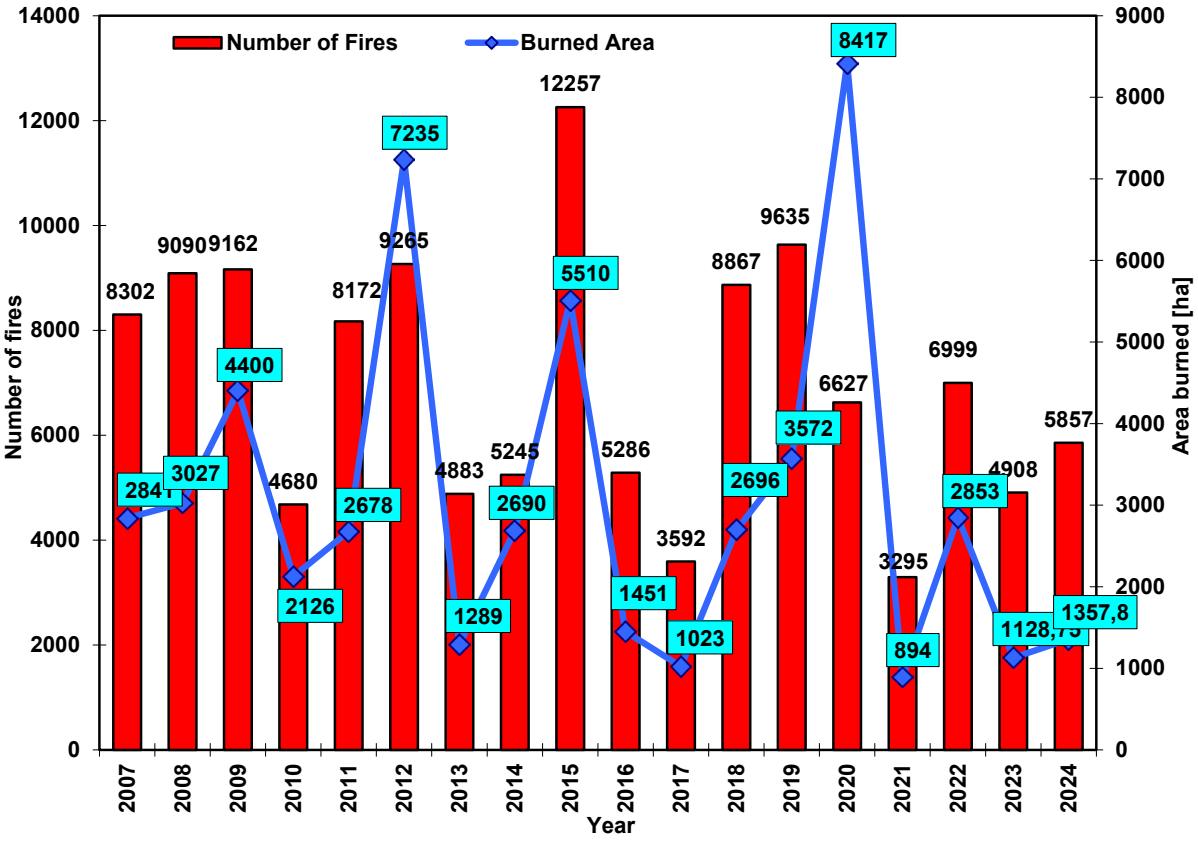
The largest fire had an area of 25.60 ha.

Figure 103. Distribution of the number of forest fires by size of burnt area in the years 2023 and 2024 in Poland.



Source: Authors of the country report for Poland.

Figure 104. Total number of fires on high forest and area burned in Poland in the period 2007-2024.



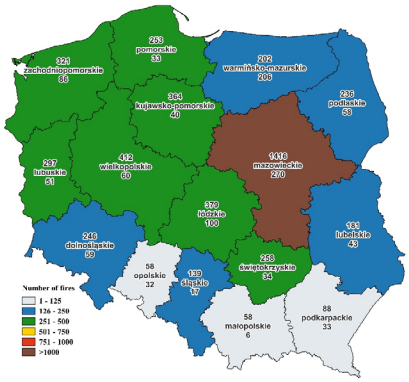
Source: Authors of the country report for Poland.

Table 32. Forest fires in Poland in the period 2007-2024.

Year	Number of fires			Burnt area (ha)		
	Forest and other wooded land	Non wooded	Total	Forest	Non wooded	Total
2007	5 086	3 216	8 302	1 642.64	1 198.24	2 840.88
2008	5 568	3 522	9 090	1 810.74	1 216.39	3 027.13
2009	5 633	3 529	9 162	2 524.58	1 875.90	4 400.48
2010	2 975	1 705	4 680	1 358.26	767.98	2 126.24
2011	5 126	3 046	8 172	1 526.11	1 151.66	2 677.77
2012	5 752	3 513	9 265	4 781.65	2 453.62	7 235.27
2013	3 168	1 715	4 883	810.42	478.12	1 288.54
2014	3 603	1 642	5 245	1 956.90	733.55	2 690.45
2015	8 292	3 965	12 257	3 765.87	1 744.03	5 509.90
2016	3 545	1 741	5 286	862.37	588.68	1 451.05
2017	2 334	1 258	3 592	692.73	329.80	1 022.53
2018	5 947	2 920	8 867	2 047.26	648.87	2 696.13
2019	6 532	3 103	9 635	2 340.74	1 231.73	3 572.47
2020	4 458	2 169	6 627	1 842.34	6 574.30	8 416.64
2021	2 243	1 052	3 295	575.42	318.32	893.74
2022	4 806	2 193	6 999	2 207.65	645.09	2 852.74
2023	3 278	1 630	4 908	771.21	357.54	1 128.75
2024	3 877	1 980	5 857	933.50	424.30	1 357.80

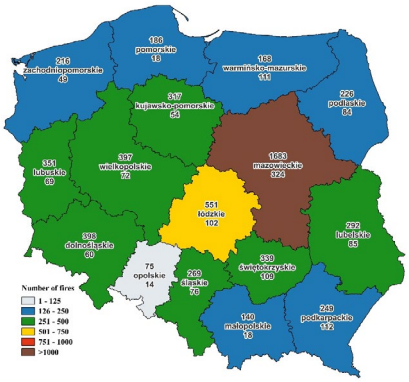
Source: Authors of the country report for Poland.

Figure 105. Number of forest fires and burned areas in Poland by provinces (NUTS2) in 2023.



Source: Authors of the country report for Poland.

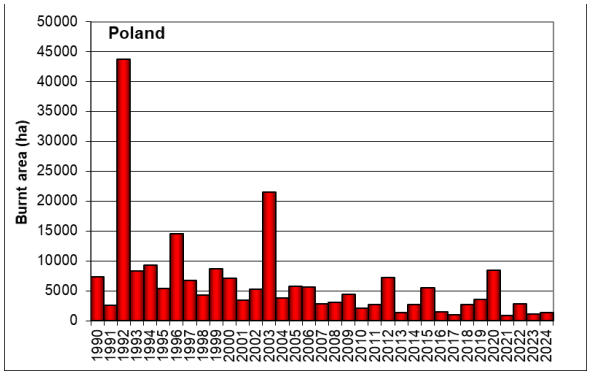
Figure 106. Number of forest fires and burned areas in Poland by provinces (NUTS2) in 2024.



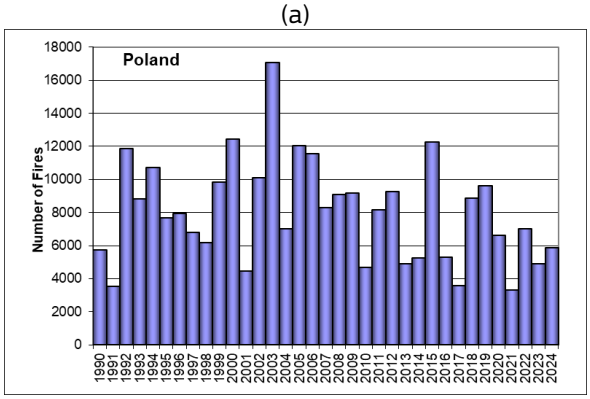
Source: Authors of the country report for Poland.

The trends of the burnt areas, number of fires and average fire size in Poland for the years 1990 to 2024 are shown in **Figure 107**.

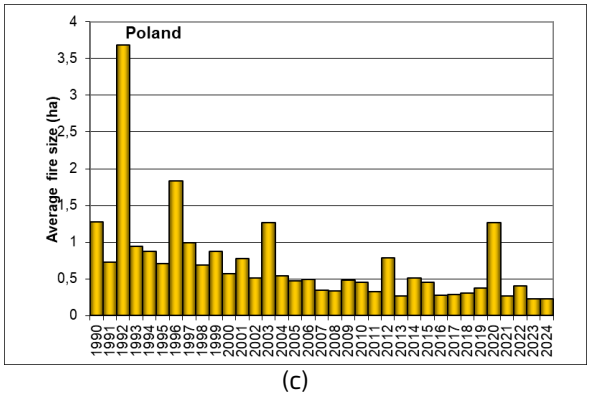
Figure 107. Burnt areas (a), number of fires (b) and average fire size (c) in Poland from 1990 to 2024.



(a)



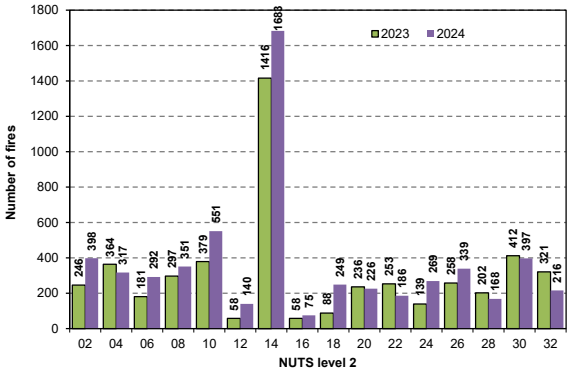
(b)



(c)

Source: JRC's elaboration of the country reports for Poland.

Figure 108. Distribution of the number of forest fires by province (NUTS2) in 2023 and 2024 in Poland.
(02 - dolnośląskie, 04 - kujawsko-pomorskie, 06 - lubelskie, 08 – lubuskie, 10 - łódzkie, 12 – małopolskie, 14 – mazowieckie, 16 – opolskie, 18 – podkarpackie, 20 – podlaskie, 22 – pomorskie, 24 – śląskie, 26 – świętokrzyskie, 28 – warmińsko-mazurskie, 30 – wielkopolskie, 32 – zachodniopomorskie).

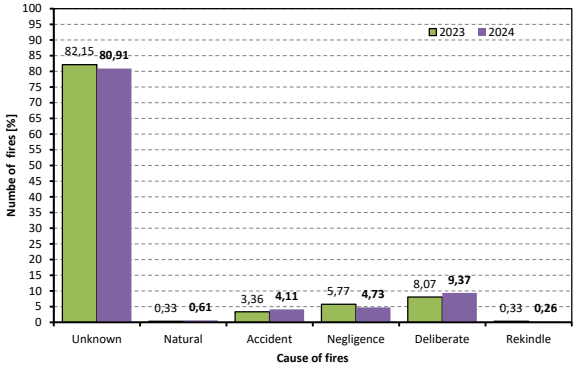


Source: Authors of the country report for Poland.

Fire causes

The main causes of fires in 2024 were identified as unknown, accounting for 80.91% (4 739 fires). Forest fires related to human activity, including "deliberate", accounted for 9.37% (549 fires), "accidents" 4.11% (241 fires) and "negligence" 4.73 (277 fires) (**Figure 109**).

Figure 109. Distribution of the number of forest fires by causes in 2023 and 2024 in Poland.



Source: Authors of the country report for Poland.

Firefighting means and information campaigns

The “State Forests” National Forest Holding (State Forests NFH) had at its disposal equipment, consisting of:

- 33 fire suppression airplanes, 5 helicopters and 4 patrol aircraft,
- 330 light fire trucks, including 323 vehicles with a fire extinguishing module,
- 5 medium and 2 heavy fire vehicles,
- 251 portable motor pumps, including 161 floating ones.

These means were used to extinguish 4% of all the fires in the areas managed by the State Forests NFH, whereas the other fires were suppressed by units of the State Fire Service and voluntary fire brigades.

In 2024, as part of information and promotion activities, the following measures in the State Forests NFH were taken:

- over 45 000 posters, leaflets and information folders on forest fires were distributed,
- 2 682 information boards were displayed,
- 1 000 interviews were given for mass media on forest fire protection,
- 112 competitions related to fire protection issues were organised.

Fire prevention activities

In forest areas managed by the State Forests NFH, work was carried out to prevent the occurrence and spread of fires, renewing 3 636 km of firebreaks, establishing 51.71 km of new ones, and tidying up the forest on an area of over 16 100 ha, reducing the amount of inflammable biomass.

The observation system of the State Forests NFH consisted of:

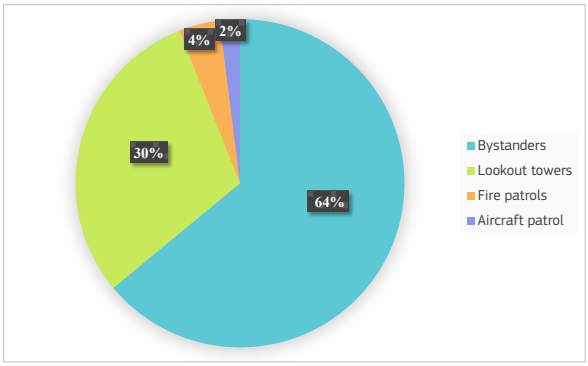
- 720 fire protection lookout towers, including 418 (58%) equipped with a TV camera system,
- 4 patrol airplanes,
- 33 fire suppression airplanes,
- 5 fire suppression helicopters using the "Bambi Bucket".

Air infrastructure is available, which includes 30 forest air bases and 49 operational landing sites. This network provides 90% coverage of the entire forest area of the country and guarantees optimal flight time to all national forest areas. An additional element of the forest fire protection system is the availability of patrol and firefighting vehicles. The fleet consists of 330 vehicles allowing for the implementation of tasks related to patrolling the area and firefighting operations. 98% of the vehicles are equipped with specially developed fire extinguishing modules.

In the areas administered by the State Forests, the effectiveness of fire detection was found to be:

- 64% by bystanders (1110 forest fires),
- 30% of fires were detected from lookout towers (521 forest fires),
- 4% of incidents were observed during fire patrols by State Forests employees (67 forest fires),
- 2% of fires were detected by aircraft patrol (30 forest fires) (**Figure 110**).

Figure 110. Types of information about fire in forest (Poland).



Source: Authors of the country report for Poland.

The State Forests have an internal communication system. This improves communication between units during firefighting operations.

The communication system consists of 5 520 radio-telephones, including 2 729 mobile sets, 929 base sets, 67 converters to the frequency band used by the State Fire Service.

The water supply for fire suppression was provided by 11 199 water supply points, including 3 894 natural points and 2 493 artificial points. Moreover, additional water was supplied by 4 800 hydrants located in the vicinity of the forests.

In the organizational units of the State Forests, the efficiency of the forest fire protection system is improving every year. However, this is related to the large financial outlays that the State Forests incur every year on fire protection. In 2024, the costs incurred for forest fire protection amounted to PLN 157.6 million, including over PLN 45.5 million (30%) for activities related to maintaining aviation services.

Scientific research

In 2024, the Forest Research Institute carried out, among others, research work:

— related to monitoring the fire risk in the Białowieża Forest, where the potential fire risk in the Białowieża Forest Distirict has increased as a result of the outbreak of the spruce bark beetle and the resulting overexposure of stands with grass cover. As part of the project: activities related to monitoring the quantitative and qualitative changes in flammable material; were carried out expert support was provided in the implementation of the "Firefighting Plan for the protection and extinguishing of forest fires for the Polish part of the Białowieża Forest Transboundary World Heritage Site" and the running management of the fire protection system operating in the forest districts;

— in relation to type A firebreaks maintained along public roads and intended to limit the spread of forest fires. As part of the project, activities related to, among others, with an analysis of:

  - the occurrence of forest fires along public roads in 2017–2021;
  - the impact of maintenance treatments in stands on the spread of fires in subsequent years;
  - the costs of creating and maintaining type A firebreaks and cleaning the areas near public roads;
  - losses caused by forest fires along public roads.

The Forest Research Institute coordinates the work and verifies the correctness of the data contained in the National Forest Fire Information System, which is available at: https://bazapozarow.ibles.pl. This is the only system in Poland that collects data on fires from the State Forests Information System, the State Fire Service and national parks.

The Forest Research Institute is responsible for information activities related to forest fires. In the season from March to October (at 9:00 am and 1:00 pm) a fire risk map is prepared, presenting current conditions for 60 forecast zones for the entire country. The map is available on the website at the link: https://bazapozarow.ibles.pl/zagrozenie/.

On August 29, 2024, the first controlled burning of forest stand was carried out in Poland at the military training ground in Toruń (**Figure 111**). The aim of the operation was to provide practical crown fires training for the State Fire Service and simulate real-life firefighting conditions. Simultaneously, the Forest Research Institute conducted scientific studies focused on analysing fire behaviour and the impact of fire on forest ecosystems. A 15-year-old pine-birch stand covering an area of 2.33 hectares was subjected to burning. The combustion process

lasted 20 minutes, was fully controlled, and closely monitored.

This operation enabled the collection of unique data that would be impossible to obtain during uncontrolled wildfires and allowed for verification of the State Fire Service's operational procedures. The results of the conducted analyses constitute a valuable contribution to the development of knowledge on forest fires under domestic conditions.

Figure 111. Course of the experimental forest stand burning in Poland.

Source: archive of the State Forests National Forest Holding Directorate-General.

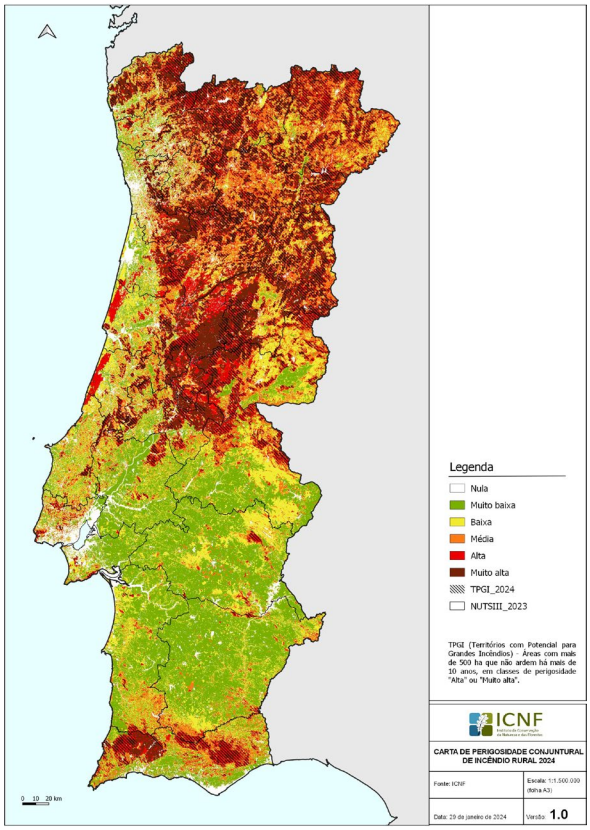
(Source: Forest Research Institute, Laboratory of Forest Fire Protection; General Directorate of State Forests, Poland).

1.2.20. Portugal

Fire danger in the 2024 fire season

The information and maps regarding fire hazard are produced annually by the Portuguese nature conservation and forest service (ICNF – Instituto da Conservação da Natureza e das Florestas) in the beginning of the year and are updated in late spring.

Figure 112. 2024 fire hazard map for Portugal.



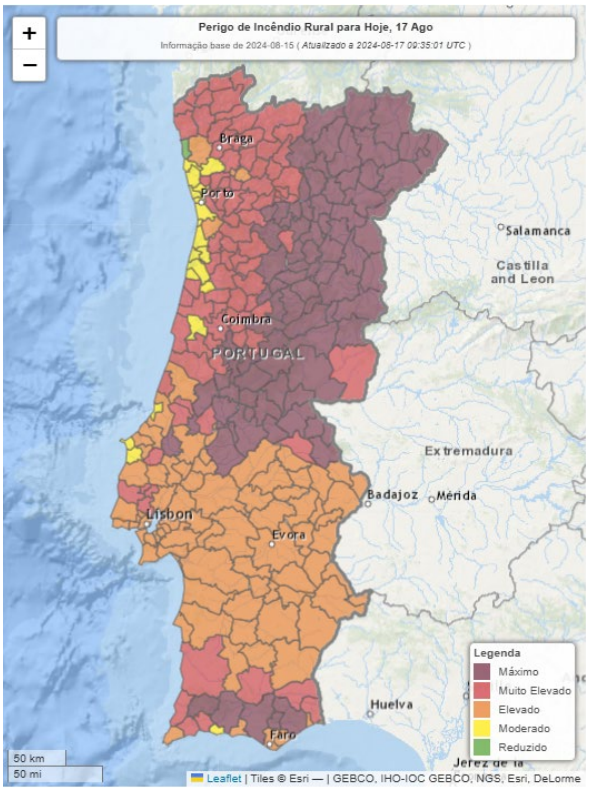
Source: ICNF.

The 2024 fire hazard map (**Figure 112**) shows the Portuguese mainland regions that were predicted as most exposed to wildfires, located mainly at interior of the Centre and North regions and in Algarve.

This map contains not only the wildfire hazard scaled from 1 to 5 for each 25 meter pixel, but also the delimitation of TPGI ("territories with potential for large wildfires"), which are forest lands that, cumulatively: i) have 500 hectares or more, ii) have a high or very high wildfire hazard (top two classes) and iii) did not burn in the last 10 years.

A local and daily wildfire danger evaluation is published for each of the 278 municipalities of Portuguese mainland territory (**Figure 113**) and for the Autonomous Region of Madeira by the Portuguese meteorological service (IPMA – Instituto Português do Mar e da Atmosfera). This evaluation combines the annual wildfire hazard map (**Figure 112**) with the meteorological forecast for each day (FWI index).

Figure 113. Example of evaluation of the daily wildfire danger in Portugal for a summer day in 2024 (17th of August).

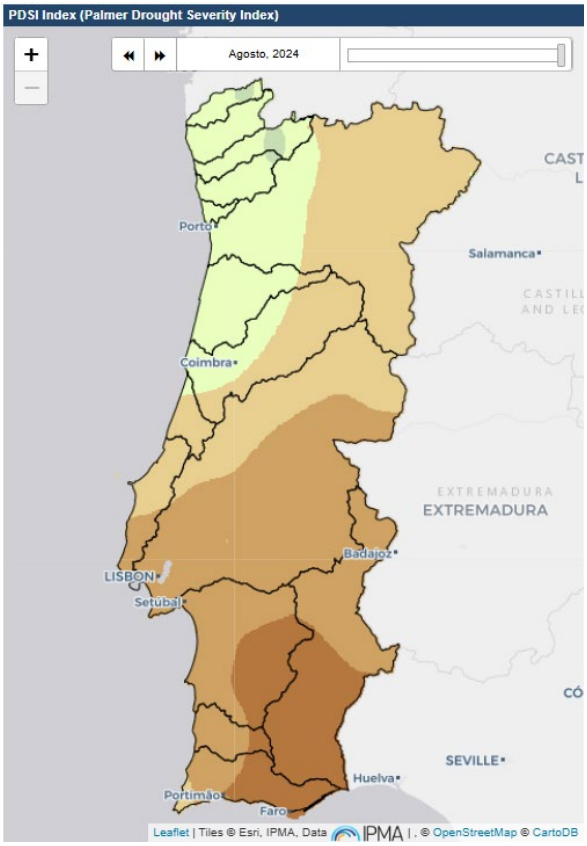


Source: IPMA.

The evolution of fire danger in 2024 was strongly influenced by the widespread drought affecting nearly the entire country. **Figure 114** shows the Palmer Drought Severity Index (PDSI) for mainland Portugal in August 2024. During this month, most of the territory was

experiencing drought conditions, except for the northwestern regions. Paradoxically, it was precisely in this northwestern area that some of the most critical wildfires of the year occurred, on September 15th-19th, because of an extreme weather event, which had not occurred for over 25 years – very low air humidity and strong and hot easterly winds.

Figure 114. Palmer Drought Severity index (PDSI) for the Portuguese mainland (August 2024).



Source: IPMA.

Fire occurrence and affected surfaces

In Portuguese mainland (NUTS I PT1) the burnt area in 2024 was 137 651 ha (**Table 33**), which is 22% more than the average of the previous decade (112 455 ha). The largest wildfire in 2024 occurred at Vila Nova de Paiva (Center Region) and resulted in almost 20 thousand hectares burned (**Figure 115**).

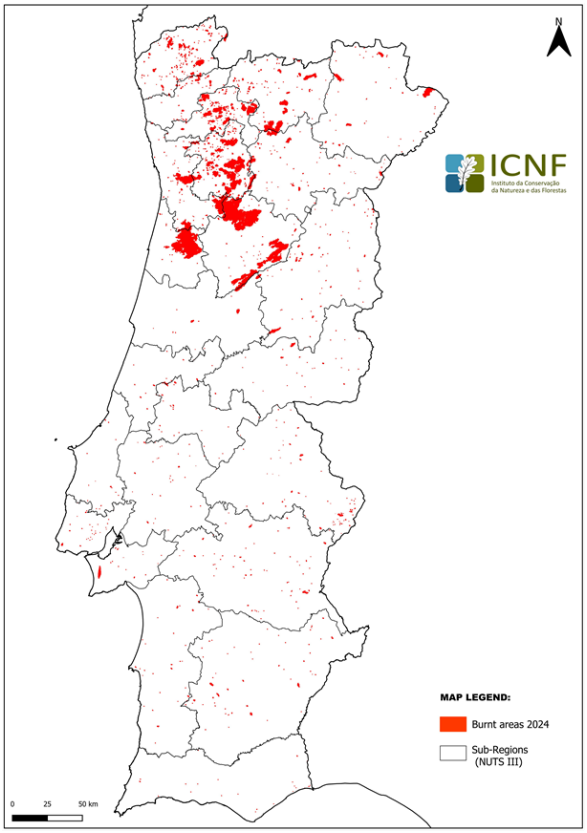
Regarding the number of wildfires, there was in 2024 a total of 6 255 fires which represents a decrease of 50% when compared to the average of fires in the last decade and a decrease of 17% when compared with de number of wildfires occurred in 2023.

Table 33. Number of wildfires and burnt area in Portugal mainland territory from 2014 to 2024.

Year	Number of wildfires	Burnt area (ha)
2014	9 388	22 820
2015	19 643	67 200
2016	16 104	167 808
2017	21 006	539 921
2018	12 274	44 578
2019	10 832	42 085
2020	9 619	67 170
2021	8 186	28 360
2022	10 390	110 097
2023	7 524	34 510
Annual average 2014-2023	12 497	112 455
2024	**6 255**	**137 651**

Source: ICNF.

Figure 115. Burnt areas in 2024 in the Portuguese mainland.



Source: ICNF.

The most affected NUTS II regions in 2024 were the North and Centre regions, each with a

total burnt area around 12 thousand hectares. The combined burnt area of these two regions represents 98% of the total burnt area (**Table 34**). Approximately 53% of all fires in 2024 occurred in August and September (**Table 35**). September alone accounted for the vast majority of the burned area, i.e., around 92% of the total area affected that year.

Table 34. Number of fires and burnt area in Mainland Portugal (NUTS 2).

PT1 - NUTS 2 Region	Number of fires	Burnt area (ha)			
		Forest and other wooded land	Shrublands	Agricultural land	Total
Norte	3 560	33 276	28 724	3 457	65 457
Centro	1 077	46 760	16 688	5 082	68 530
Oeste e Vale do Tejo	608	158	89	53	301
Grande Lisboa	98	23	81	21	126
Península de Setúbal	131	808	35	10	853
Alentejo	606	971	450	918	2 340
Algarve	175	12	22	10	45
TOTAL	**6 255**	**82 009**	**46 089**	**9 553**	**137 651**

Source: ICNF.

Table 35. Wildfires in Portugal Mainland (monthly distribution).

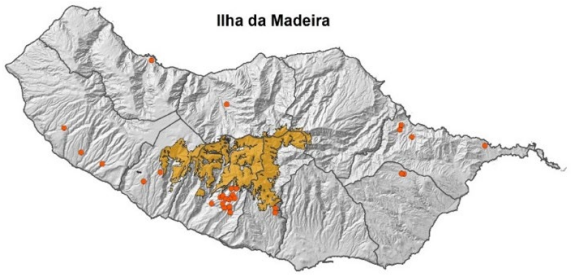
Month	Number of fires	Burnt area (ha)			
		Forest and other wooded land	Shrublands	Agricultural land	Total
January	53	22	204	0	226
February	136	50	269	4	323
March	148	136	358	1	494
April	363	184	489	6	679
May	408	101	47	64	212
June	562	335	203	407	945
July	931	775	438	337	1 551
August	1 571	2 191	2 931	743	5 866
September	1 773	78 166	40 700	7 974	126 840
October	73	6	14	13	32
November	98	34	218	3	255
December	139	9	219	1	229
TOTAL	**6 255**	**82 009**	**46 089**	**9 553**	**137 651**

Source: ICNF.

At Madeira's archipelago (PT3) 38 wildfires were recorded in 2024. The total burnt area in this autonomous region was 5 190 ha (1 696 ha in forest and other wooded lands, 3 494 ha in shrublands). The burned area was largely concentrated in August, when just three ignitions—primarily the fire originating in the parish of Serra de Água—led to 5 117.21 hectares being affected, representing 98.59% of the total area burned in 2024.

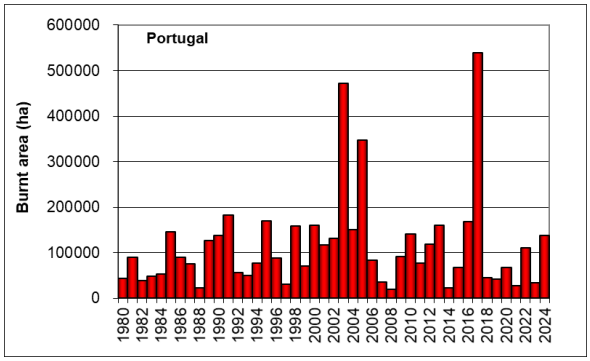
At Azores' archipelago (PT2) a total of 198 wildfires were recorded in 2024. The total burnt area at Azores was not collected, but it's rather small when comparing to Madeira or mainland territories.

Figure 116. Burnt areas and ignition points in 2024 in Madeira.

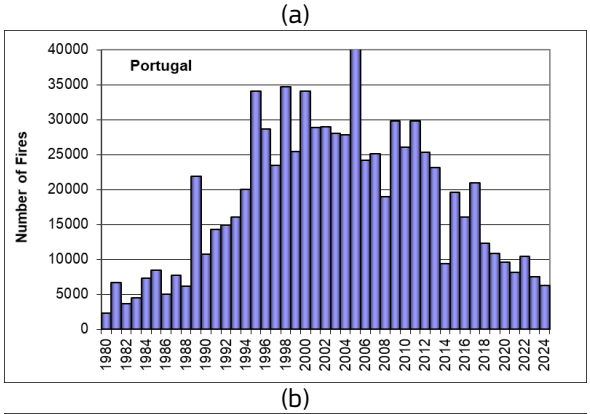


Source: IFCN- Institute for Forests and Nature Conservation – Madeira.

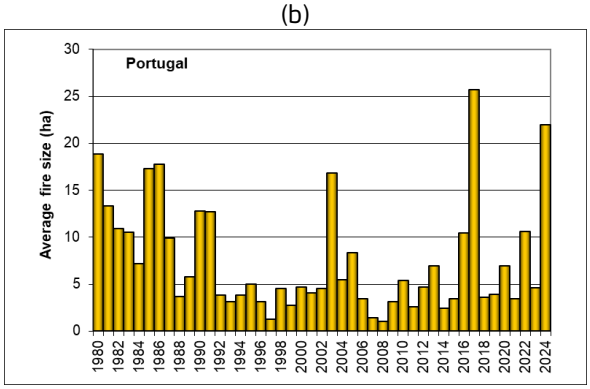
Figure 117. Burnt areas (a), number of fires (b) and average fire size (c) in Portugal from 1980 to 2024.



(a)



(b)



(c)

Source: JRC's elaboration of the country reports for Portugal.

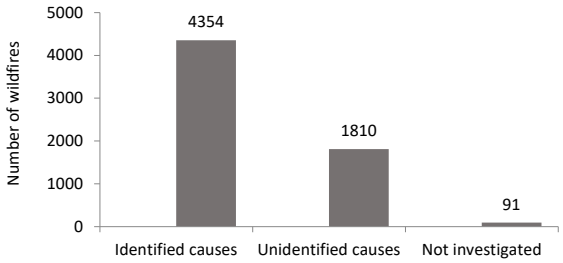
The trends of fire statistics in Portugal for the years 1980 to 2024 are shown in **Figure 117**.

With an analysis that seeks to remove the effect of meteorology in the assessment of the annual burnt area extension, for each rural fire in 2024 for mainland territory was assigned a "weighted burnt area" value, obtained from the average (2014-2023) of the burnt area of all fires of the respective DSR class in the respective district. A total value of "weighted burnt area" (for 2024) of 135 817 hectares was estimated. This value reflects the total burned area that would be obtained if all fires from 2024 followed the historical average "behaviour" given the meteorological severity of the day/place in which they occurred. The actual burnt area (137 651 ha) is 101% of the "weighted burnt area", which means that the area burned in 2024 is in line with what would be expected given the observed meteorological severity.

Fire causes

Of the 6 255 occurrences registered in 2024, the National Republican Guard investigated the causes for 6 164 wildfires (99%), of which 1 810 were of unknown origin (**Figure 118**).

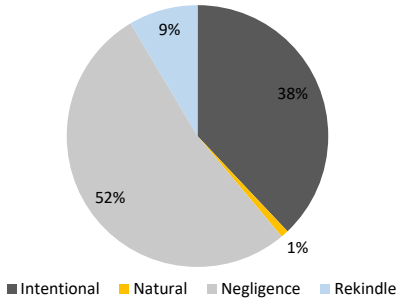
Figure 118. Wildfires in Portugal 2024 causes investigation.



Source: ICNF.

Among those fires with determined cause, intentional acts (arson) corresponded to 38% (corresponding to 84% of the burned area with determined cause) and accidents or negligence caused the ignition of 52% of the total number of fires (**Figure 119**); however, arson represented 84% of the burned area.

Figure 119. Main causes of wildfires in Portugal in 2024.



Source: ICNF.

The use of fire for renewal of pastures in mountainous regions still has some impact on the amount of burnt areas. In 2024 the application for fire permits allowed a more controlled use of fire (see "Assistance phone-line and burning permit") and the project "MARQ" (short for "Support mechanism for pastoral burning") helped 17 shepherds and treated 1 036 hectares of grazing lands with prescribed burnings.

Fire fighting means

The National Operational Directive (DON) No. 2/2024—DECIR—contemplated, during the most critical phase of the wildfire season (July to September), the availability of 14 155 operational staff, 3 173 vehicles, and 74 aerial assets. During this period, the response effort included:

- 8 061 firefighters and 1 824 vehicles from Fire Departments.
- 216 personnel and 82 vehicles from the Special Civil Protection Force (FEPC) of the National Authority for Emergency and Civil Protection (ANEPC).
- 1 007 military personnel and 190 vehicles from the Emergency Protection and Rescue Unit (UEPS) of the National Republican Guard (GNR).
- 2 430 personnel and 370 vehicles from the Institute for Nature Conservation and Forests (ICNF).
- 244 personnel and 70 vehicles from the response units of the Pulp Industry Association (AFOCELCA).

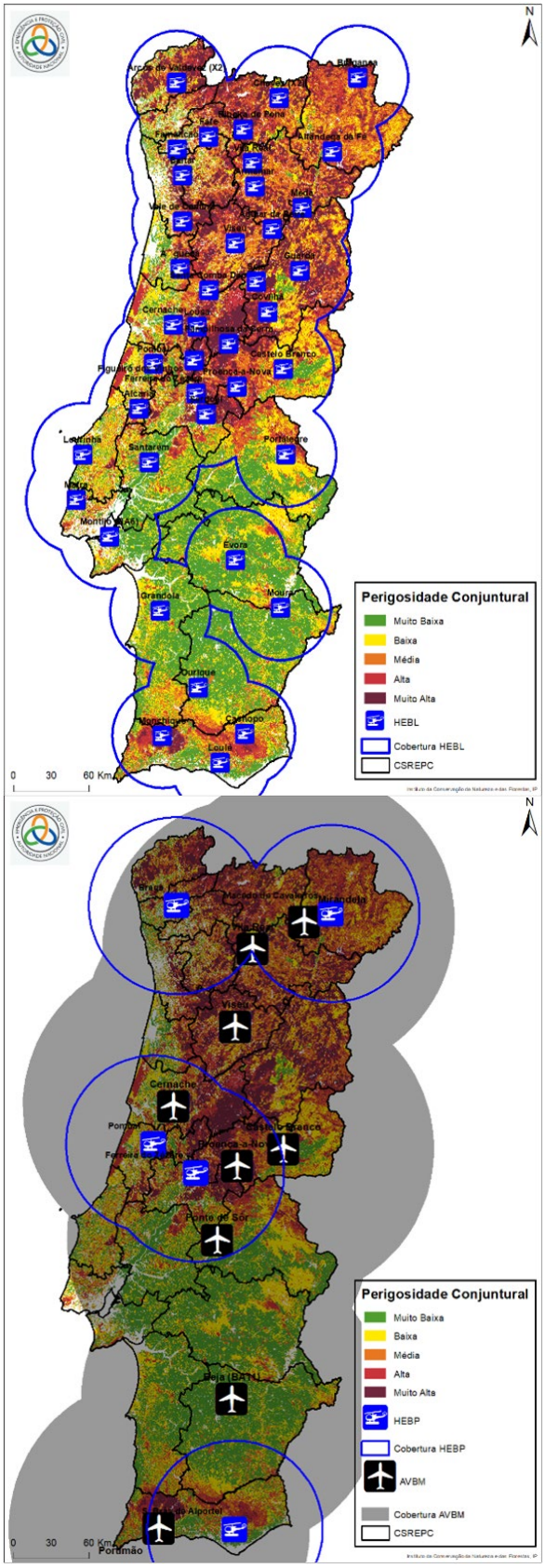
The 74 aircraft integrated into the wildland firefighting system, distributed across the territory as shown in **Figure 120**, carried out a total of 5 182 air operations, accumulating 5 258 flight hours and 31 961 drops. Aircrafts were: 43 light helicopters; 5 heavy helicopters; 18+2 amphibious airplanes (light + medium); 4 coordination helicopters; 2 coordination & monitoring airplanes.

In 2024, 91.95% of wildfires were contained within 90 minutes of the initial alert. The remaining 621 incidents exceeded this timeframe, with only 31 fires requiring more than 24 hours to be fully extinguished.

As in previous years, ANEPC continued to prepare the operational system through training activities under the scope of the DECIR. These actions were carried out at the level of the regional and sub-regional emergency and civil protection commands (CREPC and CSREPC), focusing on firefighting, aimed at different actors of the system, namely, firefighters, emergency protection and rescue unit of the GNR, forest sappers and teams of the AFOCELCA. These actions focused essentially on the operations management system, in the areas of the role of 1st Operations and Rescue Commander (COS), operations management system (SGO) in rural fires, on the training of command post teams (EPCO) and on indirect combat and mop-up operations, through actions to make the use of mechanical and hand tools, and the use of crawler machines.

In total, 1 034 operational training actions were conducted, involving 16 564 participants, along with 22 regional exercises involving 5 329 participants, and 799 exercises under the civil protection system involving 32 238 participants.

Figure 120. Aerial Assets available in Portugal, 2024.



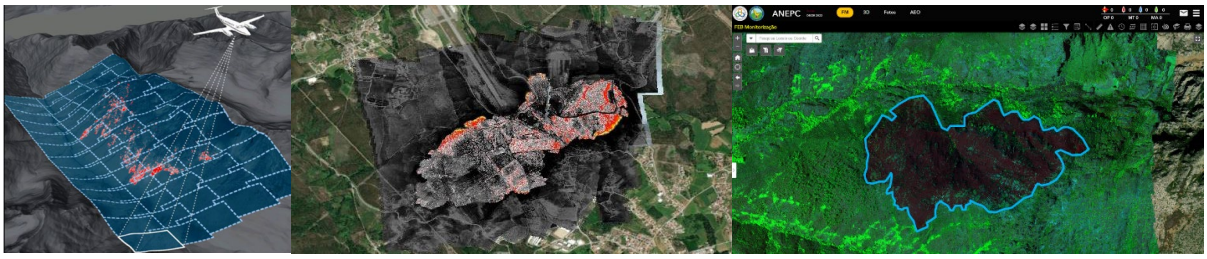
Source: ANEPC.

As part of the reinforcement of technological systems to support operational decision-making, the operation of the Decision Support Centre-Analysis for Rural Fires (NAD-AIR), based at the National Emergency and Civil Protection Command (CNEPC) of ANEPC and operated by the FEPC fire analysts, was continued.

This Center guarantees the command structure, whether at national, regional or district level, and the on-site commander, support in the collection, analysis and interpretation of information regarding the behaviour of fires and their impacts, using various decision support tools. For this purpose, it has 4 permanent operatives at the CNEPC, several technological resources and two aircraft, manned by a fire analyst, dedicated to monitoring, analysing and collecting data from occurrences. In terms of products, it produces a strategic analysis for fire risk with a preventive scope (Strategic Operational Analysis – AEO), an exclusive operational analysis for each most significant fire in progress (Operational Information – INFOP), and thematic geographic information relevant to the anticipation or course of an operation, made available to the different levels of decision.

In 2024, 99 significant fires were monitored, 193 aerial monitoring missions with 472 flight hours were carried out, 50 AEOs and 32 INFOPs were issued and participation in 23 Operational Technical Briefings was guaranteed. In the case of the 2 aircrafts, new technology was implemented, allowing the collection of multispectral orthophoto maps, used in the delineation of the perimeter of the fire, analysis of the progression of the front, and identification of hotspots. This new set of data is integrated in the implemented decision support system and available to the entities involved in the suppression operations.

Figure 121. Multispectral orthophoto maps creation process for Portugal.



Source: ANEPC.

Figure 122. The Aveiro rural fire complex is one of the biggest burned areas in 2024, covering over 22 000 hectares across seven densely populated municipalities in the Norte and Centro regions. The fires occurred between September 14 and 19, when over 90% of the burnt area in mainland Portugal occurred in 2024. Fighting them, in a region of high ecosystem productivity and, locally, a high fuel load, required the systematic use of heavy machinery on the fire perimeters. Subsequently, emergency stabilization work prioritized maintaining drinking water quality in the Vouga River collection points (which supply about 300 000 inhabitants), with interventions in the river itself (filtering ash and other residues) and in the surrounding burned watersheds (soil conservation, forest roads repair and maintenance, etc.).

Source: ICNF.

Fire prevention activities and information campaigns

Planning

In 2024, the implementation of the National Action Program (PNA 2020-2030) continued. The PNA develops the strategic options defined in the National Integrated Plan for Rural Fire Management (approved and published in June 2020), namely programs, projects and initiatives that materialize the four strategic guidelines: increasing the value of rural areas; value the rural environment; modify behaviors; manage risks efficiently.

The National Plan's vision is "Protect Portugal from severe rural fires" and, despite the likely increase of the fire risk, the targets for the 2020-2030 planning horizon are:

- The loss of lives in fires, although possible, is rare.
- The ratio of fires extending across more than 500 ha is below 0.3% of the total number of fires.
- The cumulative burned area over a period of eleven years is less than 660 000 ha.

In 2024, the activities of the 97 projects of the PNA 2020-2030 reached a cumulative overall execution since its inception of 48% (compared to 39% in 2023).

The remaining 2 regional action programs were published in the official journal this year (for the Alentejo and Algarve regions), along with the first 2 sub-regional programs (Oeste and Lisbon Metropolitan Area), that came into effect in June and August, respectively. During this year the public awareness, lessons learned, and professional qualification national subcommittees also saw relevant results.

In 2024 Portugal invested 638 million euros (M€) in governance and management of rural fire risk, not counting the involvement of local administration and landowners. This investment represents a sharing of 55% (354 M€) in prevention and 45% (284 M€) in suppression. It is worth highlighting the evolution since 2017, when total expenditure amounted to around 143 M€, with 20% allocated to prevention and 80% to suppression.

Forest fuels management

Forest fuels management is one of the key-actions in the forest fire prevention domain. In 2024 a total area of 75 559 ha was managed, of which 2.2 thousand with prescribed burning, and 6 200 ha of shaded fuel breaks were implemented.

Figure 123. "From Ashes to Action" in Portugal.

Source: Authors of the country report for Portugal.

Casal de São Simão, a historic village in the municipality of Figueiró dos Vinhos, Coimbra

region, was severely affected by the 2017 fires and is a good example of fuel management in the wildland-urban interface. In the aftermath of the disaster, its residents designed and implemented a fire protection project ("Village Protection Zone"-ZPA) with the support of tourism funds, addressing not only the fuel load and composition of the surrounding forests, but also areas of refuge in the event of a fire. (**Figure 123**).

In 2024, funding for prevention increased substantially in Portugal, particularly with European funds from the Recovery and Resilience Plan.

Following the casalis example, one of the most widespread programs is the "Village Condominium" promoting appropriate management of the urban-forest interface in in densely forested areas villages, often linked with the “Safe Village – Safe People” program.

Water reservoirs

During 2024, 690 water reservoirs (including water tanks) had maintenance and improvement works, and 28 new water reservoirs were created.

Forest roads

In 2024, more than 20 thousand kilometres of forest roads were created or under light to heavy maintenance.

“Portugal Chama” campaign

In 2024, the “Portugal Chama” (“Portugal is Calling”) awareness campaign proceeded. Its main message is the individual responsibility to promote, among citizens, a more adequate behaviour and practices towards the reduction of the high number of ignitions and the increase of the territory resilience to fires.

It is a comprehensive nationwide campaign (mainly on TV, radio, printed press and social media); however, it focuses on the most relevant causes of rural fires, both in terms of the number of occurrences and in terms of the burnt area (heap burnings, renewal of pastures in mountain grazing areas, use of machinery and recreational activities and leisure in rural areas).

The awareness campaign "Portugal Chama" broadcasted television and radio spots at national, regional, and local levels, and published advertisements in the regional press, aiming to reducing incidents that could lead to rural fires.

The campaign, from July 23 to October 31, 2024, included 555 television spots, about 25 000 radio spots in national, regional, and local stations, and 241 advertisements in regional and local newspapers.

“Safe Village – Safe People” Program

The Safe Village - Safe People Program was created in Portugal in 2018.

The "Safe Village" part of the program is a driver for the protection of population clusters residing at urban-forest interfaces by implementing structural solutions.

The "Safe People" component aims to raise awareness among local authorities about risky behaviour prevention, self-protection measures, and the implementation of simulation evacuation plans.

In 2024, the two programs continued, jointly promoted with the municipalities and civil parishes.

From the start of the programs in 2018, to the end of 2024, 2 350 communities were involved (of which 2 198 have a designated local safety officer), 992 evacuation plans were developed, and nearly 3 thousand locations of refuge and shelter were identified.

Public Warning system

In Portugal, Civil Protection Entities provide, at various territorial levels, the broadcast of public warnings in the event of a significant emergency or catastrophe.

In the event of a wildfire, the Local Civil Protection uses heritage methods (e.g., sirens,

megaphones, door-to-door contact, etc.) to provide local notice.

Similarly, at the national level, the ANEPC publishes warnings via media, Internet-based platforms (websites, social networks), and Location-Based SMS, which sends bulk notifications to mobile phones.

The LB-SMS warning system is Portugal's most wide-range system for broadcasting alerts. SMS are sent by mobile telecommunications carriers at the request of ANEPC, messages are conveyed to individuals in geographical regions prone to the impending or occurrence of a wildfire.

The system does not require registration and includes mobile devices that connect to national mobile networks via roaming. In 2024, there was one wildfire-related activation: in September, 10.7 million text messages were transmitted to mobile phones in the highest fire danger areas.

Automatic daily emails service

ICNF provides an automatic daily email distribution service that provides useful information to all agents involved in wildfire prevention and suppression operations. Among the information that is daily spread within this service, stands out two email types:

- "Locais críticos" – This email provides the daily forest hazard information for the user region, showing the places (list and map) where the fire hazard is expected to be worst. The fire hazard is estimated with an algorithm that combines meteorological forecast with structural fire hazard, local ignition and burnt area historical statistics, among other variables.
- "Perigo de reacendimento" – This email provides a list and map of the recently extinguished fires that are, simultaneously, more probable to rekindle and are expected to do more damage.

Assistance phone-line and burning permit

During 2024 the official assistance phone line continued.

More than 125 thousand calls were received from citizens, mainly to obtain information and help with the web application that analyses fire hazard and gives individual authorization to the use of fire in vegetation debris burning and pasture renewal.

The official phone line also provides information on fuel management prescriptions around houses and other infrastructures in order to reduce the fire risk.

The burning permit application processed 1 470 801 permits in 2024 (with a maximum of 16 911 permits processed in just one day, on February 3rd) and has around 787 thousand registered users.

The permits are granted if the local weather forecast analyses shows that the burning can be executed in a safe way.

This programme is considered a very important tool in reducing the number of fires (and burnt area), as burnings are one of the most significant causes of wildfire in Portugal.

Post-fire management

In 2024, there were 35 burned areas with more than 500 ha, and 20 emergency stabilization reports were produced, for 122 709 ha of burned area and a total planned investment of 2.6 million euros of community and national funds.

Figure 124. Post-fire remediation work in Portugal, in the burned area of Vale do Paiva, in the Paiva river watershed, with a storm patrol team in Soutelo, Castro Daire municipality.

Source: ICNF.

The primary focus of forest fire recovery is to protect people and property from events resulting from the effects of fire, such as flash floods, infrastructure destruction, and soil and habitat degradation. Interventions in the forest road network and waterways are priorities, as was the case in the burned area of the Vale do Paiva fire complex, which affected over 34 000 ha. In this case, the repair of forest road drainage structures, as well as the immediate intervention of forest firefighter "storm patrols" whenever heavy rains occurred, along with hillslope and channel treatments, were among the main actions taken (**Figure 124**).

Injuries and loss of human lives

During 2024, there were 16 fatalities associated with wildfirs, of which 9 civil protection agents (4 firefighters and 5 operational from the UEPS helitack crew). The total number of injured people was 349, of which 82 didn't need transport to a healthcare facility.

Operations of mutual assistance

In 2024, under the Portuguese-Spanish bilateral agreement on cross-border initial attack, Spanish resources responded to 19 fires in Portuguese territory, employing 26 aircrafts, 145 vehicles, and 645 operational personnel. Portugal has sent 96 firemen, 20 vehicles, and 3 firefighting aircraft to 5 fires near to the Portuguese border.Portugal contributed for the Union Civil Protection Mechanism (UCPM) deploying 2 AT-802F Fire Boss aircraft (light planes) under the rescEU initiative. Portugal received support of two Ground Firefighting teams (GFFF) provided by Finland and Latvia with a total of 64 firemen. Between 1 August and 15 September, the international teams worked and trained in close cooperation with the Portuguese FEPC teams. In September, associated with the high number of ignitions on the night of the 15th to the 16th, associated with the weather forecast for the following days and the worsening of the operational situation in some of the ongoing fires, were the determining factors for the activation of international aid mechanisms. Priority was given to the bilateral agreement with Spain (15/9), followed by the activation of the EUCPM, (16/9) and request to the Kingdom of Morocco (17/9). As a response to the activation of EUCPM, Spain, France, Italy and Greece made available the AFFF Modules associated with rescEU capacity; specifically:

- Spain - a pair of Canadair (2 aircrafts)
- France - 2 pairs of Canadair and 1 Beechcraft (5 aircrafts)
- Italy - 1 pair of Canadair (2 aircrafts)

The total of air resources (11 aircrafts), between 16 and 20 September, carried out 121 missions, with 98 flight hours in which more than 200 starts were made, that is, about 1 200 000 litres of water.

Climate change

In 2024, rural fires resulted in the emission of 686 090 tons of carbon, equivalent to 2.5 million tons of CO_2eq. This figure represents the highest value recorded during from 2018 to 2024, although it remains 11% below the average for the 2001–2017 period, which stood at 717 557 tons. The average emissions between 2018 and 2024 amounted to 316 837 tons, reflecting a 59% reduction compared to the previous period.

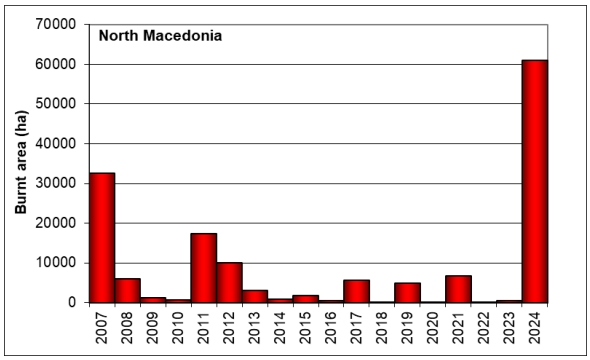
(Sources: Ministry of Agriculture and Sea, Institute for Nature Conservation and Forests (ICNF), SGIF/System for Forest Fire Information Management; Agency for Integrated Rural Fire Management (AGIF); Ministry of Internal Administration, National Authority for Emergency and Civil Protection (ANEPC); Regional Government of the Azores, The Azores Regional Civil Protection and Fire Service; Regional Government of Madeira, Institute for Forests and Nature Conservation, Portugal).

1.2.21. Republic of North Macedonia

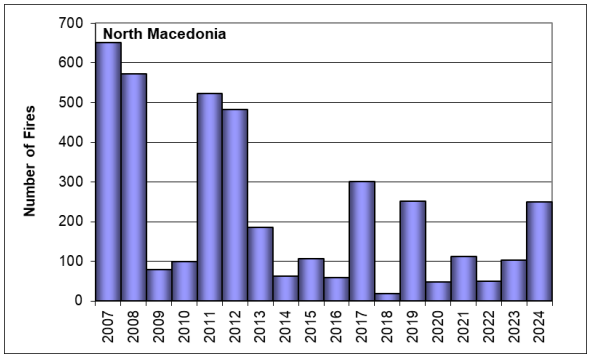
Fire occurrence and affected surfaces

Planning, prevention, preparedness and forest fires fighting is covered by the obligated entity of the protection and rescue system.

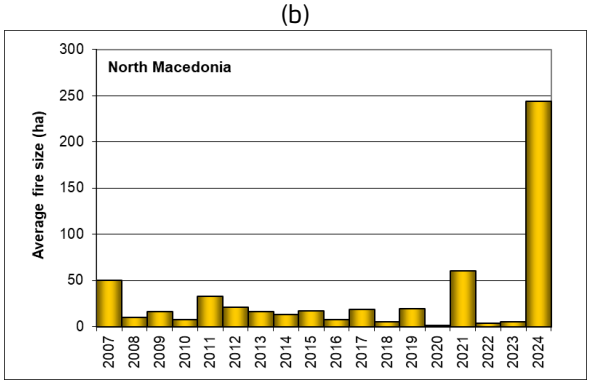
Figure 125. Burnt areas (a), number of fires (b) and average fire size (c) in the Republic of North Macedonia from 2007 to 2024.



(a)



(b)



(c)

Source: JRC's elaboration of the country reports for the Republic of North Macedonia.

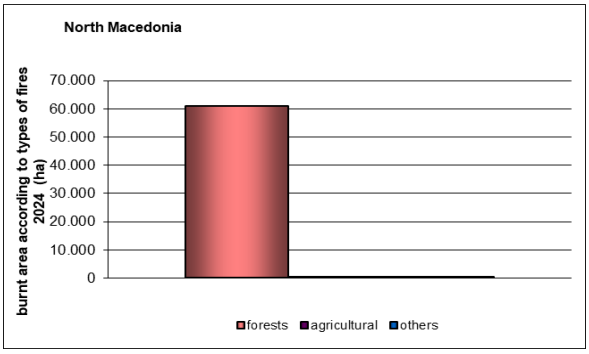
According to the data supplied by the authorities, during the year 2024 there were 1897 fires of which 250 were forest fires, affecting in total area 61 061 ha. The agricultural affected area was 545.36 ha and the total affected area was 62 060.34 ha. The average of forest fires was 13.17 % of the total numbers of fires were forest fires.

The analysis of the preconditions, reasons and factors and factor leads to the conclusion that North Macedonia is region with a high risk of fires on its territory.

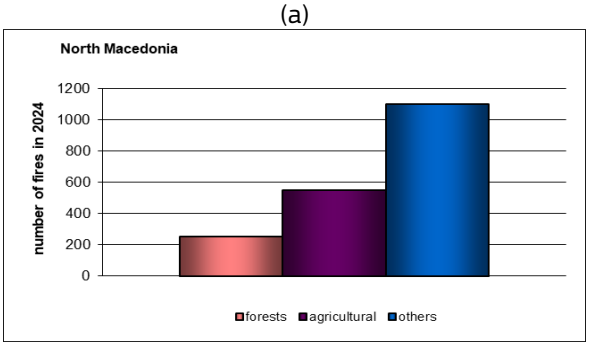
The damages were not only economical ones but on a much bigger scale-inestimable damage for plant conditions.

The fire statistics for the Republic of North Macedonia for the years 2007 to 2024 are shown in **Figure 125**. Burnt areas (a) and number of fires (b) according to types of fires for 2024 are reported in **Figure 126**.

Figure 126. Burnt areas (a) and number of fires (b) in the Republic of North Macedonia according to types of fires for 2024.



(a)



(b)

Source: Authors of the country report for the Republic of North Macedonia.

Fire prevention activities and information campaigns

Fire prevention and firefighting activities were undertaken along with public information campaigns. Media events like press conferences, shot reports and announcements on the TV and radio were organized to raise awareness

The protection and rescue directorate through the department started preparations for the upcoming fire season in November 2023. Immediately after, the preparations began with updating the planning documents, checking the condition of equipment for extinguishing fires, and of the protection and rescue forces. The problems were noted and approaches were taken to resolve them. Considering last year's forest fires, a program was drawn up with proposed measures to overcome the situation.

The annual operational plan for forest fire management was created by the PC "National forests" and its subsidiaries. The prevention activities started conducting meetings before the season of forest fires and this year the protection and rescue directorate-PRD conducted a campaign where the staff of the PRD, including the 35 departments for reduction of risks from forest fires.

The National Forest Authority kept its efforts in the forest fire planning at the local, municipal levels. The municipal planning objective is pursued by the technical support to the municipalities forest offices, based in the municipal plans for forest fire prevention and the Municipal Operational Plans, which are part of the previous plans and are updated on a yearly basis. The municipalities provide technical support, by the end of the year there were established Plans for Forest Fire Prevention and Municipal Operational Plans approved. 96% of the municipalities are covered by Forest Fire Prevention Municipal Plans.

The campaign, includes distribution of manuals for reducing the risk of fires in major cities in the country, at toll booths, at border crossings, in rural areas, in National Parks, picnic places where posters with steps of forest fire protection were placed.

Collaboration with the operational meteorological services has been consolidated in order to improve the performances by integrating additional data sources.

We have developed a public awareness campaign for forest fires prevention under the slogan "*Let's protect the forest*".

In the public information domain, the National Authority of Civil Protection –Protection and Rescue Directorate – PRD made significant efforts on the availability of on-line information.

School campaigns - During 2024, presentations in schools and colleges in North Macedonia, gave information to raise awareness on environmental issues, social and economic factors caused by fires, its causes and how it can be avoided.

The the Ministry of Interior carried out a preventive activity regarding fire in an open space. During immediate meetings, leaflets with practical advice for greater protection were distributed to citizens, informing them through short educational talks about the risks of lighting a fire in an open space and its consequences.

National Forests in accordance with the operational plan implemented the preventive campaign - "Summer without fires". The main goal of the campaign was the protection and preservation of green forest areas, agricultural land, meadows and pastures from fires, primarily by raising the awareness of citizens about the risks of fires and their damages.

Figure 127. Example of pamphlet in the Republic of North Macedonia.

Source: Authors of the country report for the Republic of North Macedonia.

Figure 128. Example of campaign "Summer without fires" with Fire risk reduction manual, Republic of North Macedonia.

Source: Authors of the country report for the Republic of North Macedonia.

Climate change

Rural fire management actions play a central role in national policies to combat and adapt to climate change. The climate is changing and it is evident in whole territory of the country.

National adaptation strategies / plans and in particular regarding plans to adapt the forest sector to climate change in order to reduce the probability of catastrophic forest fire seasons which greatly increase the emission of CO^2 take a specifies the main objectives for forest-based business and activities.

Operations of mutual assistance

North Macedonia requested ground forest firefighting modules through the EU Civil Protection Mechanism in the period from 15 to 22.07.2024.

Rapid response Teams -RRTs were deployed in the regions from – Serta, Krivolak, Negotino, Jasen and Sirkovo.

All RRTs are equipped with personal and common firefighting equipment operating in cooperation with ground forest firefighting modules through the EU Civil Protection Mechanism.

Table 36. Report from the Department for specialized air services for 2024, Republic of North Macedonia.

Date 2024	Operational region	Aircraft designation	Number of flights	Water discharged in liters	Fuel consumed in liters
12/07	Municipality of Negotino and surrounding villages, Krivolak region - Serta mountain	Z3-BGV, Z3-BGU, Z3-BGT	44	110 000	4 938
13/07	Municipality of Novo Selo - Strumica region towards the Republic of Bulgaria	Z3-BGU, Z3-BGT, Z3-BGV	50	125 000	7 104
16/07	Municipality of Bitola and Krivolak region - Serta mountain	Z3-BGV, Z3-BGT, Z3-BGU	39	97 500	5 060
17/07	Krivolak - Shtip - village of Dragoevo and Selce, Negorci Kozuv - Municipality of Gevgelija	Z3-BGV, Z3-BGT, Z3-BGU	48	120 000	5 711
18/07	Sirkovo	Z3-BGT, Z3-BGU, Z3-BGV	93	232 500	8 714
21/07	Krivolak	Z3-BGU, Z3-BGT	58	145 000	6 963
23/07	Jasen- Demir Hisar	Z3-BGU, Z3-BGT	62	155 000	8 009
27/07	Krivolak	Z3-BGT, Z3-BGU	31	80 000	3 879
29/07	Demir Hisar- Jasen- Radobil	Z3-BGU, Z3-BGT, Z3-BGV	41	102 500	4 702
30/07	Kokosinje	Z3-BGU, Z3-BGT, Z3-BGV	23	57 500	4 946
31/07	Probishtip	Z3-BGU, Z3-BGV	20	50 000	3 974
01/08	Gydjanci	Z3-BGU	14	35 000	1 629
02/08	Linska Mountain -Kosel Ohrid	Z3-BGU	19	47 500	1 675
03/08	Kosel	Z3-BGU	4	10 000	984
04/08	Demir Hisar-Ohrid Furka	Z3-BGU, Z3-BGV	23	57 500	2 819
05/08	Furka	Z3-BGV, Z3-BGU	48	129 000	3 996
06/08	Galichica	Z3-BGU, Z3-BGV	14	35 000	1 902
07/08	Gradmanci Zajas	Z3-BGT, Z3-BGV	73	182 500	6 264
09/08	Jasen	Z3-BGT, Z3-BGV	21	52 500	2 642
10/08	Galichica	Z3-BGU, Z3-BGT	34	85 000	3 782
11/08	Pateec	Z3-BGT, Z3-BGU	20	50 000	2 617
12/08	Belica	Z3-BGU	12	30 000	1 806
13/08	Pehcevo	Z3-BGU	14	35 000	977
14/08	Galichica	Z3-BGU	54	135 000	6 492
18/08	Plachovica- Gari	Z3-BGU	3	7 500	426
26/08	Municipality of Chashka, village of Omorani - Mount Mukos	Z3-BGU	11	27 500	1 381
27/08	Studenichani	Z3-BGU	49	122 500	4 695

Source: Authors of the country report for the Republic of North Macedonia.

Forest fires and EU response

In dealing with the forest fires on the territory of the Republic of Nort Macedonia, following the requests, the European Civil Protection Mechanism was activated in July and reactivated.

Table 37. Operational firefighting module from countries - EU Civil Protection Mechanism.

	Country	Coordination	Aircraft	Number of staff	Period
1.	Türkiye	Bilateral	2 Air Tractor 1 Helicopter	7	15-19.07.2024
2.	Serbia	Bilateral	1 Helicopter	7	16-20.07.2024
3.	Montenegro	Bilateral	1 Helicopter	7	16-22.07.2024
4.	Slovenia	Union's Civil Protection Mechanism	2 Helicopters	11	16-20.07.2024
5.	Croatia	Union's Civil Protection Mechanism	1 Canadair	10	16-21.07.2024
6.	Romania	Union's Civil Protection Mechanism	1 авион за гаснење 1 авион за поддршка	8	17-21.07.2024
	Total		5 Helicopters 3+1=4 Airplanes	50	

Source: Authors of the country report for the Republic of North Macedonia.

Due to the estimated need for additional foreign assistance, the EU Civil Protection Mechanism was reactivated on 30.07.2024, as well as bilateral requests at the level of ministers in the Government, as shown in the following table.

Table 38. Firefighting module from countries through EU Civil Protection Mechanism.

N	Country	Coordination	Aircraft	Number of Staff	Period
1.	Serbia	Bilateral	1 Helicopter	6	31.07-04.08.
		EU Civil Protection Mechanism	1 Helicopter	7	02-07.08
2.	Czech Republic	EU Civil Protection Mechanism	1 Helicopter	9	01-05.08.
3.	Slovenia	EU Civil Protection Mechanism	1 Helicopter	7	01-05.08.
			1 Helicopter	8	10-16.08
4.	Sweeden	EU Civil Protection Mechanism	2 Air Tractors	11	02-05.08.
5.	Hungary	EU Civil Protection Mechanism	2 Air Tractors	10	01-16.08
6.	Hungary	Bilateral	Ground Firefighting module, 13 vehicles	46	01-18.08
			2 Helicopters	19	01-06.08. 01-09.08
7	Cypris	EU Civil Protection Mechanism	2 Air Tractors	9	07-15.08.
8.	ЕУ	EU Civil Protection Mechanism Liaison officer	/	1	31.07 -05.08.
	Total		7 Helicopters 6 Air Tractors	133	

Source: Authors of the country report for the Republic of North Macedonia.

Figure 129. Hungarian Ground Firefighting Module and Macedonian Rapid Response Teams in Galicica region.

Source: Authors of the country report for the Republic of North Macedonia.

Figure 130. Hungarian Ground Firefighting Module and Macedonian Rapid Response Teams in Galicica region.

Source: Authors of the country report for the Republic of North Macedonia.

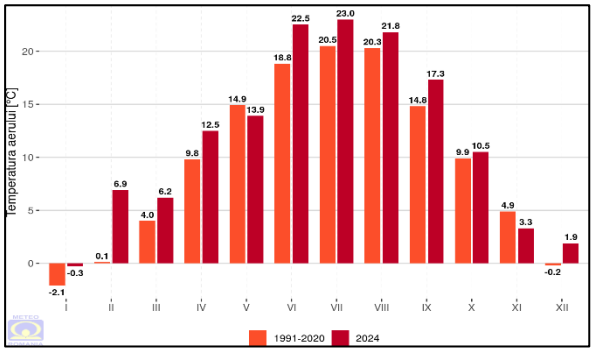
(Source: Protection and rescue directorate, Sector for planning, prevention and development, Department for analytics and research, Republic of North Macedonia).

1.2.22. Romania

Fire danger in the 2024 season

The area average temperature of 11.6 ºC was 2.0 ºC higher than the standard reference interval (1991 - 2020) median (**Figure 131**). From a thermal point of view, anomalies were positive in 10 of the 12 months of the year. The average monthly temperature in the country was higher than the median of the standard reference interval (1991 - 2020) with values between 0.6 ºC (October) and 6.8 ºC (February). In May and November, the deviation was negative, their values being -1.0 ºC and -1.6 ºC, respectively.

Figure 131. The national mean monthly temperature in Romania in 2024, compared with the standard climatologically normal (1991-2020).

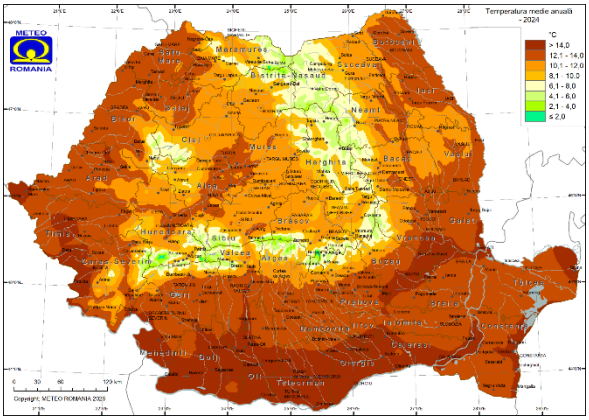


Source: Authors of the country report for Romania.

The year 2024 ranks first in the top of the hottest years in Romania, a top made based on data from 129 full-line meteorological stations between 1961 and 2024

The highest values, over 14 ºC, were recorded in the south and east of Oltenia, on extensive areas of Muntenia, in the south of Moldova, in the center, south and north-west of Banat, on the coast, locally, in the Danube Delta and Crisana. Annual averages between 12 and 14 ºC characterize Dobrogea, the northern half of Oltenia, areas in the west, north and east of Muntenia, the lowlands of Moldova, most of Banat and Crișana, western Maramureș and the Mureș River Valley in Transylvania. In most of Transylvania, in the north, west and center of Moldova and in the submontane areas, the averages generally ranged between 10 – 12 ºC. Low mountain areas and most intramountain depressions were characterized by values between 8 and 10 ºC. In most of the mountainous areas, the average annual temperature varied between 4 and 8 ºC, while at high altitudes it fell below 4 ºC and isolated below 2 ºC.

Figure 132. Annual mean air temperature in 2024 in Romania.



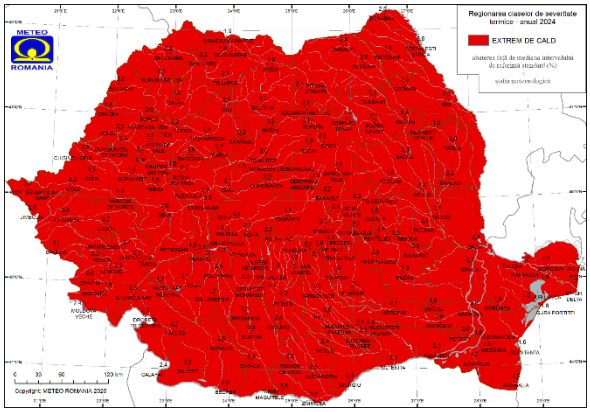
Source: Authors of the country report for Romania.

According to the 2024 mean annual temperature heat severity classification, it was extremely hot across the country. The deviation of the 2024 mean air temperature from the median of the standard reference interval (1991 - 2020) was exclusively positive, and most of the deviations exceeded 2.0 ºC. Values ≥ 2.5 ºC were recorded in Oltenia, Muntenia, in the north of Moldova and in the south of Banat. In Dobrogea, the Danube Delta and in some mountainous areas, thermal anomalies were between 1.5 and 2.0 ºC

The maximum temperature in 2024 varied between 17.2 ºC, at Vârful Omu, on August 13 and 41.7 ºC, a value recorded in Cernavodă, on July 17.

The minimum temperature in 2024 varied between -24.4 ºC, at Intorsura Buzăului, recorded on January 30, and -6.2 ºC, at Chișinău Criș, on November 18.

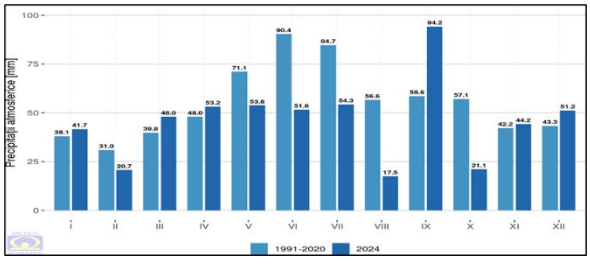
Figure 133. Regional classification of thermal severity classes in Romania in 2024.



Source: Authors of the country report for Romania.

The average amount of precipitation per country, 551.4 mm, was 17% lower than the median of the standard reference interval (1991 - 2020). From a pluviometric point of view, the anomalies (calculated in %) were negative in six of the 12 months of the year (February, May, June, July, August and October). In these months, the amount of monthly precipitation in the country was lower compared to the median of the standard reference interval (1991 - 2020) with values between 24% (May) and 69% (August). In the remaining six months, the deviation was positive, their values being between 5% (November) and 21% in March (**Figure 134**).

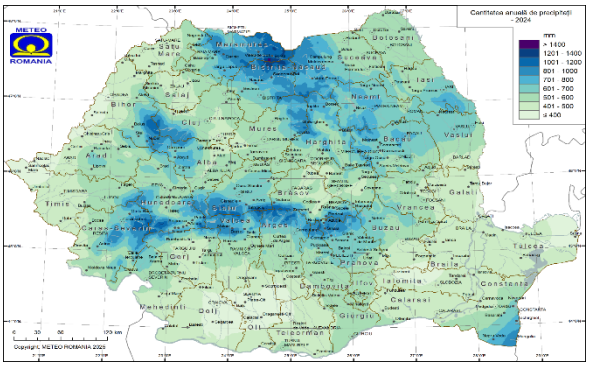
Figure 134. Evolution of Monthly Precipitation Amounts (mm), National Average for Romania in 2024, compared to the median of the Standard Climatic Period (1991 - 2020).



Source: Authors of the country report for Romania.

In 2024, the total amount of precipitation varied between 291.5 mm at the Sulina weather station and 1334.3 mm at the Iezer station. The highest values, over 800 mm, were recorded in the mountainous area and in the south of the coast. Values between 700 – 800 mm were recorded in the submontane areas and locally, in Moldova and Dobrogea. In some submontane areas, in the central part of Moldova, in the south of Transylvania, in the north of Muntenia and in small areas of Dobrogea, the annual amounts of precipitation were between 600-700 mm. In the rest of the plain, hill and plateau areas, they varied between 400 and 600 mm, with lower values in the south, southeast and west of the country. The lowest values, below 400 mm, were recorded in the center and east of Oltenia, in Bărăgan, in the Danube Delta and on extensive areas of the Western Plain.

Figure 135. Annual precipitation amount in Romania in 2024.

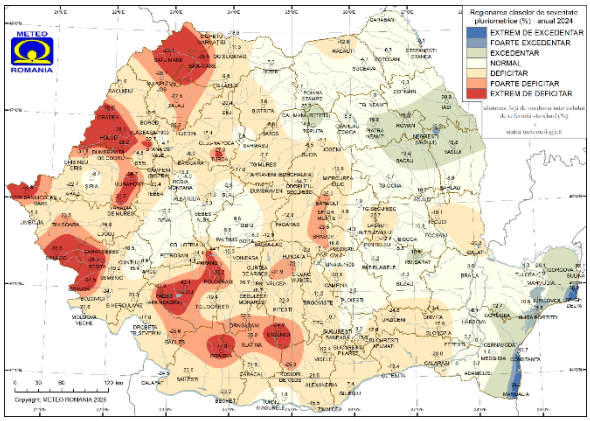


Source: Authors of the country report for Romania.

The deviation of the amount of precipitation in the year 2024 from the median of the standard reference interval (1991-2020), calculated as a percentage, was negative in most of the country. Negative deviations generally had values below 30%. High values, over 40%, were recorded locally, in Oltenia and Banat. The largest negative deviation, 44.9%, was recorded in Sânnicolau Mare. Positive deviation values were recorded in the center and east of Moldova, in Dobrogea, the Danube Delta and isolated in the rest. They exceeded 20% in the Danube Delta, in the southern and isolated coast, in the east of Moldova and in the Eastern Carpathians. The highest positive deviation was 95.2%, in Mangalia.

Analyzing the categorization of the annual rainfall amounts from 2024 into rainfall severity classes, it is found that the rainfall regime was deficient and very deficient in most of Transylvania, Maramureș, Banat, Crișana, Oltenia and Muntenia and locally, in the north and south of Moldova. On extensive areas of Banat, Crișana and Maramureș, locally in Oltenia and isolated in Muntenia and Transylvania, it was extremely deficient. The rainfall regime was excessive in the center and east of Moldova, in the east of Dobrogea and the Danube Delta, locally in the Eastern Carpathians and isolated in the north of Muntenia. It was very surplus and extremely surplus on the coast, in the south-east of the Delta and isolated, in the Central Moldavian Plateau. Otherwise, the rainfall regime fell within normal limits.

Figure 136. Regional classification of Pluviometric Severity Classes in Romania in 2024.



Source: Authors of the country report for Romania.

The highest annual total amount of precipitation (mm) in 2024 was 1334.3 mm and was recorded at the weather station Iezer, and the lowest, 291.5 mm, at Sulina.

The highest amount of precipitation that fell in 24 hours (mm), recorded in the year 2024, was 234.7 mm, at the Mangalia weather station, in August.

Extreme phenomena from the year 2024: heat waves; in June 2024, there were two heat waves that mainly affected the low-lying areas in the south of the country. Thus, the first heat wave started at the beginning of the month and lasted until June 13, and the second, started on June 17 and lasted for 13 consecutive days, affecting approximately 70% of the country's total surface.

In July 2024, a heat wave was recorded that started on July 8 and lasted 15 days. It affected over 80% of the total surface of the country, being in second place after the one in 2012 which lasted 17 days. And in 2021 there was a persistent heat wave lasting 14 days. Years in which heat waves lasting 10 - 12 days were recorded and affected an area of more than 60% of the country's territory are: 1987, 2007, 2015, 2021 and 2022.

In August 2024, two heat waves were recorded. The first was short-lived, during the first 3 days of the month, being a continuation of the heat wave that started the previous month. The second lasted 17 days, affecting over 80% of the country's total area, and was the longest heat wave recorded in August in the period 1981 – 2024. The maximum air temperature during this heat wave was 41.0 ºC.

Forest Fire Season in Romania – 2024

Compared to 2023, in 2024 the number of forest fires increased from 170 to 728 and the affected area increased from 554 ha to 10360 ha.

First fire burst in Romania on 03rd of January and the second fire burst last was reported on the 05th of January. The last reported fire was on the 20th of November.

In 2024, the most forest fires occurred in the months of April and August, namely 299 fires that affected 4957.28 ha.

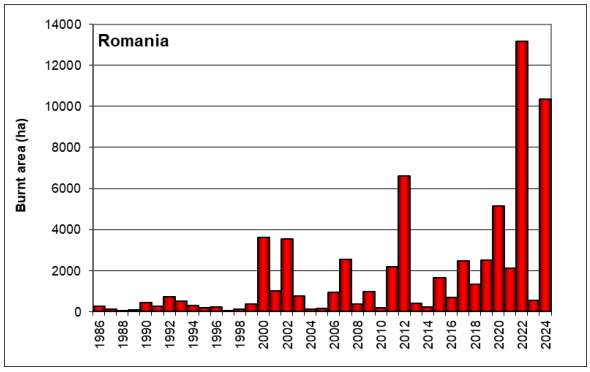
The largest affected area by a forest fire was about 1252.30 hectars and the smallest area was about 0.01 hectars.

Due to the fires, at the national level was estimated a damage of 832.912 thousand Euro. It was burned a number of 715.38 thousand seedlings of plantations and natural

regenerations and a quantity of 10820.69 cubic meters of standing or under operation timber.

The burnt area, number of fires and average fire size for the years 1986-2024 are shown in **Figure 137**.

Figure 137. Burnt areas (a), number of fires (b) and average fire size (c) in Romania from 1986 to 2024.



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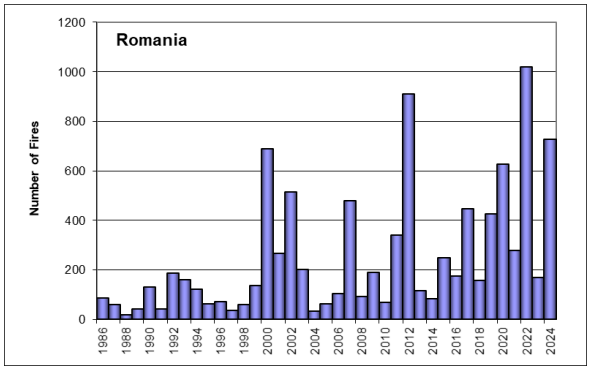

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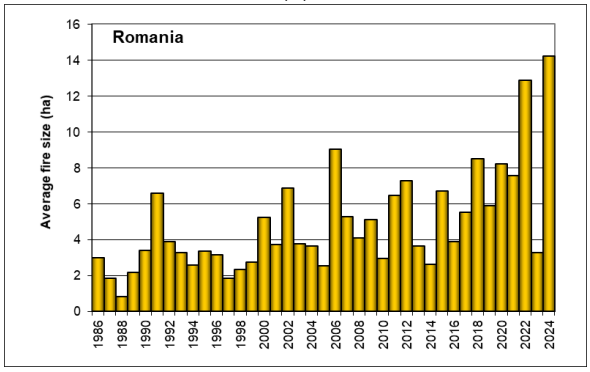


(c)

Source: JRC's elaboration of the country reports for Romania.

The firefighting actions involved a total of 17880 people, detailed in **Table 39**.

Table 39. People involved in firefighting actions in Romania.

Forest rangers	4 536
Military and civilian fire-fighters	7 846
Policemen and gendarmes	931
Volunteers (Citizens)	4 567

Authors of the country report for Romania.

All the forest fires of 2024 are classified as presented in **Table 40**, **Table 41**, and **Table 42**.

Table 40. Causes of forest fires in Romania in 2024.

Cause of fire	EFFIS code	Number of fires	Burnt area (ha)
Unknown	100	212	4 480.78
Natural	201	11	28.21
Electrical power	301	9	56.51
Railways	302	2	19.47
Vehicles	303	4	24.61
Works	304	1	36.28
Explosives	305	1	2.00
Self-ignition	306	3	5.78
Other accident	307	5	37.56
Vegetation management	411	360	3 923.17
Agricultural burnings	412	46	955.93
Waste management	413	6	22.70
Recreation	414	2	9.29
Other negligent use of fire	415	47	612.02
Cigarettes	422	12	43.78
Other use of glowing object	424	2	24.00
Revenge	512	1	0.2
Mental illness	521	1	16.26
Rekindle	600	3	59.22

Source: Authors of the country report for Romania.

Table 41. Nature of the affected property in Romania in 2024.

Public property of State	417 fires on 6876.90 ha
Public/private property of Communities	72 fires on 1409.60 ha
Private property	169 fires on 2018.33 ha
(9 fires occurred on lands belonging to several forms of ownership)	

Source: Authors of the country report for Romania.

Table 42. Type of fire in Romania in 2024.

Litter fires	649 fires on 9 545.94 ha
Mixed fires (litter, canopy, underground)	79 fires on 814.93 ha

Source: Authors of the country report for Romania.

In 2024, the most forest fires occurred in the months of April and August, namely 299 fires that affected 4957.28 ha of forest. In contrast, in January there were 6 fires on the surface of 2.56 ha, and in December no fire was reported.

In 2024, there were 93 forest vegetation fires lasting more than 24 hours. Notably the one in the area of Zărnești (Brașov county) broke out on 26.10.2024; although the affected area was not large (10.4 ha), the fire was completely extinguished after 30 days for the following reasons: very difficult to access terrain, predominantly resinous composition and the repeated re-ignition of the roots.

In general, in Romania, forest fires occur during the period of vegetative rest, so the damage caused is not great, being litter fires for the most part, which only superficially affect the organic horizon of the soil and the organisms in this area. On the other hand, if there is a young plantation in the path of the fire, especially one that includes resinous species in its composition, due to the small height of the saplings, we are faced with the complete burning of their crown, causing a total loss of the plantation, and subsequently it is necessary to replant the respective lands.

(Source: Romanian Ministry of Environment, Waters and Forests (forest fires data); Romanian National Meteorological Institute (meteorological data), Romania).

1.2.23. Serbia

Introduction

According to the second national forest inventory with data released in 2023 total forest area in the Republic of Serbia (without data for the administrative province of Kosovo and Metohija) is covering 2 854 955.8 ha.

State-owned forests represent 58.3% of the forested area whilst 41.7% is in private ownership. The most dominant are broadleaved types of forest with beech and oaks as a main species, while pure coniferous types of forest cover less than 8% of the total forested area.

The elevation in Serbia ranges from 28 to 2169 m. Annual air temperature varies from 11°C for the altitudes of up to 300 m to 6 °C for altitudes over 1000 m. Lower regions receive from 540-820 mm of precipitation while higher regions with altitudes above 1000 m receive from 700-1000 mm of precipitation in average.

Fire occurrence and affected surfaces

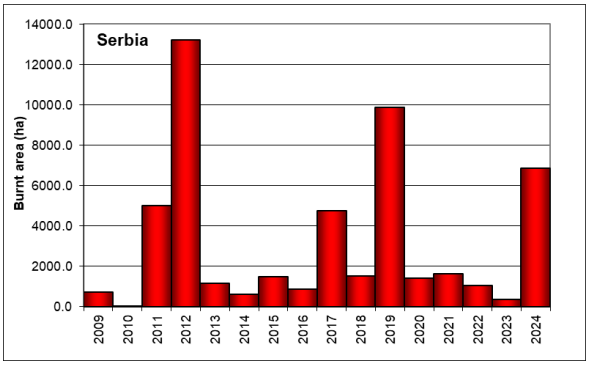
The 2024 fire season was much intense than an average fire season in Serbia. In total 186 forest fires were recorded with more than 6870 ha of total burnt area and with 36.94 ha of forest fire in average (**Figure 138**).

The biggest forest fire, with 556.6 ha of burnt area, was recorded in the forest district Vranje, which is situated in the southern part of Serbia.

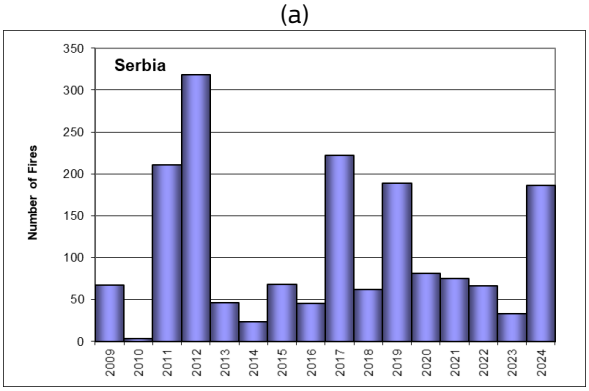
Usually, Serbia has two peaks of forest fire activity. The first one occurs in March or April and the second one in July and August, depending on the season. Contrary to the previous fire season in 2023, when the highest fire activity was recorded in October, the 2024 season saw its highest fire activity in August, with fires during this month accounting for 26% of the total burned area and more than 37% of the total number of forest fires recorded during the season (**Figure 139**b).

The trends of the burnt areas, number of fires and average fire size in Serbia for the years 2009 to 2024 are shown in **Figure 138**.

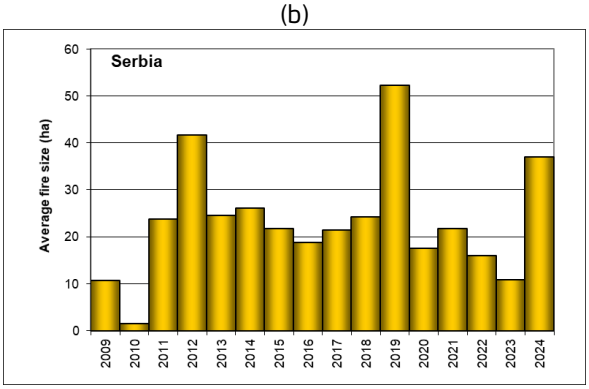
Figure 138. Burnt areas (a), number of fires (b) and average fire size (c) in Serbia from 2009 to 2024.



(a)



(b)



(c)

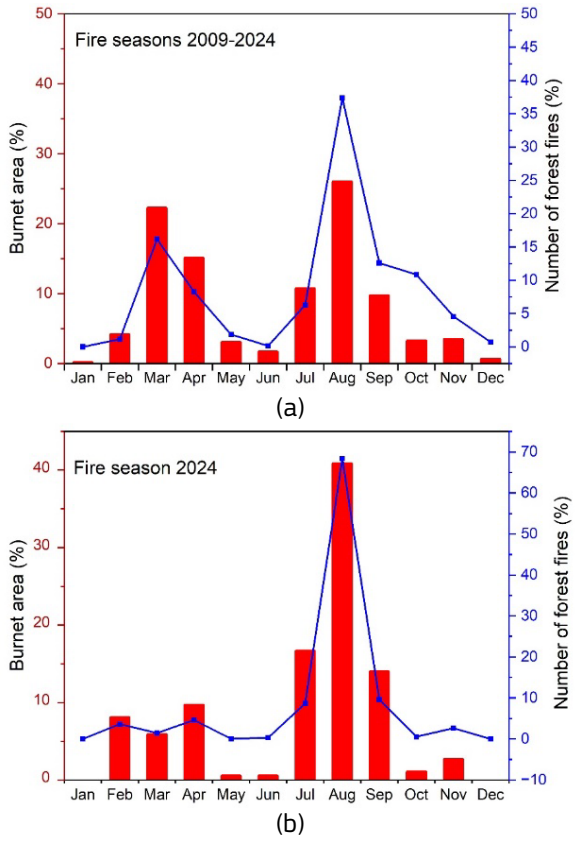
Source: JRC's elaboration of the country reports for Serbia.

Table 43. Number of fires and burnt area in Serbia.

Year	Number of fires	Burnt area (ha)	Average burnt area
2012	318	13 226.44	41.59
2013	46	1 131.83	24.61
2014	23	599.19	26.05
2015	68	1 474.24	21.68
2016	45	843.29	18.74
2017	222	4 756.80	21.43
2018	62	1 501.92	24.22
2019	189	9 871.73	52.23
2020	81	1 417.43	17.50
2021	75	1 633.53	21.78
2022	66	1 052.99	15.95
2023	33	358.22	10.86
2024	186	6 870.00	36.94

Source: Authors of the country report for Serbia.

Figure 139. Monthly distribution of forest fires in Serbia: (a) for the years 2009-2024, (b) season 2024.

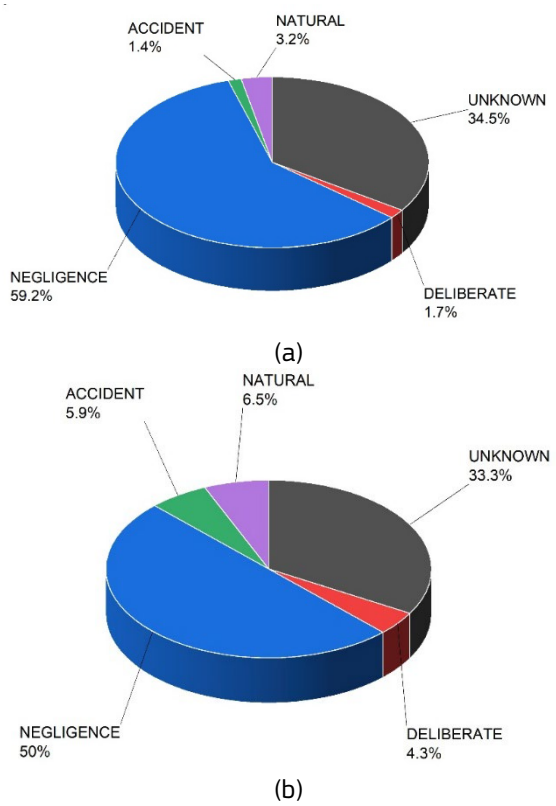


Source: Authors of the country report for Serbia.

Fire causes

The main cause of the forest fire was negligence during the previous decade (59.2%), like in the fire season 2024 where negligence was reported as a major cause in 50.0% followed by unknown (33.3%) and natural (6.5%) causes (**Figure 140**).

Figure 140. Causes of forest fires in Serbia: (a) for the years 2014-2024, (b) fire season 2024.



Source: Authors of the country report for Serbia.

Fire prevention activities and information campaigns

Information about the FWI is provided by the Republic Hydrometerologica Service of Serbial on the dayli bases for each adiminatrative unit in Serbia at the NUTS2 level. Fire danger activities are prohibited during fire season in all the forests. State Forest Enterprises starting campaign in public media about the forest fire danger each year before the fire season. Forest Directorate, as a part of the Ministry of Agriculture, Forestry and Water Management Invested in the maintained and establishment

of the new fuel breaks 52,000. and 10,700 euros respectively, before the 2024 fire season.

Injuries and losses of human lives

During the 2024 season, there was one fatality in a forest fire.

Climatic conditions and how they impacted the fire season

Record-breaking heat dominated Serbia's climate in 2024, making it the country's hottest year since measurements began in 1951. The average annual temperature soared to 2.3°C above the 1991–2020 baseline. The extremes peaked on July 17 in Ćuprija, where temperatures hit a scorching 41.8°C. Tropical days (≥30°C) became alarmingly frequent, with Ćuprija enduring 92 such days—a national record. Belgrade faced 79 tropical days, exceeding its average by 34 days, while most regions saw 69–90 tropical days (30–50 above normal). Nights offered little relief: Belgrade recorded 67 tropical nights (≥20°C), shattering its 2012 record of 57, and northern/western areas experienced 30–39 stifling nights. Prolonged and Intense Heat Waves amplified fire risks throughout the year. Five major heat waves struck between June and August alone, with mid-July and mid-August episodes exceeding 10°C above normal. The longest spanned 17 days in Sombor (August 23–September 8). Two additional autumn heat waves extended the threat into October, including one centered in Negotin. Precipitation patterns were uneven, with most areas receiving average annual rainfall but critical exceptions. Severe dryness gripped Palic, Banatski Karlovac, Loznica, Valjevo, Veliko Gradište, Negotin, Ćuprija, and Kopaonik, while Crni Vrh was "very dry." Only Vranje saw above-average rain. Annual totals ranged from 439.8 mm in arid Palic to 778.2 mm in wetter Loznica, with mountains recording 589.4 mm (Crni Vrh) to 930.2 mm (Zlatibor). Despite seasonal averages, intense downpours occurred, including Belgrade's 82.5 mm deluge on June 28. Minimal Snow Cover in Winter set the stage for early fire vulnerability. Negotin registered a record-low snow depth of just 2 cm (January 9–11), while Palic, Crni Vrh, and Vranje saw the fewest snow-covered days on record. This scant winter accumulation left landscapes parched and combustible well before summer's heat arrived. In essence, 2024's relentless heat, record-shattering tropical conditions, and localized droughts created a tinderbox across Serbia. The convergence of these extremes—especially during historic heat waves—significantly heightened wildfire ignition risks and challenged firefighting efforts throughout the season (https://www.hidmet.gov.rs/data/klimatologija/eng/2024.pdf).

National adaptation strategies / plans

The Serbian Law on climate change was adopted on 18 March 2021, and its implementation will establish a system for reducing greenhouse gas emissions and ensure adaptation to changed climate conditions. The law fulfils the obligations under the UN Framework Convention and the Paris Agreement and harmonizes domestic legislation with European Union regulation. Serbia has developed a National Adaptation Plan (NAP) and a related Climate Change Adaptation Programme for the period 2023-2030, with an Action Plan for implementation from 2024 to 2026. The NAP aims to integrate climate change adaptation into national and subnational planning processes and improve the legal framework for addressing climate change vulnerabilities.

Research activities aimed at improving fire management

During 2024, research activities were not supported by the Forest Directorate.

Firefighting means

All firefighting measures are under the responsibility of the Sector for Emergency Situations which is a part of the Ministry of Internal Affairs in Serbia. The operational core of the Sector consists of members of operational fire and rescue units. At any

moment, 3 280 of them are ready to react. The seat of the Sector for Emergency Situations consists of several departments including Directorate for Fire and Rescue Units and Civil Protection. At the local level, the Sector has 27 organizational units, four Emergency Situations Administrations in Belgrade, Kragujevac, Nis and Novi Sad, and 23 Departments for Emergency Situations all around Serbia. Along with the ground troops and firefighting vehicles. As part of two specialized Kamov Ka-32 helicopters, at least four helicopters are available for fire suppression if needed from other parts of the Ministry of Internal Affairs in Serbia.

Operations of mutual assistance

Serbia assisted in combating the forest fire in the region. A team of 35 firefighters from the Sector for Emergency Situations (Ministry of Interior), equipped with 12 vehicles followed were sent on August 13 to Greece along with one helicopter through the EU mechanism for civil protection. Helicopters were sent as assistance to North Macedonia on July 16, July 30, to Bosnia and Herzegovina on August 13, to Greece again on October 2, October 10, and October 29.

(Source: Forest Directorate - Ministry of Agriculture, Forestry and Water Management, Centre for Forest Fire Research - University of Belgrade Faculty of Forestry, Serbia).

1.2.24. Slovakia

Fire danger in the 2024 fire season

The year 2024 was the warmest globally and also the warmest in Slovakia. The global average temperature reached 15.1 °C, ranking first since the beginning of measurements in 1830, according to the Slovak Hydrometeorological Institute (SHMÚ).

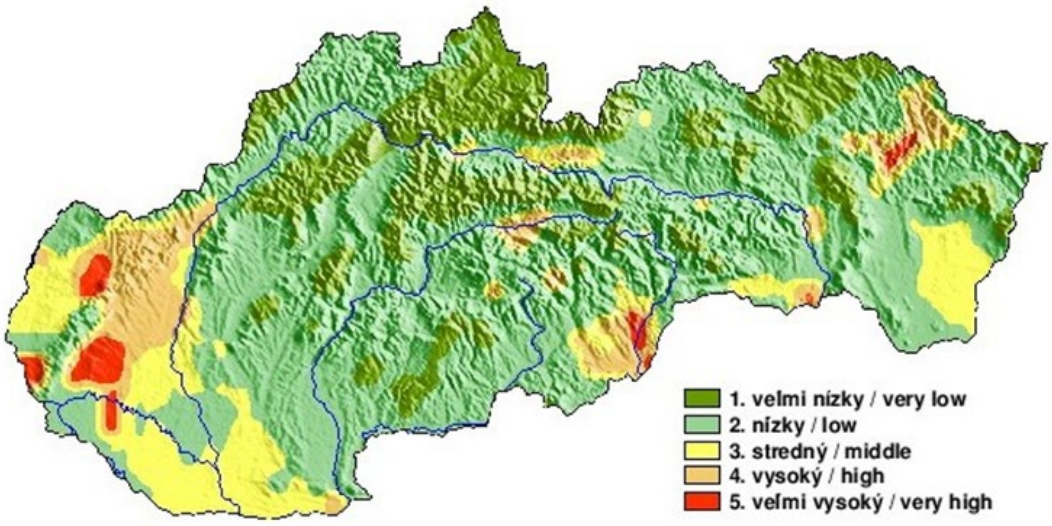
Some meteorological stations reported the lowest number of days with snow cover in their history. "For example, in Bratislava–Koliba it was only one day, while in Poprad it was 32 days — the lowest since 1951".

Extremely warm winter. The winter of 2023–2024 was particularly remarkable. In February, an exceptionally high positive temperature anomaly was recorded, reaching +6.8°C.

April brought extreme temperature swings, with air temperatures dropping by more than 16 °C from one day to the next. Such extreme weather events, including snow calamities and floods, are consequences of ongoing global warming.

In 2024, meteorologists recorded three drought periods in Slovakia — in May, September, and during November–December. These conditions had a negative impact on agricultural yields and forest health.

Figure 141. Day information on the forest fire index in Slovakia.



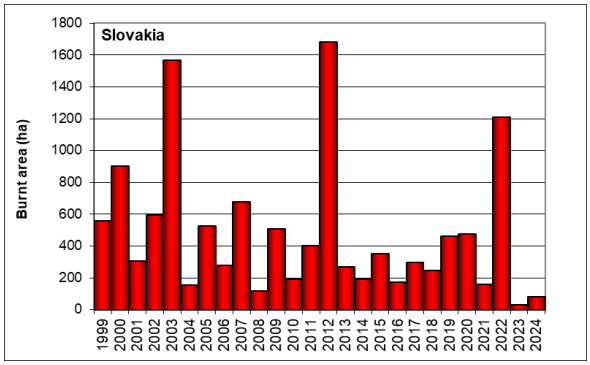
Source: Slovak hydrometeorological institute.

Fire occurrence and affected surfaces

In 2024, according to the records of the Fire Engineering and Expertise Institute of the Ministry of the Interior of the Slovak Republic (PTEU), 102 forest fires were recorded, with a total burned area of 81.73 ha. The damage caused by these fires was estimated at €1 919 550. Compared to 2023, the number of fires was significantly higher (2023: 55), and the total burned area also increased substantially (2023: 29.46 ha). The total calculated damage likewise grew several times compared to 2023 (2023: €89 035). Despite this increase, the number of forest fires in 2024 is considered average, since 2023 was significantly below average in terms of number of fires, burned area, and calculated damage.

The trends regarding the burnt areas, number of fires and average fire size in Slovakia for the years 1999 to 2024 are shown in **Figure 142**.

Figure 142. Burnt areas (a), number of fires (b) and average fire size (c) in Slovakia from 1999 to 2024.



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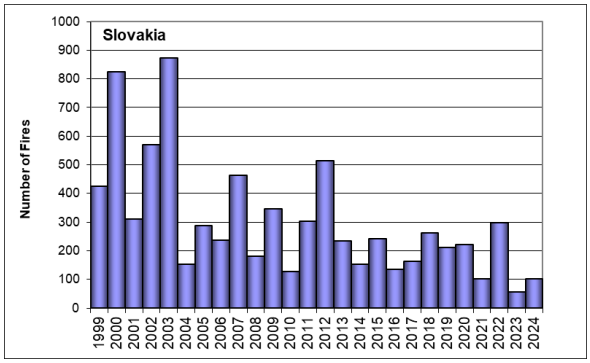
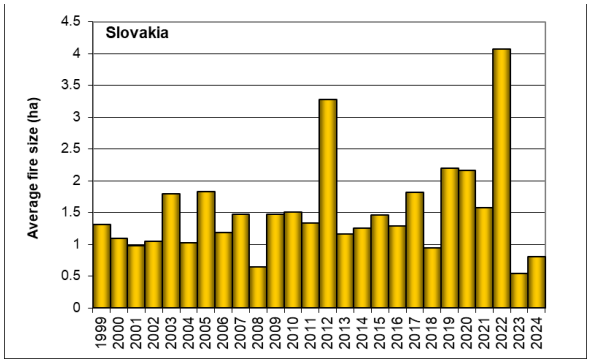


(b)

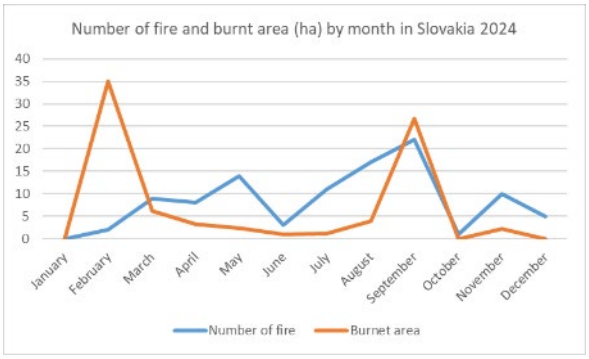


(c)

Source: JRC's elaboration of the country reports for Slovakia.

The highest number of fires was recorded in the districts of Malacky (9 fires), Senica and Čadca (7 each), Žilina, Brezno, and Spišská Nová Ves (6 each). The largest burned areas were reported in the districts of Malacky (12.47 ha), Senica (4.01 ha), and Čadca (1.63 ha). The most extensive single fire occurred in Mníšek nad Hnilcom, where 35 ha burned as a result of grass burning on surrounding land, causing damage worth €1 500. The most severe damage, however, was caused by a forest fire in the village of Ludrová (NAPANT), which spread in difficult-to-reach terrain and lasted four days. The fire caused direct damage of €1 600 000. The cause was identified as careless handling of an open fire. One person was killed and another seriously injured.

Figure 143. Number of fires and burnt area by month in Slovakia in Fire frequency by month in 2024.



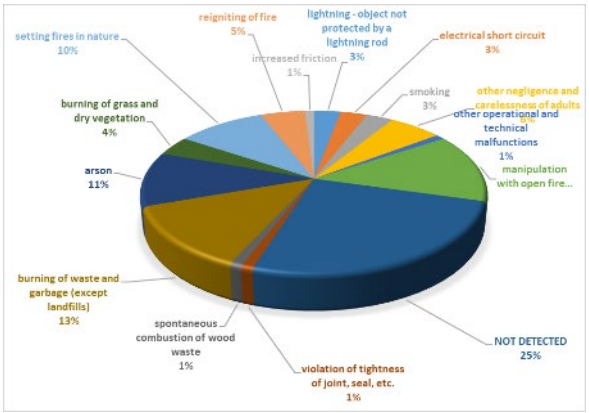
Source: Institute for Fires and Expertise of the Ministry of Interior of the Slovak Republic.

The months with the highest occurrence of forest fires were September (22), August (17), May (14), and July (11).

Fire causes

Forest fire causes in 2024 are show in **Figure 144**, and causes for the years 2014-2024 are presented in **Table 44**.

Figure 144. Causes of forest fires in Slovakia in 2024.



Source: Institute for Fires and Expertise of the Ministry of Interior of the Slovak Republic.

Table 44. Number of fires and burnt area in Slovakia in 2024.

	Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
A. Basic information	Total fires	**153**	**242**	**136**	**162**	**262**	**210**	**221**	**101**	**297**	**55**	**102**
Known causes (Human)	Arson	26	23	12	11	19	7	18	8	22	7	11
	Negligence (see also B below)	112	167	98	108	179	156	113	63	195	29	62
Known causes (Natural)	Lightning	2	12	0	10	9	4	0	6	9	2	3
Unknown	Unknown	13	40	26	33	55	43	36	24	71	17	26
B. Supplementary information: Total negligence	Agricultural operations	24	26	21	20	19	25	39	8	10	1	4
	Logging/forest operations	18	21	14	21	37	27	5	27	14	3	6
	Other industrial activities	1	5	0	0	1	28	1	1	2	1	1
	Communications (railways, electricity lines, etc.)	1	2	1	2	2	3	7	2	2	2	4
	General public (campers, other visitors, children)	67	110	62	65	119	72	113	24	72	21	46
	Other (military, etc.)	1	3	0	0	1	1	2	2	2	1	1

Source: Institute for Fires and Expertise of the Ministry of Interior of the Slovak Republic.

The most common identified causes of forest fires were: unknown cause (26), open fire handling (14), burning of waste and garbage outside landfills (13), and deliberate arson by a known person (11).

Fire prevention activities

The prevention of forest fires was ensured by the owners, managers or managers of the forest, especially at the time of increased danger of fire occurrence in accordance with § 6b par. 1 letter c) Act no. 314/2001 Coll. on fire protection as amended

- Provide information on the forest fire index through the internet Slovak Hydrometeorological institute
- Provide information through television when the forest fire index is high
- Information campaigns
- Prohibit fire dangerous activities in period with high Fire index
- Use of a stationary camera system for the early detection of forest fires

Injuries and loss of human lives

During the 2024 fire season in Slovakia, one person died and three people were injured in forest fires.

Figure 145. Fire fighting in Slovakia 2024 (a, b and c).

(a)

(b)

(c)

Source: Institute for Fires and Expertise of the Ministry of Interior of the Slovak Republic.

(Processed: National Forest Centre - Forest Research Institute Zvolen, Slovakia; Source: Institute for Fires and Expertise of the Ministry of Interior of the Slovak Republic).

1.2.25. Slovenia

In 2024, 49 forest fires were reported, with a total burnt area of 134.42 ha.

Excluding the exceptional fire season 2022, the burnt area in 2024 aligns with the average of the last five years, while the number of fires is below the average of the same period.

The most affected land cover type is woodland (**Table 45**). No fire was over 100 ha.

Table 45. Number of fires and burnt area in Slovenia in 2024.

Number of fires	< 1 ha	41
	>= 1 ha	8
	>=100 ha	0
	>=500 ha	0
	Total	49
Burnt area	Woodland	113.48
	Bushes	13.28
	Non woodland	7.66
	Total	134.42

Source: Authors of the country report for Slovenia.

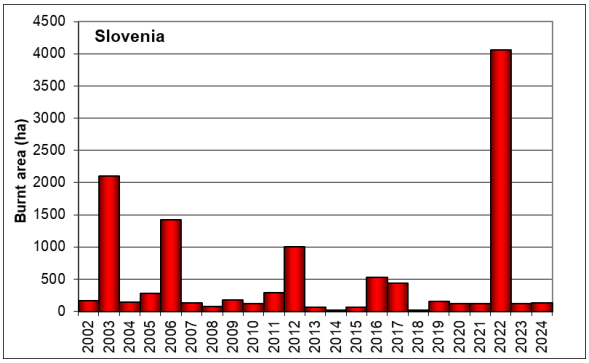
Figure 146. Hydrant inspection in Slovenia.

Source: Matej Kravanja, SFS.

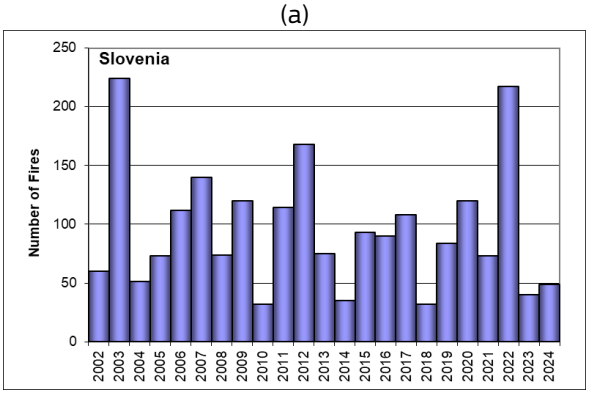
Figure 147 shows the trends in terms of number of fires and burnt area in Slovenia from 2002.

As was the case in previous years, the most affected region was Sežana (**Table 46**).

Figure 147. Burnt areas (a), number of fires (b) and average fire size (c) in Slovenia from 2002 to 2024.



(a)



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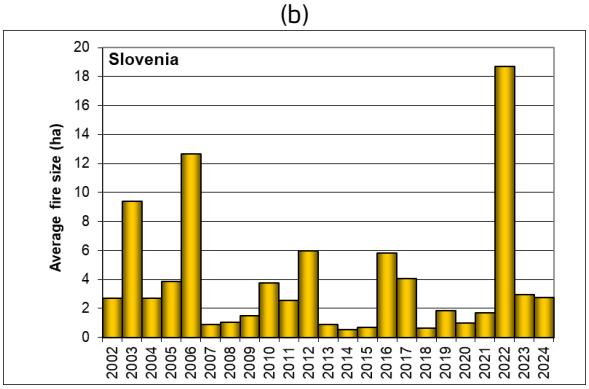


(c)

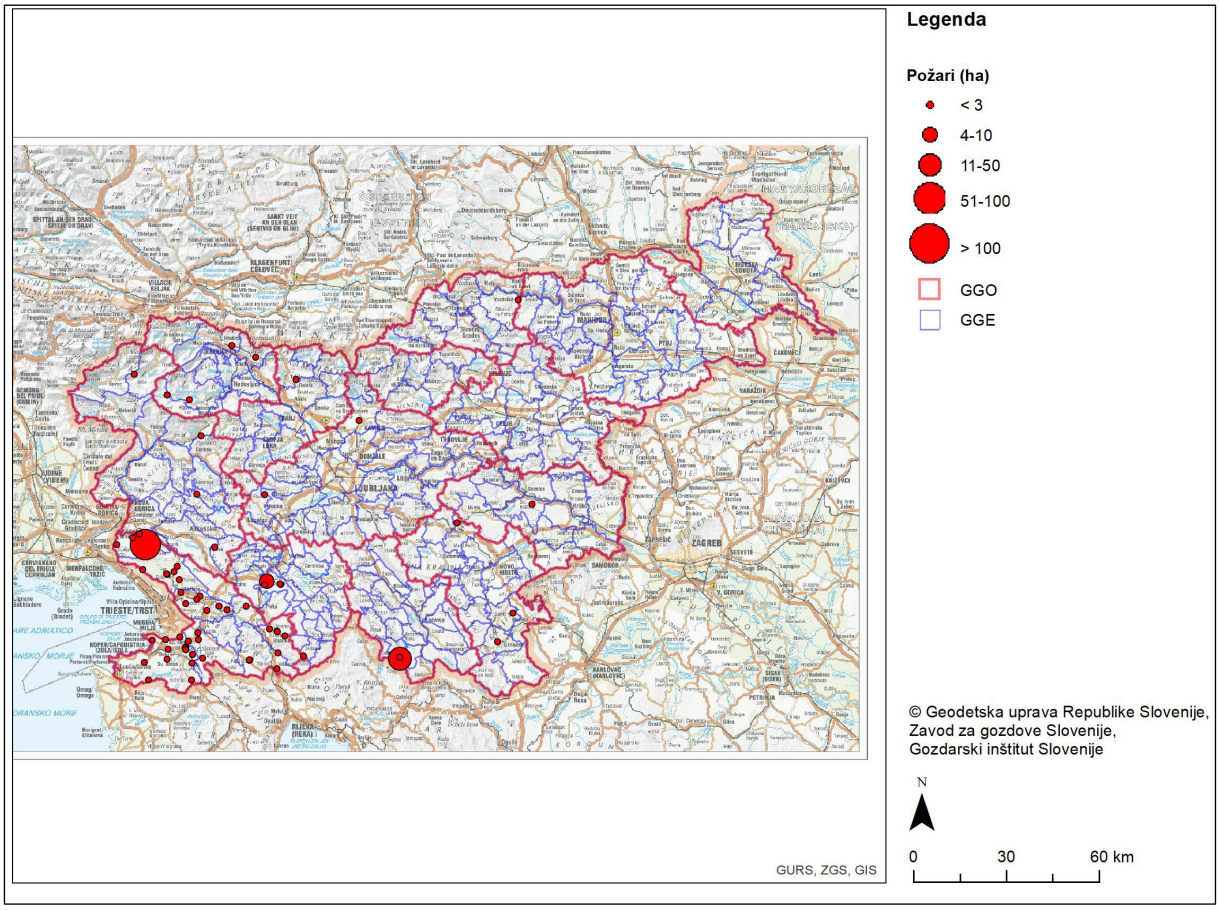
Source: JRC's elaboration of the country reports for Slovenia.

Table 46. Number of fires and burnt area by regional unit in Slovenia in 2024.

	Number of fires					Burnt area (ha)			
Regional unit	**<1 ha**	**≥1 ha**	**≥100 ha**	**≥500 ha**	**Total**	**Woodland**	**Bushes**	**Non woodland**	**Total**
Tolmin	2	1	0	0	3	2.16	0.00	0.00	2.16
Bled	3	0	0	0	3	0.81	0.00	0.00	0.81
Kranj	1	0	0	0	1	0.04	0.00	0.40	0.44
Ljubljana	1	0	0	0	1	0.04	0.00	0.00	0.04
Postojna	0	1	0	0	1	0.01	0.18	1.56	1.75
Kočevje	1	1	0	0	2	34.92	0.00	0.01	34.93
Novo mesto	3	0	0	0	3	1.09	0.40	0.00	1.49
Brežice	1	0	0	0	1	0.16	0.00	0.00	0.16
Celje	0	0	0	0	0	0.00	0.00	0.00	0.00
Nazarje	0	0	0	0	0	0.00	0.00	0.00	0.00
Slovenj Gradec	1	0	0	0	1	0.01	0.00	0.00	0.01
Maribor	0	0	0	0	0	0.00	0.00	0.00	0.00
Murska Sobota	0	0	0	0	0	0.00	0.00	0.00	0.00
Sežana	28	5	0	0	33	74.24	12.70	5.69	92.63
Total	**41**	**8**	**0**	**0**	**49**	**113.48**	**13.28**	**7.66**	**134.42**

Source: Authors of the country report for Slovenia.

Figure 148. Map of fires in Slovenia in 2024.



Source: Authors of the country report for Slovenia.

Table 47. Burnt area by type of surface, ownership and regional unit in Slovenia in 2024.

Regional Unit	TO	BL	KR	LJ	PO	KO	NM	BR	CE	NA	SG	MB	MS	SE	Total
A. Burnt area by type of surface (ha)	2.16	0.81	0.44	0.04	1.75	34.93	1.49	0.16	0	0	0.01	0	0	92.63	**134.42**
1 Forests	2.16	0.81	0.04	0.04	0.01	34.92	1.09	0.16	0	0	0.01	0	0	74.24	**113.48**
1.1 High forests	0.58	0.81	0.04	0.04	0.01	21.01	1.09	0.16	0	0	0.01	0	0	55.27	**79.02**
1.1.1 Coniferous forests	0.2	0.2	0.04	0	0.01	21.01	0.16	0	0	0	0.01	0	0	48.82	**70.45**
1.1.2 Deciduous forests	0.38	0.37	0	0.04	0	0	0.93	0.16	0	0	0	0	0	2.29	**4.17**
1.1.3. Mixed forests	0	0.24	0	0	0	0	0	0	0	0	0	0	0	4.16	**4.4**
1.2 Coppices	1.28	0	0	0	0	0	0	0	0	0	0	0	0	18.97	**20.25**
1.3 Shrubs, shrubby forest	0.3	0	0	0	0	13.91	0	0	0	0	0	0	0	0	**14.21**
2 Other surfaces	0	0	0.4	0	1.74	0.01	0.4	0	0	0	0	0	0	18.39	**20.94**
2.1. Other forest land, overgrown areas	0	0	0	0	0.18	0	0.4	0	0	0	0	0	0	12.7	**13.28**
2.2 Other surfaces	0	0	0.4	0	1.56	0.01	0	0	0	0	0	0	0	5.69	**7.66**
B. Burnt areas by type of ownership (ha)	2.16	0.81	0.44	0.04	1.75	34.93	1.49	0.16	0	0	0.01	0	0	92.63	**134.42**
1. Public property	0.75	0	0	0	0	0	0	0	0	0	0	0	0	34.67	**35.42**
1.1 Forests	0.75	0	0	0	0	0	0	0	0	0	0	0	0	27.5	**28.25**
1.2 Other surfaces	0	0	0	0	0	0	0	0	0	0	0	0	0	7.17	**7.17**
2. Private property	1.41	0.81	0.44	0.04	1.75	34.93	1.49	0.16	0	0	0.01	0	0	57.96	**99**
2.1 Forests	1.41	0.81	0.04	0.04	0.01	34.92	1.09	0.16	0	0	0.01	0	0	46.74	**85.23**
2.2 Other surfaces	0	0	0.4	0	1.74	0.01	0.4	0	0	0	0	0	0	11.22	**13.77**

Source: Authors of the country report for Slovenia.

Table 48. Causes of fires by area and regional unit in Slovenia in 2024.

Regional Unit	TO	BL	KR	LJ	PO	KO	NM	BR	CE	NA	SG	MB	MS	SE	Total
A. All fires together	2.16	0.81	0.44	0.04	1.75	34.93	1.49	0.16	0	0	0.01	0	0	92.63	**134.42**
1. Known causes, of which:	1.87	0	0.44	0	1.75	34.93	1.49	0.16	0	0	0.01	0	0	6.74	**47.39**
1.1. Man	0	0	0.44	0	1.75	0	0.59	0.16	0	0	0	0	0	4.91	**7.85**
1.1.1. Arson	0	0	0	0	0	0	0.57	0	0	0	0	0	0	0.32	**0.89**
1.1.2. Carelessness	0	0	0.44	0	1.75	0	0.02	0.16	0	0	0	0	0	4.58	**6.95**
1.2. Natural causes (lightning)	1.87	0	0	0	0	34.93	0.9	0	0	0	0.01	0	0	1.83	**39.54**
2. Not knowing the anniversary	0.29	0.81	0	0.04	0	0	0	0	0	0	0	0	0	85.89	**87.03**
B. Additional breakdown of fires due to carelessness	0	0	0.44	0	1.75	0	0.02	0.16	0	0	0	0	0	4.58	**6.95**
1. Agricultural tasks	0	0	0.44	0	0	0	0	0	0	0	0	0	0	2.45	**2.89**
2. Forestry tasks	0	0	0	0	0	0	0.02	0.16	0	0	0	0	0	0	**0.18**
3. Industrial activity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4. Communications (trains, power lines, etc.)	0	0	0	0	0	0	0	0	0	0	0	0	0	0.16	**0.16**
5. Visitors to the forest (tourists, children, etc.)	0	0	0	0	0	0	0	0	0	0	0	0	0	1.97	**1.97**
6. Other (military, etc.)	0	0	0	0	1.75	0	0	0	0	0	0	0	0	0	**1.75**

Source: Authors of the country report for Slovenia.

Figure 149. Fire prevention in Slovenia.

Source: Andrej Zadnik, SFS.

Figure 150. Firefighting resources in Slovenia.

Source: Obalno-Kraška Fire brigade.

(Source: Ministry of agriculture, forestry and food; Slovenia Forest Service, Slovenia).

1.2.26. Spain

Fire danger in the 2024 fire season

According to the State Meteorological Agency (AEMET), the year 2024 in Spain was extremely warm, with an average temperature of 15.1 °C in the Iberian Peninsula. 2024 was the third warmest year of the historical record, which started in 1961.

It should be noted that the year was very warm in the Cantabrian and Western regions. 2024 was extremely warm in the rest of the Iberian Peninsula. In the Canary Islands and the Balearic Islands, the year was very or extremely warm.

In 2024, there were three heat waves in the Iberian Peninsula and the Balearic Islands, occurring in these dates: 18-20 July, 23 July-1 August and 4-12 August. In the Canary Islands, there wasn't any heat wave.

Regarding rainfall, 2024 was humid in most of the Iberian Peninsula, becoming the 26th wettest year since 1961, and the 10th in 21st century. On the opposite, 2024 was extremely dry in the Canary Islands, becoming the driest year of the historical record.

Fire occurrence and affected surfaces

The provisional statistics for the period between January 1 and December 31, 2024, are compiled with the information sent by the Autonomous Communities on a weekly basis during the high-risk season (i.e., from 1st June to 15th October) and monthly for the rest of the year.

Number of forest fires

According to these data, the total number of fires has decreased by 36.57% compared to the average of the last decade, with a decrease of 31.75% in the number of small fires (area <1 ha) and 46.21% in larger fires (area ≥ 1 ha), respectively. 2024 is the year with less forest fires of the decade.

Table 49. Number of forest fires in Spain in 2024 compared with 10 year average.

	Average 2014-2023	*2024*
Number of fires <1ha	6 448	4 401
Number of fires ≥1ha	3 222	1 733
Total	**9 670**	**6 134**

Source: Ministry for the Ecological Transition and Demographic Challenge, Wildland Fire Management Service, Spain.

Burnt areas

Regarding the burnt areas, there was a decrease compared to the 10-year average of 65.08% in wooded lands, 48.37% in non-wooded lands and 54.09% in forest areas (sum of wooded and non-wooded lands). 2024 is the second year with less affected forest area of the decade.

Table 50. Burnt area in Spain in 2024 compared with 10 year average.

Burnt area (ha)	*Average 2014-2023*	*2024*
Wooded land	35 531.00	12 405.71
Non-wooded land	68 387.00	35 305.42
Forest	**103 918.00**	**47 711.13**

Source: Ministry for the Ecological Transition and Demographic Challenge, Wildland Fire Management Service, Spain.

The yearly trends in terms of burnt area of forest, number of fires and average fire size since 1980 in Spain are shown in **Figure 151**.

Large fires

According to the provisional statistics compiled by the relevant departments in the Autonomous Communities, during 2024 there were 16 large forest fires (Grandes Incendios Forestales, GIF), a category which includes fires affecting more than 500 hectares. In 2024 there were 7 large forest fires below the average of the decade.

In total, the GIFs accounted for 34.72% of the total burnt area, but only 0.26% of the total number of fires that occurred in the year.

Regarding the incidence of GIF by geographic regions, the Interior Communities experienced 56.25% of the GIF.

Table 51. Large forest fires in Spain (>500 ha) in 2024.

Province	*Municipality of origin*	*Start date*	*Burnt area (ha)*
Cantabria	Soba	26-jan	1 715.00
Almería	Enix	9-feb	580.85
Cantabria	Rionansa	6-apr	592.66
Alicante	Tárbena	14-apr	543.67
Almería	Níjar	6-jun	2 122.19
Badajoz	Cabeza del Buey	5-jul	754.91
Badajoz	La Coronada	19-jul	779.73
Cáceres	Talavan	20-jul	728.55
Badajoz	Ribera del Fresno	24-jul	1 138.77
Badajoz	Puebla del Maestre	24-jul	943.80
Ciudad Real	Argamasilla de Calatrava	24-jul	702.05
Cuenca	Valverdejo	30-jul	2 226.98
Toledo	La Estrella	6-aug	1 829.54
Jaén	Andújar	18-aug	786.88
León	Astorga	19-aug	589.74
Madrid	Tres Cantos	22-aug	528.71
Total burnt area			**16 564.03**

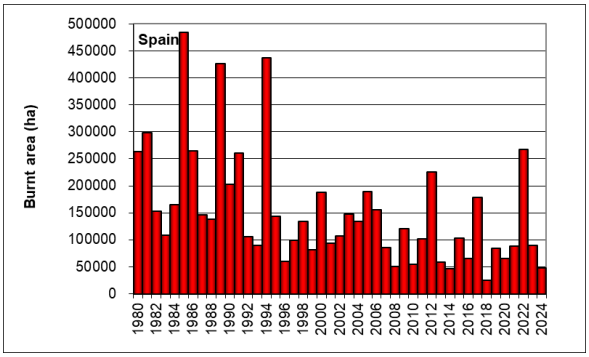
Source: Ministry for the Ecological Transition and Demographic Challenge, Wildland Fire Management Service, Spain.

Of the 16 large fires, 9 (56%) had consequences on the population or their assets. In 14 (87%) of these large fires participated the resources of the Ministry for the Ecological Transition and Demographic Challenge (*Ministerio para la Transición Ecológica y el Reto Demográfico*, MITECO). The Emergency Military Unit (*Unidad Militar de Emergencias*, UME) was activated in 4 (25%) of them.

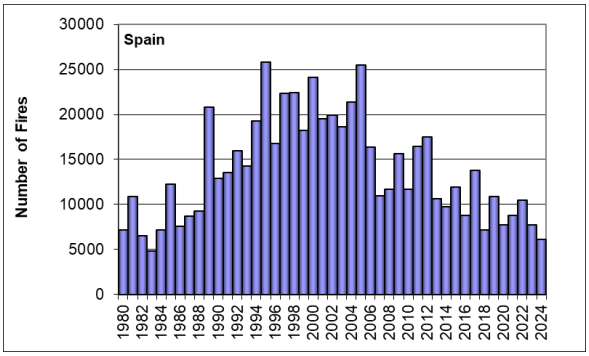
The two large fires with highest consequences for the population and their assets were the following:

- Tárbena (Alicante) started on April 14. 4 interveners were injured. 206 people had to be evacuated. 2 roads were cut. Regional resources, MITECO resources and UME intervened in its suppression.
- Tres Cantos (Madrid): started on August 22. 8 people were injured. 120 people had to be evacuated.

Figure 151. Burnt area of forests (a), number of fires (b) and average fire size (c) in Spain 1980 - 2024.



(a)



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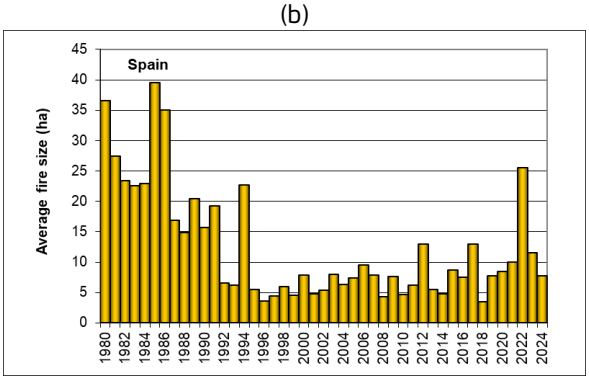


(c)

Source: JRC's elaboration of the country reports for Spain.

Geographical distribution of forest fires

Given the heterogeneity of the national territory in terms of meteorology, topography, vegetation and socioeconomic factors, forest fires are traditionally analysed by region according to four zones that are considered homogeneous, as follows.

NORTHWEST: includes the Autonomous Communities of Galicia, Asturias, Cantabria and the provinces of León and Zamora.

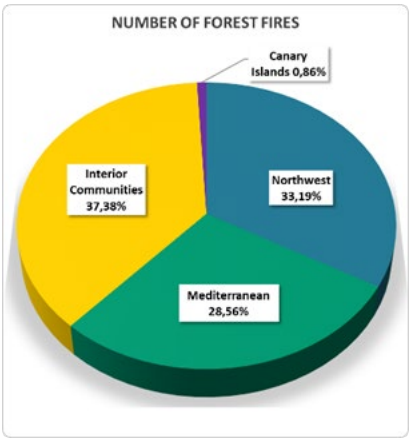
MEDITERRANEAN: includes the coastal Autonomous Communities with the Mediterranean Sea, including its interior provinces.

CANARY ISLANDS: includes the entire Canary archipelago.

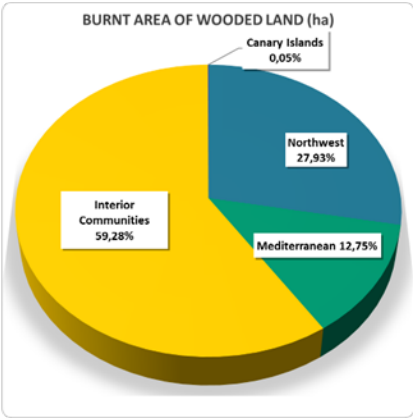
INTERIOR COMMUNITIES: includes the provinces of the rest of the non-coastal Autonomous Communities, except León and Zamora, as well as the Basque Country.

The geographical distribution of forest fires in Spain in 2024 is shown in **Figure 152**.

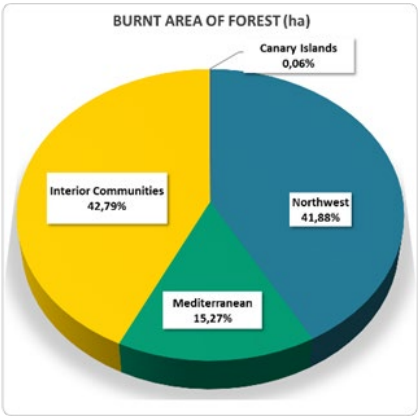
Figure 152. Number of forest fires (a), burnt area of wooded land (b), and burnt area of forest (c) in Spain in 2024 by geographic region.



(a)



(b)



(c)

Source: Ministry for the Ecological Transition and Demographic Challenge, Wildland Fire Management Service, Spain.

The Interior Communities suffered the highest number of fires, with 37.38% of the annual total. It is followed by the Northwest (33.19%), the Mediterranean region (28.56%) and, finally, the Canary Islands with less than 1% of the total number of fires.

Considering the wooded land, the highest percentage of burnt area occurred in the Interior Communities (59.28%), followed by the Northwest region (27.93%).

Regarding the burnt area of forest, the Interior Communities depicts 42.79% of the total, followed by the Northwest region (41.88%).

Civil Protection in forest fires

Loss of human life and injuries

In 2024, we regret to report the death of 5 individuals due to forest fires, one of them belonging to the suppression teams. In 18 forest fires, at least 42 people had to be assisted by health services, 18 of them belonging to the suppression teams.

Damage to infrastructure

Due to the continuity of the houses with the forest, the risk of so-called Urban-Forest Interface Fires causes damages to houses and other infrastructures. In 2024, 9 forest fires caused damage to infrastructures.

Evacuations and disruption to transport

Preventive evacuations were carried out in 59 fires, affecting more than 6827 people, highlighting:

- 1520 evacuees, Ontinyent (Valencia), July 21
- 1500 evacuees, Montblanc (Tarragona), June 27
- 500 evacuees, Andújar (Jaén), August 18
- 488 evacuees, Benasau (Alicante), July 30

Roads were cut in 45 fires, mostly regional and local, but on 12 occasions the State Road Network was affected. In 5 forest fires, the railroad network was interrupted.

Figure 153. BRIF of Pinofranqueado (Cáceres) working on the suppression of Cabeza del Buey fire, Spain, 05/07/2024.

Source: Ministry for the Ecological Transition and Demographic Challenge, Wildland Fire Management Service, Spain.

Operations of mutual assistance

Cross-border cooperation with Portugal

In 2024, as in previous years, the Protocol between Spain and Portugal on technical cooperation and mutual assistance in Civil Protection matters and the Additional Protocol on mutual aid in border areas was applied and thus support was given to Portugal in the following operations.

Support with Spanish resources in cross-border fires in Portuguese territory:

- 4 with regional resources of Galicia
- 14 with regional resources of Castilla y León
- 3 with regional resources of Extremadura
- 4 with State resources, one by means of the Bilateral Agreement and the other by the Cross-border Protocol.

Support with Portuguese resources in cross-border fires in Spanish territory.

These mutual aid protocols also imply aid from Portugal in the Spanish territory, which materialised in the following operations:

- Andalucía, on 1 occasion

— Castilla y León, on 2 occasions

— Galicia, on 1 occasion

Cross-border cooperation with France

During 2024, there was an intervention of regional resources of Cataluña in Perpignan fire on September 12.

Operations of assistance through European Union Civil Protection Mechanism

During 2024, Spain received 6 requests of assistance through European Union Civil Protection Mechanism:

— Guatemala (30 May-15 June): in the areas of Izabal, Petén and Alta Verapaz. Participation of 7 FAST experts from State and regional administrations.

— Bulgaria (20-25 July): participation of 2 Canadair aircrafts, in the frame of RescEU programme.

— Bulgaria (4-9 August): participation of 2 Canadair aircrafts, in the frame of RescEU programme.

— Portugal (23-25 August): participation of 2 Canadair aircrafts, in the frame of RescEU programme.

— Portugal (17-20 September): participation of 2 Canadair aircrafts, in the frame of RescEU programme.

— Bolivia (20 September-20 October): in the area of Chiquitanía (Concepción and Monteverde). Participation of 40 BRIF firefighters, 1 liaison officer from MITECO and 8 FAST experts from State and regional administrations.

Figure 154. Support of Spanish resources in Bolivia forest fires (September-October 2024).

Source: Ministry for the Ecological Transition and Demographic Challenge, Wildland Fire Management Service, Spain.

State resources for prevention and suppression

Integral Prevention Teams (Equipos de Prevención Integral de Incendios Forestales, EPRIF) and Prevention and Assessment Teams (Equipos de Prevención y Análisis de Incendios Forestales, EPAIF)

In 2024, MITECO deployed 18 Integral Prevention Teams (EPRIF) and 7 Prevention and Assessment Teams (EPAIF).

18 EPRIFs were operational during 2024: 8 annuals centred in prevention all year and 10 operational during off-summer months.

EPRIF's mainly work on training activities and meetings with various groups, including ranchers, farmers, hunters, neighbourhood associations, representatives of town halls or teachers, in order to reconcile interests and raise awareness of forest fire prevention.

From January 2022, 7 EPAIF were put in place, bringing together prevention and assessment activities.

During low risk season, they work on prevention tasks. In summer season, they associate with Assessment and Planning Mobile Units (UMAP vehicles) in order to participate in suppression activities, such as giving support to Autonomous Communities or MITECO's Operational Centre by elaborating risk bulletins, meteorological assessments or post-fire analyses.

Three of these teams also work on suppression during winter-spring season. During 2024, these teams have continued their work, coordinating with competent administrations and defining their action lines.

It is worth mentioning that, during 2024, these teams treated 1554.84 hectares by performing 209 prescribed and controlled burns. This helps to reduce the risk of forest fires by reducing forest fuel and creating discontinuities in the vegetation, while also achieving other objectives such as improving pastures, favouring the habitat of various species or improving accessibility in the forest areas.

A total of 635 plots were prepared for burning, although the weather conditions did not allow all of the work to be completed.

Preventive Work Brigades (Brigadas de Labores Preventivas, BLP)

The Preventive Work Brigades acted, in collaboration with the autonomous administrations, from the beginning of the year until the beginning of the summer campaign. Once the summer campaign was over, preventive work was resumed, which ended at the end of December.

During these two work periods, they carried out fire prevention work on more than 950 hectares of forest land, which mainly consisted of construction and maintenance of strips and areas of greater resistance to forest fires, through clearing, thinning, pruning and prescribed burning.

In total, more than 600 workers distributed in the 10 Preventive Work Brigades carried out preventive forestry work close to the surroundings of BRIF bases.

As already noted, the BLPs also work from time to time in support of EPRIFs in the execution of prescribed burns.

The Preventive Work Brigades also collaborate in suppression activities. During 2024 the BLP carried out 12 actions in 11 forest fires.

Reinforcement Brigades in Forest Fires (Brigadas de Refuerzo en Incendios Forestales: BRIF)

MITECO deploys 5 BRIF-i during the winter-spring campaign in the Northwest of the Peninsula, and 10 BRIFs during the summer campaign, distributed across the national territory.

In the summer campaign the BRIF are composed of three teams, each comprising 2 foremans and 14 specialists under the command of 1 technician.

For transport and support for fire suppression they have two transport and suppression helicopters with 1200 litres of capacity. In the Puerto del Pico (Ávila) aerial base, a BRIF-B type brigade is available, which is smaller in size and similar to the brigades of the BRIF-i winter campaign, consisting of 3 teams of 7 specialists, 1 foreman and 1 technician equipped with a single helicopter.

These highly specialised helicopter transport personnel units can operate anywhere in the country where needed. BRIF personnel receive continuous education and training that allows them to act in the most demanding situations and the most complicated fires.

The mastery of all techniques of suppression, including backburning, is essential in their performance.

In 2024 campaign, the BRIF worked for 993 hours in 162 fire operations and suppressed a total front length of 52 566 metres.

The BRIF with the highest activity during this campaign was that of Laza (Galicia), with 27 operations summing up the summer and winter campaigns.

During the winter campaign, the BRIF of Ruente (Cantabria) operated 22 times. This BRIF is only operational during the winter-spring months.

Figure 155. BRIF of La Iglesuela (Toledo, Spain) performing boarding practices, 22/06/2024.

Source: Ministry for the Ecological Transition and Demographic Challenge, Wildland Fire Management Service, Spain.

Aerial resources

The Wildland Fire Management Service of MITECO coordinates the deployment of the State aerial resources, which cover the national forest area throughout the year.

During the two periods of highest occurrence of forest fires, winter-spring and summer campaigns, the number of available resources is strengthened. Complete information on these resources is available on: https://www.miteco.gob.es/es/biodiversidad/temas/incendios-forestales/extincion/medios_aereos.aspx.

During 2024, MITECO's aerial resources carried out a total of 713 operations in 267 forest fires, in support of the Autonomous Communities and other countries.

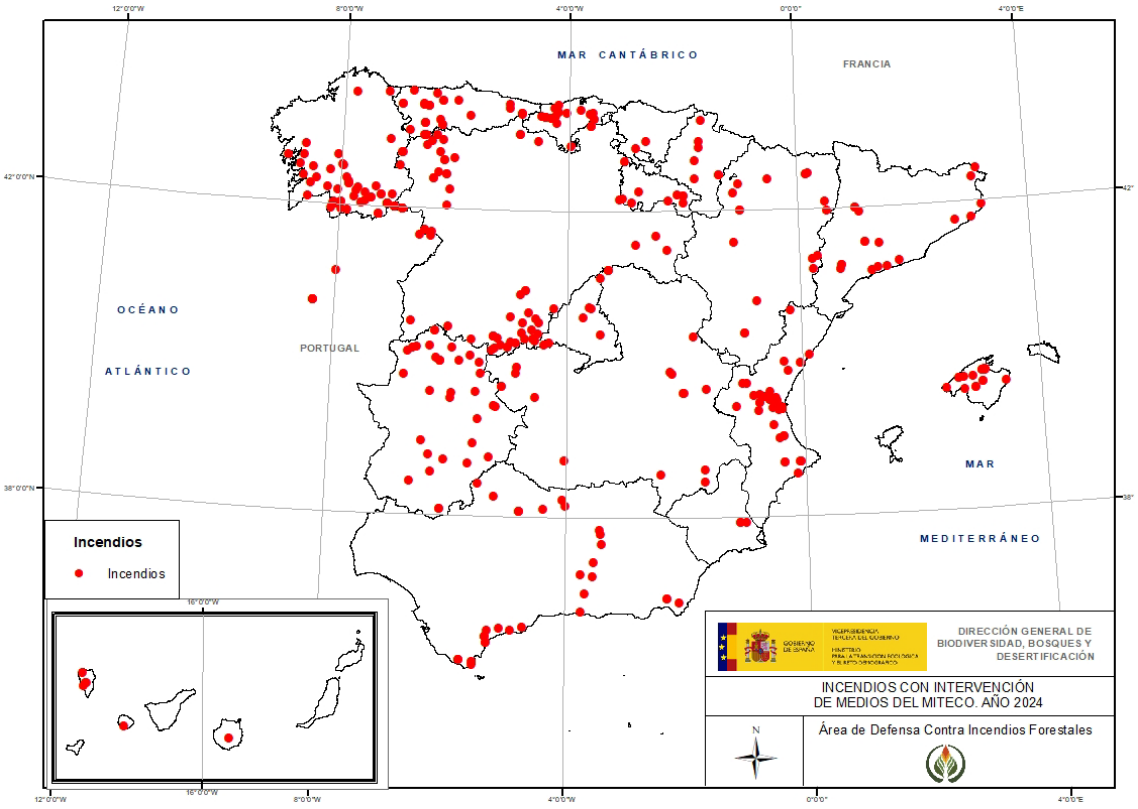
In total, they flew for 2 183 hours, making 10 663 drops. **Table 52** details the number of State aerial resources operations in support of the Autonomous Communities and other countries.

Table 52. Number of State aerial resources operations in support of the Autonomous Communities and other countries in Spain in 2024.

Autonomous Community/Other country	*Number of fires*	*Number of operations*	*Flight hours*	*Drops*
ANDALUCÍA	23	27	230:53	956
ARAGÓN	10	63	258:50	1310
ASTURIAS, PRINCIPADO DE	21	21	69:05	435
BALEARS, ILLES	7	14	26:16	69
CANARIAS	4	23	48:02	509
CANTABRIA	19	21	54:13	343
CASTILLA Y LEÓN	43	154	530:18	2758
CASTILLA-LA MANCHA	17	45	171:25	581
CATALUÑA	13	31	59:32	468
CEUTA	0	0	0:00	0
COMUNIDAD VALENCIANA	11	41	102:52	279
EXTREMADURA	32	74	226:38	1085
GALICIA	41	132	128:31	912
MADRID, COMUNIDAD DE	5	12	27:51	86
MURCIA, REGIÓN DE	3	3	6:03	52
NAVARRA, COMUNIDAD FORAL DE	6	21	60:08	299
PAÍS VASCO	1	2	1:23	2
RIOJA, LA	6	5	37:04	72
NATIONAL TOTAL	**262**	**689**	**2039:04**	**10216**
OTHER COUNTRIES: PORTUGAL	3	14	90:13	333
OTHER COUNTRIES: BULGARIA	2	10	53:43	114
TOTAL	**267**	**713**	**2183:00**	**10663**

Source: Ministry for the Ecological Transition and Demographic Challenge, Wildland Fire Management Service, Spain.

Figure 156. Location of forest fires with the participation of MITECO resources of suppression during 2024.



Source: Ministry for the Ecological Transition and Demographic Challenge, Wildland Fire Management Service, Spain.

Other prevention activities

Training and awareness actions against forest fires

During 2024, the traveling exhibition entitled "50 years of knowledge and prevention of forest fires", created in 2019 to commemorate 50 years of the National Forest Fire Statistics (Estadística General de Incendios Forestales, EGIF), was shown in various centres and public spaces of several provinces (Palencia, Cuenca, Ávila, Segovia and Lugo).

Artificial intelligence techniques for the analysis and prediction of forest fires

During 2024, ARBARIA project continued. This is a computer system for the analysis and prediction of forest fires making use of artificial intelligence techniques associated with Machine Learning and Deep Learning. It has been developed together with the Ministry of Agriculture, Fisheries and Food.

ARBARIA uses historical data on forest fires that have occurred in Spain in recent decades and open data related to meteorology and socioeconomic factors. Applying two different algorithmic models, ARBARIA makes possible to explain and predict the weekly occurrence of fires at the provincial level, as well as to identify patterns of forest fire causality associated with the socioeconomic characteristics of each municipality.

The predictive and explanatory capacity of both models provides valuable information for prevention and suppression actions.

Coordination and planning actions

Joint Commission, Ministry of Defence - Ministry for the Ecological Transition and Demographic Challenge

During 2024, two meetings of the Joint Commission were held in order to coordinate the operational, maintenance and availability needs of the Canadair aircrafts owned by MITECO and operated and maintained by the 43-Group of the Air Forces.

Meetings were held on March 7 and December 3, respectively, to agree on the deployment and renewal of the aircraft fleet, as well as to analyse aspects of the 2023 campaign.

Committee for the Fight against Forest Fires (CLIF)

This is a technical committee for coordination between the competent administrations in the management of forest fires, chaired by the Deputy Director General for Forest Policy.

During 2024, there were two ordinary meetings, before and after the summer season (May 8-9 and November 26, respectively).

Centre for the Coordination of National Information on Forest Fires (CCINIF)

In accordance with Royal Decree-law 11/2005, the main functions of the CCINIF are to channel and make available to all the competent public administrations and in real time, all the available information related to: evolution of fire risk; material, technical and personal resources available at all times; and forest fires, once they occur.

Information on operations involving the MITECO's State resources is updated twice a day on the webpage.

Likewise, the operations of the State resources in the forest fires that occurred the previous day are published daily, and the link to the fire risk map published by the State Meteorological Agency for the next seven days is shown.

This information can be consulted updated daily at the following link:

https://www.miteco.gob.es/es/biodiversidad/temas/incendios-forestales/estadisticas-actuaciones.aspx.

National Wildfire Preparedness Programme

Regarding to the preparedness actions promoted in 2024 by MITECO in the frame of this Programme, we can highlight the following:

— Joint exercises: an exercise was held in Laguardia (Álava) involving the Autonomous Communities of La Rioja, Navarra and País Vasco.

— Forest Fires Assessment and Advisory Team (FAST): the team is formed by fire experts mainly from the Autonomous Communities and the State Administration, and they carry out assessment and advisory missions. During 2024, FAST team participated in international assessment missions in Guatemala and Bolivia.

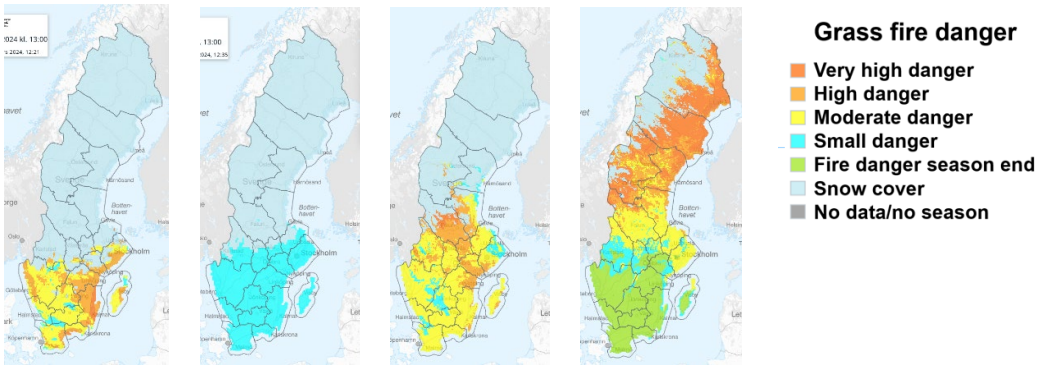
(Source: Ministry for the Ecological Transition and Demographic Challenge, Wildland Fire Management Service, Spain).

1.2.27. Sweden

Fire danger in the 2024 fire season

The grass fire danger season started in February in the southernmost parts of Sweden, even though there were only a few days with grass fire danger in February. During the whole grass fire season there were remarkably few days with grass fire danger, due to several periods with passing low pressure systems with precipitation and humid weather conditions in March and April. The first three weeks of May was much warmer and dry; however, the warm temperatures implied that new green grass grew rapidly in many parts of Sweden and reduced the grass fire danger.

Figure 157. Grass fire danger in Sweden in February – May 2024.

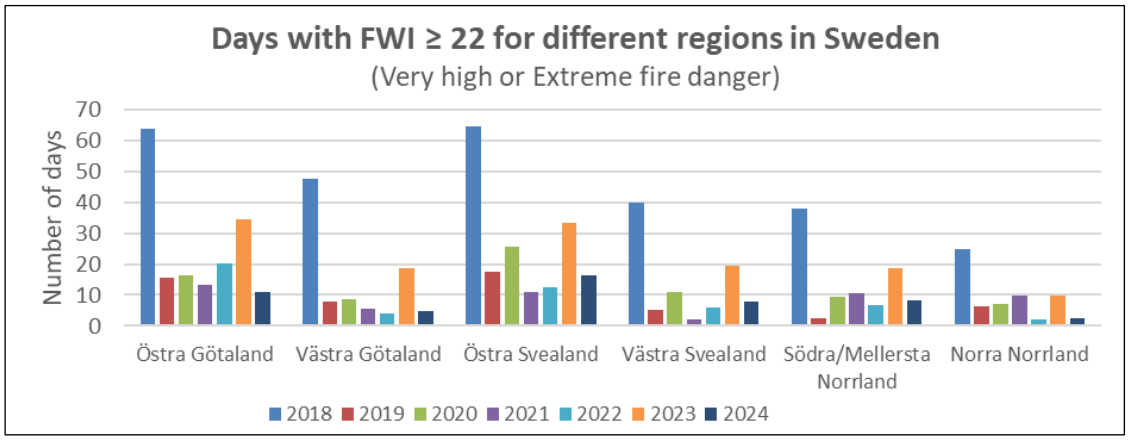


Source: Swedish Civil Contingencies Agency (MSB), Civil Protection Department, Natural Hazards and Climate Adaption Section, Sweden.

The forest fire danger season showed similar trends; the number of days with very high or extreme fire danger were rather few in 2024 due to humid and unstable weather conditions.

A comparison between the years 2018-2024 is presented in **Figure 158**, where the number of days with FWI≥22 (daily values) is plotted for different regions in Sweden.

Figure 158. Number of days with FWI≥22 for different regions in Sweden for the years 2018-2024. The bars represent mean values from a selection of a few (6-8) grid points in each region.



Source: Swedish Civil Contingencies Agency (MSB), Civil Protection Department, Natural Hazards and Climate Adaption Section, Sweden.

In general, 2024 had few days in comparison with the other years, especially in southern Sweden (Götaland) and northernmost Sweden (Norra Norrland).

For some regions, 2024 was a rather normal year (Västra Svealand and Södra/Mellersta Norrland).

Remark; the mean values shown in **Figure 158** are based on a selection of a few (6-8) grid points in each region.

The first three weeks of May were dominated by stable conditions with a warm and dry air mass and the forest fire danger increased to very high levels in large parts of Sweden.

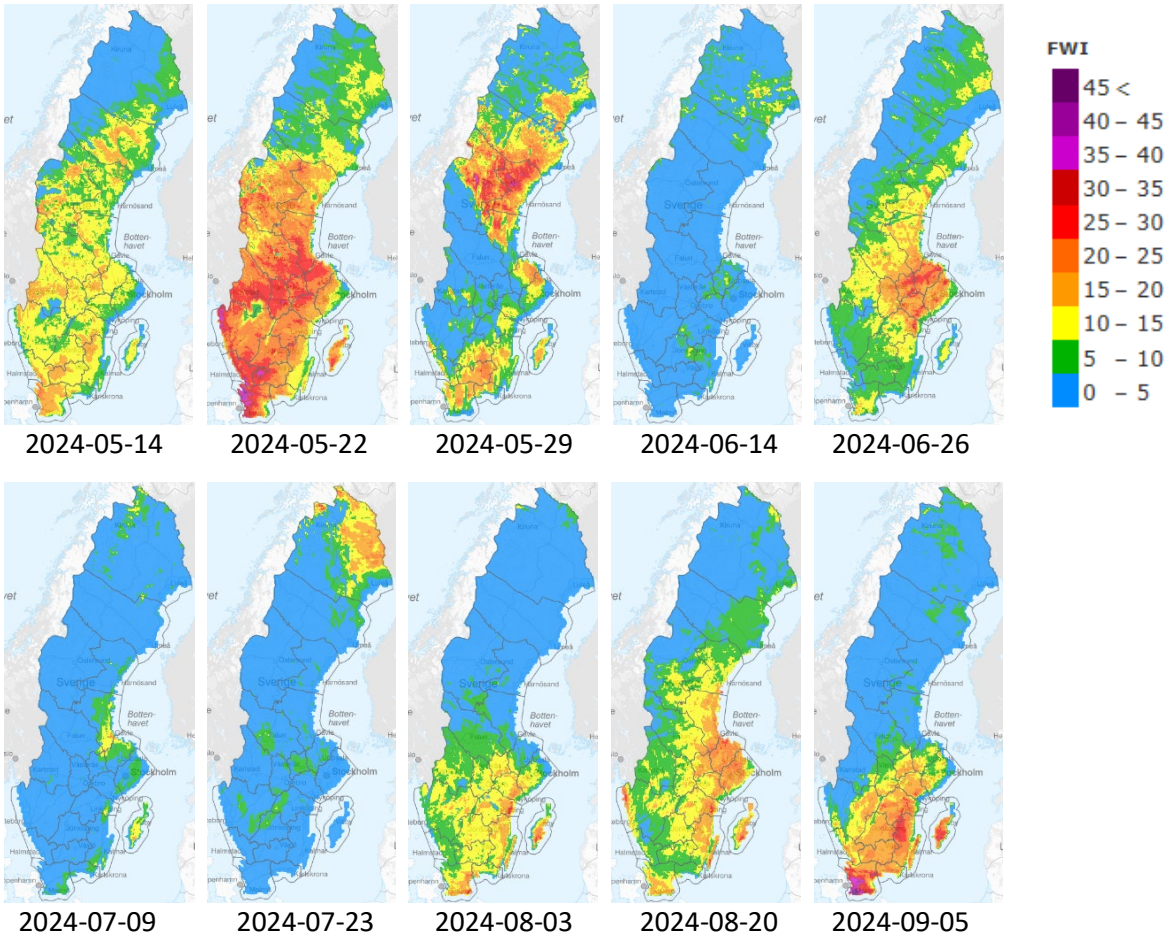
However, from the end of May and during most of the summer the weather was variable with low pressure system passages, much precipitation and humid air conditions.

Nevertheless, some parts of eastern Sweden had less precipitation and intermittently higher forest fire danger, especially during August.

During some days in the beginning of September, a very warm air mass was transported into Sweden and some places recorded temperatures over 30°C.

However, since the late season with a diurnal variation with a rather short time frame for fires, there were no large wildfires even though the forest fire danger was high during middays.

Figure 159. Some examples of forest fire danger (FWI) maps season 2024 in Sweden.



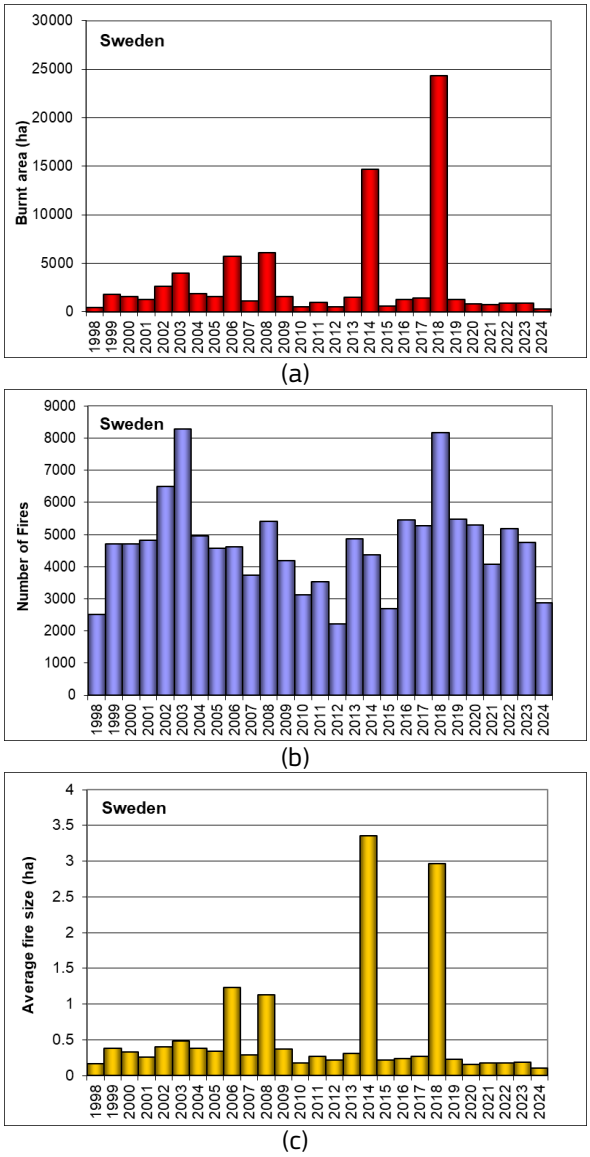
Source: Swedish Civil Contingencies Agency (MSB), Civil Protection Department, Natural Hazards and Climate Adaption Section, Sweden.

Fire occurrence and affected surfaces

2867 fires in terrain were reported to the national incident database in 2024. The burned area consisted of 164 ha productive forest, 71 ha other wooded land, 58 ha other open land and 17 ha agriculture field or pasture.

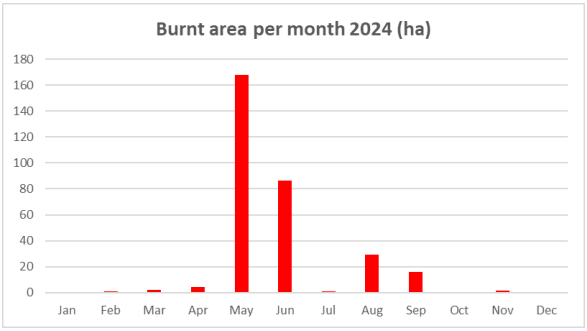
The trends regarding the burnt areas, number of fires and average fire size in Sweden for the years 1998 to 2024 are shown in **Figure 160**.

Figure 160. Burnt areas (a), number of fires (b) and average fire size (c) in Sweden from 1998 to 2024.



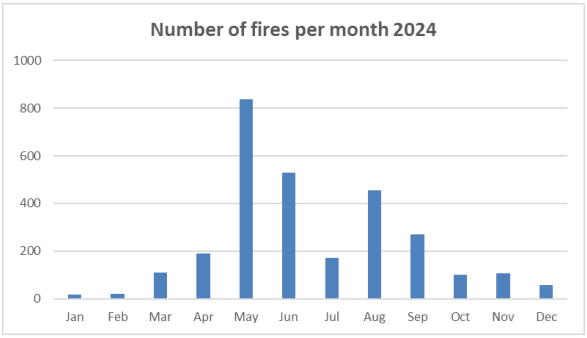
Source: JRC's elaboration of the country reports for Sweden.

Figure 161. Monthly burnt area in Sweden in 2024.



Source: Swedish Civil Contingencies Agency (MSB), Civil Protection Department, Natural Hazards and Climate Adaption Section, Sweden.

Figure 162. Monthly number of fires in Sweden in 2024.



Source: Swedish Civil Contingencies Agency (MSB), Civil Protection Department, Natural Hazards and Climate Adaption Section, Sweden.

Fire causes

During 2024 almost half of the fires had unknown causes (43%) and 19% were deliberate. 10% were caused by use of fire, 6% known but not specified, 5% recreation and 5% lightning.

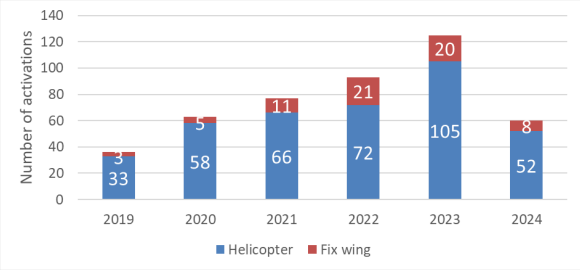
Injuries and loss of human lives

During 2024, no civilians died in connection with wildfires. 3 civilians were injured, 1 of which were transported to healthcare.

Activations of national resources and assistance to rescEU 2024

In 2024, the national airborne reinforcement resources were requested to assist on 59 occasions at wildfires in Sweden, which was less activations than 2020-2023.

Figure 163. Number of activations of the national aerial force. Since the establishment of reinforcement resources, it has increased year by year. In 2024 this upward trend was broken thanks to the limited number of challenging fires. Both fixed wing and helicopter resources can be used on the same fire, and the total number of activations may therefore be higher than the number of wildfires they assisted on.



Source: Swedish Civil Contingencies Agency (MSB), Civil Protection Department, Natural Hazards and Climate Adaption Section, Sweden.

The airborne resources provided a fast and valuable support to the municipal fire and rescue services; resources were reallocated on a daily basis to locations with the highest fire danger. Those material depots also available as national reinforcement resources were not activated on any fire in 2024. The Swedish rescEU resources (4 Air tractor Fire boss scooping planes) were activated in August 2024 to assist on wildfires in Bulgaria and North Macedonia.

Prescribed fire and controlled burns, including Natura 2000-areas

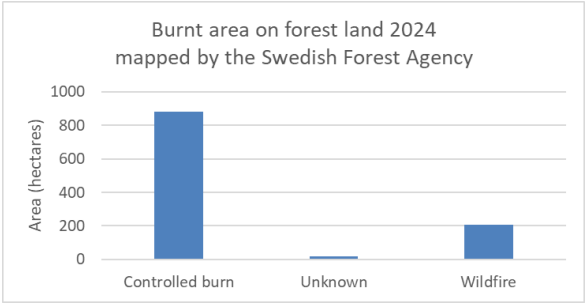
Prescribed fire is in Sweden mainly carried out as a habitat restoration measure in standing forest, but also to some extent as a forest regeneration measure to improve seeding on clearcut areas.

Reporting controlled burns is not mandatory. Estimates on area burned in controlled burns is therefore collected from several sources and the actual number is likely to be larger than the verified area reported here. 72 ha of the area EFFIS noted as burned in Natura 2000 areas are verified as controlled nature conservation fires. The most comprehensive source of information comes from the Swedish Forestry Agency (SFA) who maps burnt areas on forest land with the help of satellite imagery and incident coordinates.

In 2024 the SFA mapped 185 ha of wildfires and an additional 900 ha of controlled burns/management burns (https://www.skogsstyrelsen.se/globalassets/nyheter/skogsskador-i-sverige-2024.pdf). Since most wildfires in Sweden are very small and low intensity, and fires in stands with dense tree cover are difficult to identify in satellite imagery, the number of mapped wildfires will be fewer than the reported number of incidents.

The LIFE2Taiga-project, an EU-financed project carrying out restoration of the priority habitat 9010 Western Taiga, reports 354 hectares burned by the project partners in controlled habitat restoration burns in Natura 2000-areas in Sweden during 2024 (Map of project areas in LIFE2Taiga: https://ext-geoportal.lansstyrelsen.se/standard/?appid=ae8b5316db7d46b38061047fc2c7db07). These areas are included in the mapping carried out by the Swedish Forest Agency.

Figure 164. 2024 was characterized by few days with high or extreme fire danger, leading to few and small wildfires. The conditions were better for carrying out controlled management burns, as this comparison shows.



Source: Swedish Civil Contingencies Agency (MSB), Civil Protection Department, Natural Hazards and Climate Adaption Section, Sweden.

Fires detected by small-manned aircraft and satellites

Surveillance with small manned aircraft is performed in Sweden when the fire danger is

high. The aircraft detected 44 wildfires in 2024 (2023: 119) and were used to position 6 already detected wildfires.

Near real-time satellite detection of active fires with VIIRS satellites (NOAA-21, NOAA-20 and Suomi-NPP) is operational in Sweden. Alerts are fully automatically sent to the national emergency dispatch and call center (SOS Alarm) with a latency of 16 minutes on average.

During 2024, there were totally 503 satellites detections in Sweden; 95% verified as real fires or heat sources. 35 of totally 192 detected events were wildfires (2023: 61). 34% of the wildfires were detected before any other alert to the national emergency dispatch and call center (for example from the public).

Climate change

During 2023 a study of changes in forest fire danger under future climate scenarios (https://www.msb.se/sv/publikationer/framtida-brandrisk--forandringar-i-perioder-av-hog-brandrisk-enligt-fwi-modellen/) was carried out by the Swedish meteorological and hydrological institute (SMHI) with fundings from the Swedish Civil Contingencies Agency (MSB).

The results indicate a clear increase of high-risk periods of fire danger in southern Sweden and the eastern coastal land of northern Sweden. High-risk periods will occur more frequently, during a longer season, and are both longer and at a generally higher level of fire danger (especially in the middle of the century when the consistency between climate models becomes evident).

However, in the midland of northern Sweden the changes are non-robust even for high emission scenarios.

Remark; even though climate change in general increases the wildfire danger in a climatological perspective, the variability between different years might be large. 2024 is an example of a year with rather low wildfire danger in Sweden. Similar years will occur even in the future, however, the frequency of years with high wildfire danger will increase.

Preventive fire protection measures and risk management in the forestry sector and Nordic collaboration

The forestry sector is an important stakeholder for wildfire prevention and risk management in Sweden.

A cross-sector working group with members from the forest industry, landowners, insurance companies, rescue services and relevant government agencies has been active since 2015, developing guidelines and information materials (see also the 2023 Forest fire annual report: https://data.effis.emergency.copernicus.eu/effis/reports-and-publications/annual-fire-reports/Annual_Report_2023.pdf).

The Nordic Network for Forest and Vegetation Fires is a network dedicated to examining the challenges that Nordic forestry faces in a future shaped by climate change.

The network consists of around thirty members from ministries, relevant authorities, academia, industry, governmental agencies, and operational fire management representatives from the Nordic countries. In 2024, the network published a policy brief on mitigation of forest fires in the Nordic region through forest management (https://skogsbrandnorden.org/wp-content/uploads/2024/09/PB-2024-Eng.pdf)

The policy brief provides an overview of current knowledge based on scientific research as well as identifies knowledge gaps and recommended areas for future research. Some short- and long-term management recommendations are suggested, but the policy brief also stresses that some mitigation effects may have complex effects, lowering one aspect of risk and increasing another, and that even the best managed forests may burn under extreme weather conditions.

Preventive measures and information campaigns to the public

Recreation and tourism are important in Sweden; thus, it is also a common cause for ignition and wildfires. In order to prevent wildfires, the Swedish Civil Contingencies Agency (MSB) has provided a mobile app (https://www.msb.se/en/about-msb/websites-and-social-media/apps/brandrisk-ute-fire-danger-outdoors/), Fire Danger Outdoors (in Swedish: Brandrisk Ute), aimed at the public. The mobile app is available in both Swedish and English and presents current fire danger forecast and local fire bans and gives recommendations and advice on how to light a fire and barbeque safely.

During 2025, MSB and the Swedish EPA have also published an updated brochure about lightning fires and the right of public access (https://www.msb.se/sv/publikationer/lighting-fires-and-the-right-of-public-access/). The brochure is available in six languages.

(Source: Swedish Civil Contingencies Agency (MSB), Civil Protection Department, Natural Hazards and Climate Adaption Section, Sweden).

1.2.28. Switzerland

Weather conditions and state of the forests 2024

In Switzerland, 2024 started extremely mild, with an average temperature of 2.8°C above the 1991-2020 norm. It was the mildest winter season since measurements (i.e., 1864). The total precipitation in the winter 2023/2024 reached between 130 and 160% of the norm, resulting in abundant snowfall across Switzerland, with snow cover well above the average in many alpine regions.

Spring 2024 was mild, rainy, and unusually cloudy. Nationally, the average temperature was 0.8°C above the norm. In most regions, spring precipitation was above average, especially on the southern side of the Alps, while sunshine duration was significantly below average (70-80% of the norm).

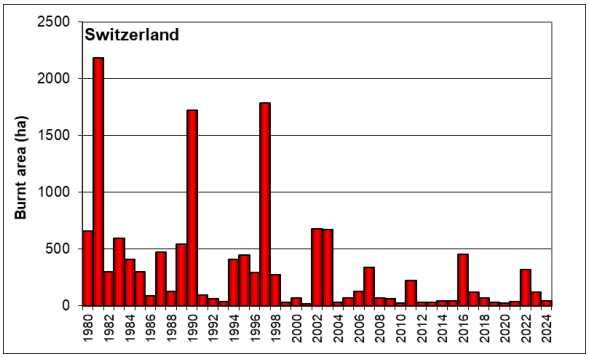
In Switzerland, the average temperature during summer 2024 was 1.6°C above the norm. In the Alps, it was recorded as the third or fourth warmest summer since the beginning of measurements. South of the Alps, the extremely high temperatures in August led to an unusually high number of tropical nights. Overall, the three summer months recorded below-average precipitation, ranging between 70 and 90% of the norm. Summer 2024 in Switzerland was marked by several severe thunderstorms and heavy rainfall events. Intense precipitation between late May and early July caused flooding and debris flows, particularly in the Valais, Ticino, and the Engadine. Following a cloudy June and a moderately sunny July, August experienced abundant sunshine.

Switzerland experienced a mild autumn, with temperatures 0.9 °C above normal. After a cooler-than-normal September, October and November were extremely mild, especially at higher elevations. The three autumn months saw above-average precipitation across large parts of Switzerland. Autumn sunshine duration was below average due to cloudy weather in September and October.

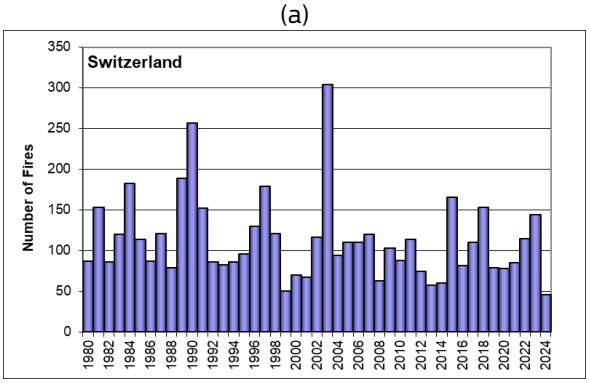
Fire occurrence and affected surfaces

Due to the mild temperatures, the year started with several small wildfires in the south. Later on, several small wildfires were also recorded north of the Alps. The second half of the year saw more wildfires north of the Alps, although they remained localized and small in size. No major wildfires were recorded in 2024. The fire trends for the years 1980 to 2024 are shown in **Figure 165** and **Figure 166**.

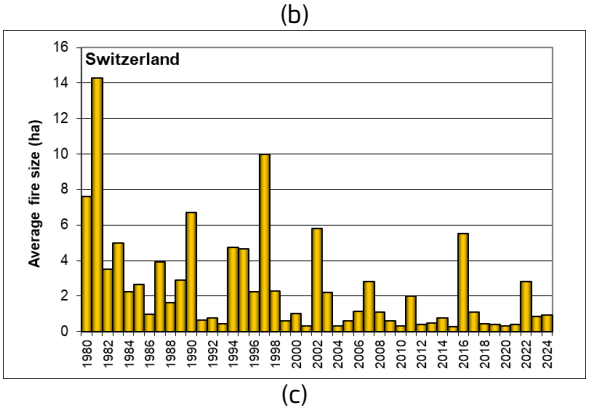
Figure 165. Burnt areas (a), number of fires (b) and average fire size (c) in Switzerland for 1980-2024.



(a)



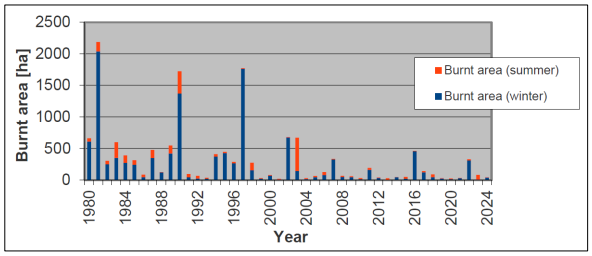
(b)



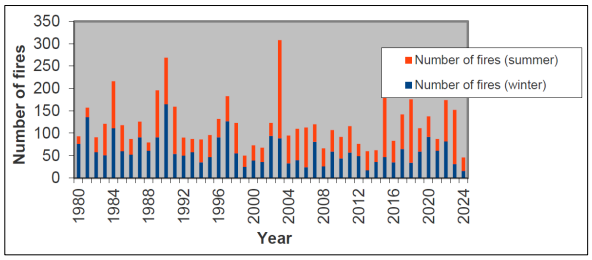
(c)

Source: JRC's elaboration of the country reports for Switzerland.

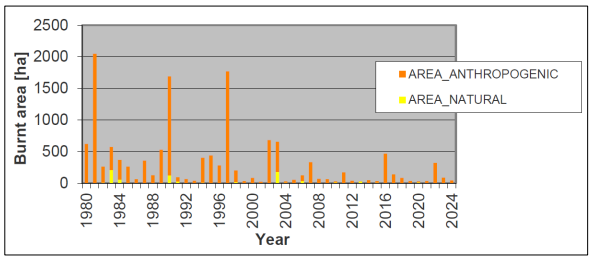
Figure 166. Burnt areas (a) and number of fires (b) in summer/winter; burnt areas (c) and number of fires (d) anthropogenic/natural in Switzerland for 1980-2024.



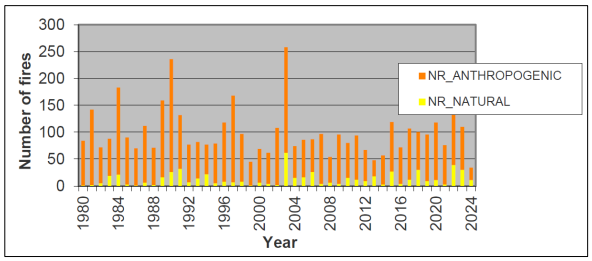
(a)



(b)



(c)



(d)

Source: Authors of the country report for Switzerland.

In total 42 hectares burnt in 2024 and 46 wildfires are known.

The summer half year was the season with the most wildfires (30 in total), but only 2.3 ha were burned. In the winter season 16 wildfires occurred for an area burnt of 39.7 ha.

Fire causes

The main cause of the wildfires was negligence, whereas in summer 2024, 11 lighting-ignited wildfires occurred.

Fire prevention activity in 2024

No fire bans were required in 2024 due to favorable meteorological conditions. The highest wildfire danger level of the year (level 4 out of 5) was recorded south of the Alps in February, lasting four days. This was due to a temperature anomaly of +4.6°C above the norm, setting a new temperature record for February. Additionally, throughout the entire month of August, a level 4 warning was issued for parts of the canton Valais, due, among other factors, to the region experiencing the second warmest August in Switzerland since measurements began. However, both situations did not escalate enough to prompt the authorities to implement preventive measures.

Loss of human lives

No loss of life or major damage to buildings were reported in 2024.

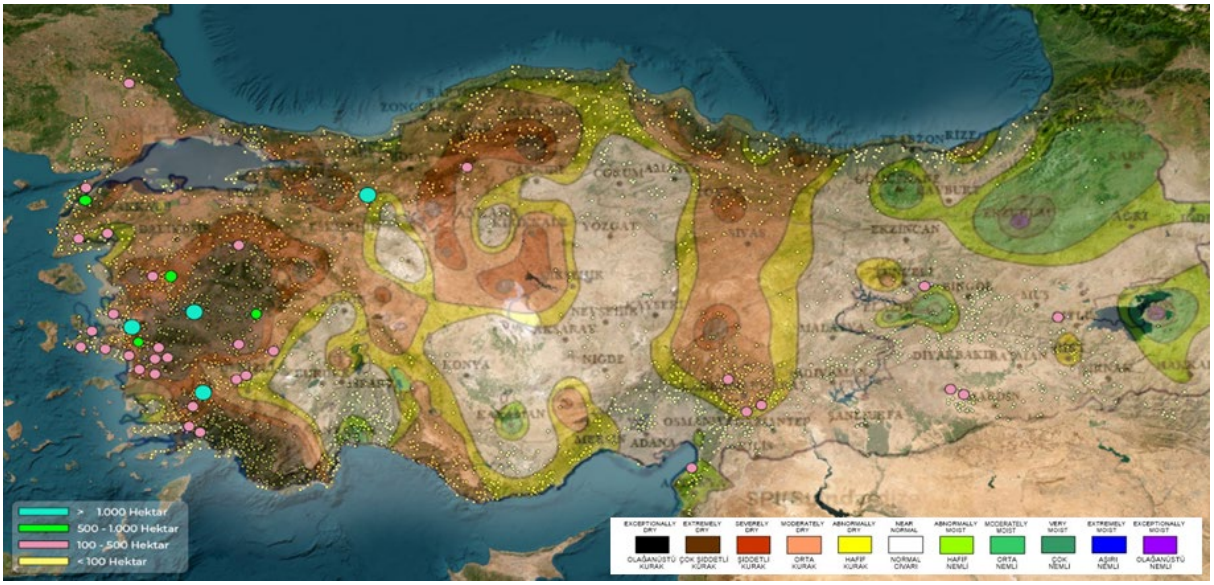
(Sources: Federal Office for the Environment FOEN; Swiss Federal Research Institute WSL (SwissFire database); MeteoSwiss (MétéoSuisse 2024: Klimabulletin 2024, Zürich), Switzerland).

1.2.29. Türkiye

Fire danger in the 2024 fire season

Due to the extreme drought experienced during the pre-season, as seen on the map, and the adverse meteorological conditions, both the number and total area of forest fires increased in 2024 compared to the previous year. In 2024, the average area lost per fire rose by 1.22 hectares, reaching 7.24 hectares per fire.

Figure 167. Türkiye 2024 Drought Map and Fires.



Source: General Directorate of Forestry, Ankara, Türkiye.

Fire occurrence and affected surfaces

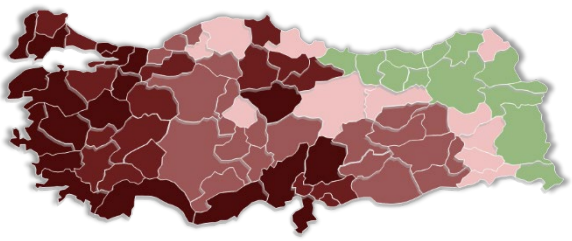
In Türkiye, the coastline, which starts from Hatay and extends through the Mediterranean and Aegean up to Istanbul, has the highest fire risk; in other words, approximately 64% (15 Mha) of Türkiye's forest area is located in fire sensitive areas.

Table 53. The most notable forest fires for 2024 in Türkiye.

Date	Region	Affected Area (ha)
15/08	Alançayı, Göynük, Bolu	3 313
18/06	Akbulak, Uşak	740
14/08	Gülmeztepe, Gördes, Manisa	2 027
14/08	Adala, Salihli, Manisa	1 403
15/08	Karşıyaka, İzmir	1 330
16/08	Bozdoğan, Nazilli, Aydın	1 303

Source: General Directorate of Forestry, Ankara, Türkiye.

Figure 168. Türkiye Forest Fire Sensitive Map.



Source: General Directorate of Forestry, Ankara, Türkiye.

According to data derived from the General Directorate of Forestry, Department of Forest Fire Combating, in 2024 the total burnt area was 27 485 hectares. The number of fires was 3 797 in the same year.

Forest fires occurred mostly in March-December, especially in June, July, August and September. When we look at the number of forest fires, 759 fires in July and 14 006 ha are

the highest in August. 42% of forest fires occurred in four months (between June and September) and 13 539 hectares of forest area were damaged during this period.

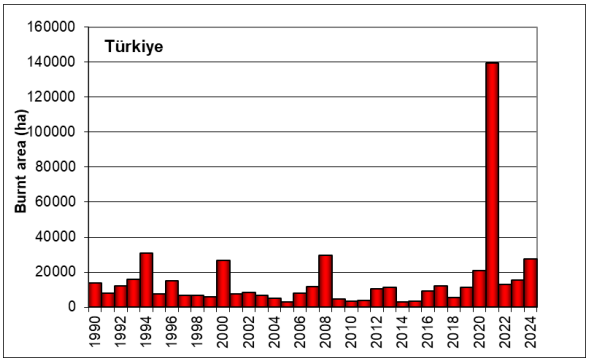
Table 54. Forest fires in Türkiye 1990-2024.

Year	Fire Number	Burnt Area (ha)
1990	1 750	13 742
1991	1 481	8 081
1992	2 117	12 232
1993	2 545	15 693
1994	3 239	30 828
1995	1 770	7 676
1996	1 645	14 922
1997	1 569	6 517
1998	1 932	6 764
1999	2 075	5 804
2000	2 555	26 653
2001	2 631	7 394
2002	1 471	8 514
2003	2 177	6 644
2004	1 762	4 876
2005	1 530	2 821
2006	2 227	7 762
2007	2 829	11 664
2008	2 135	29 749
2009	1 793	4 679
2010	1 861	3 517
2011	1 954	3 612
2012	2 450	10 455
2013	3 755	11 456
2014	2 149	3 117
2015	2 150	3 219
2016	3 188	9 156
2017	2 411	11 992
2018	2 167	5 644
2019	2 688	11 332
2020	3 399	20 971
2021	2 793	139 503
2022	2 160	12 799
2023	2 579	15 520
2024	3 797	27 485

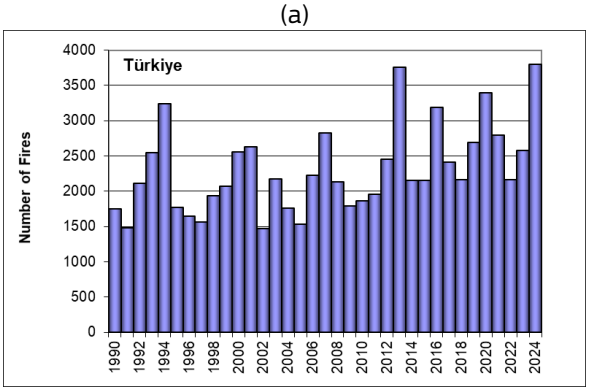
Source: General Directorate of Forestry, Ankara, Türkiye.

The trends regarding the burnt areas, number of fires and average fire size in Türkiye for the years 1990 to 2024 are shown in **Figure 169**. In addition to forest fire, General Directorate of Forest has been intervening in agriculture fires for the recent years, which is about 4 339 non-forest incidents in 2024.

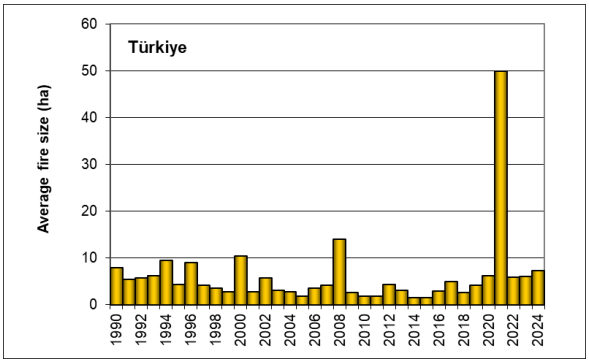
Figure 169. Burnt areas (a), number of fires (b) and average fire size (c) in Türkiye from 1990 to 2024.



(a)



(b)



(c)

Source: General Directorate of Forestry, Ankara, Türkiye.

Table 55. Forest fires per month in Türkiye 2024.

Month	Number of Fires	Burnt Area (ha)
Jan	1	1
Feb	104	72
Mar	94	58
Apr	276	227
May	141	76
Jun	656	5 003
Jul	786	5 018
Aug	759	14 006
Sep	426	870
Oct	360	1 693
Nov	154	444
Dec	20	8
TOTAL	**3 797**	**27 485**

Source: General Directorate of Forestry, Ankara, Türkiye.

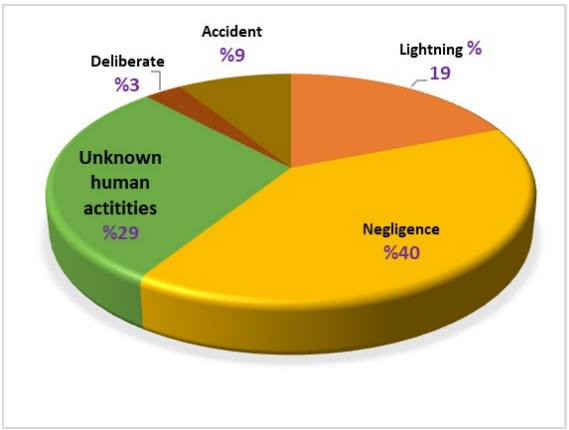
Figure 170. Agriculture fire in Türkiye.

Source: General Directorate of Forestry, Ankara, Türkiye.

Fire causes

Most of the fires in Türkiye were by human activities (81%) The causes of forest fires in 2024 are shown in **Figure 171**.

Figure 171. Fire causes in Türkiye in 2024.



Source: General Directorate of Forestry, Ankara, Türkiye.

In Türkiye, 78% of forest fires take place in forested areas up to 400 meter altitude.

These areas are:

- High populated areas
- Areas of high migration
- Areas where there are valuable lands
- Places with cadastral problems
- Tourism areas.

Fire management

Fire management in Türkiye is carried out under the responsibility of the General Directorate of Forest (GDF). Duties are carried out by state forest enterprises functioning under regional directorates.

Regardless of the high costs involved, all required activities are planned and implemented immediately.

Fire management deals mainly with activities concerning early detection, prevention and control.

Figure 172. Fire Management Center in Ankara, Türkiye.

Source: General Directorate of Forestry, Ankara, Türkiye.

The most important factor that brings success in forest fires is early notice of forest fires, then early and effective response to the fire.

Türkiye is one of the countries that uses new generation technologies most effectively like artificial intelligence and machine learning in forest fires.

In case of combating forest fires Türkiye are using cameras, UAV (Unmanned aerial vehicles) and Decision Support System which supported with artificial intelligence to help spot and management of them.

With the Decision Support System, the probability of fire is estimated and possible causes of forest fires are determined.

The infrastructure of this system consists of the behaviour patterns of forest fires that have occurred from the past to the present, the experience of the employees and the technical studies of the scientists.

By integrating these into the system, a fire behaviour prediction system is formed and the predicted response methods against possible fires are modeled in real time by combining machine learning and artificial intelligence support.

This system supports managers in the coordination and decision making of forest fires.

Figure 173. Decision Support System for Türkiye.

Source: General Directorate of Forestry, Ankara, Türkiye.

Early Fire Warning Systems

So far, total of 776 fire towers have been built to detect fire report to firefighting teams.

With 368 cameras at 184 points, fire detected in our forest in the fire sensitive zone area reported to the fire management centers and team are sent.

In addition, forest fires are detected early thanks to 81 unmanned towers equipped with cameras and software.

The system enables rapid detection of forest fire to visible range optical cameras. (Fire Management Centers can also monitor the progress through these cameras).

Figure 174. The camera images from fire towers in Türkiye.

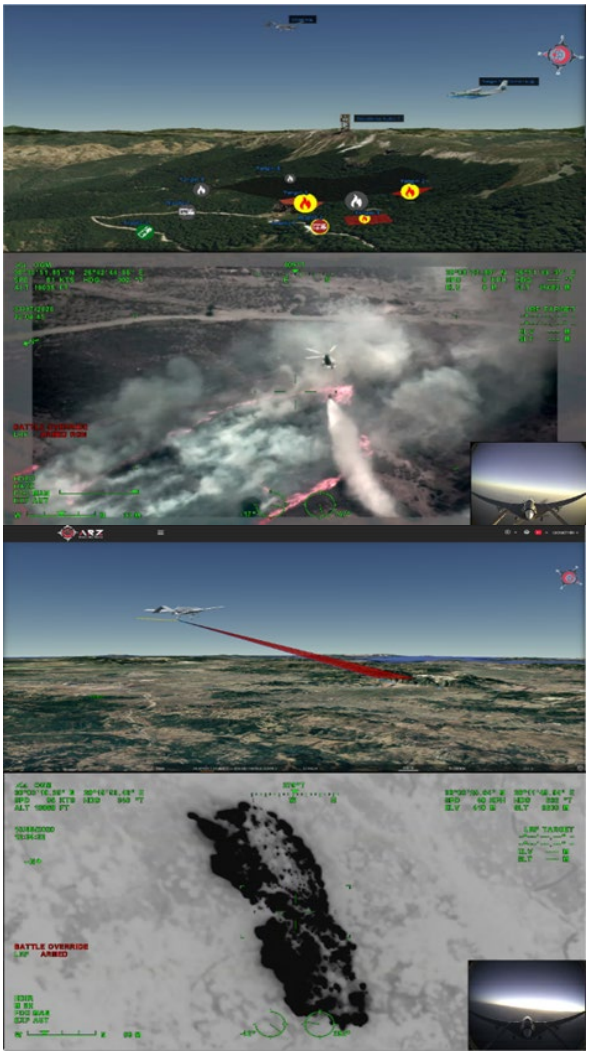
Source: General Directorate of Forestry, Ankara, Türkiye.

We have 14 UAVs stationed in Muğla, Manisa, Antalya, Adana, Kütahya, Mersin and Çanakkale, and during the fire season, the UAVs make continuous observations for fire detection and fire management.

With the UAV, 3 million hectares of land can be scanned against fires in 1 minute.

Base stations have been installed on UAVs in order to meet the communication needs in places where there is no GSM coverage area.

Figure 175. The camera images from unmanned aircraft in Türkiye.



Source: General Directorate of Forestry, Ankara, Türkiye.

Fire detection can be done easily with thermal cameras. Thermal cameras have been found to be very useful for dangers in the ongoing fires at the decision stage.

With these tools, he guided the managers in the detection and management of forest fires.

Construction of Pools and Ponds

During 2023, for the purpose of shortening the periods of forest fire attack in areas where water sources are scarce 4 727 fire pools and ponds were used.

With these water sources, the water intake times of the helicopters were shortened.

Figure 176. Fire pools and ponds in Türkiye.

Source: General Directorate of Forestry, Ankara, Türkiye.

Fire fighting means

In 2024, 25 000 personnel participated in fire detection, communication and extinguishing activities.

Ground and air equipment used in firefighting in 2024 are as in **Table 56**.

Table 56. Firefighting forces in Türkiye in 2024.

Bulldozer	217	Leased Helicopters	63
Grader	308	Aircraft	10
Fire Truck	1 240	Leased aircraft	14
Water Tank	320	Reserve helicopter	33
First intervention vehicle	2 453	Staff	24 959
Helicopters	9	Volunteer	132 000

Source: General Directorate of Forestry, Ankara, Türkiye.

Preventive measures

Fire prevention technical studies include:

- Construction of fire prevention facilities: between settlements or agricultural areas and forests, strips are created with fire resistant species. Thus, fires originating from settlements or agricultural lands are prevented from spreading to forests.
- By making silvicultural interventions in forests, it is ensured that the combustible material is reduced and the forests become resistant to fire.
- Fire safety roads and lanes are built and these lanes are maintained every year. In this way, physical barriers are created against forest fires on the one hand, and new fronts are created where fire can be intervened on the other.
- In order to reduce the combustible material load of our forests, cleaning of combustible materials on the roadsides and pruning of trees are carried out.

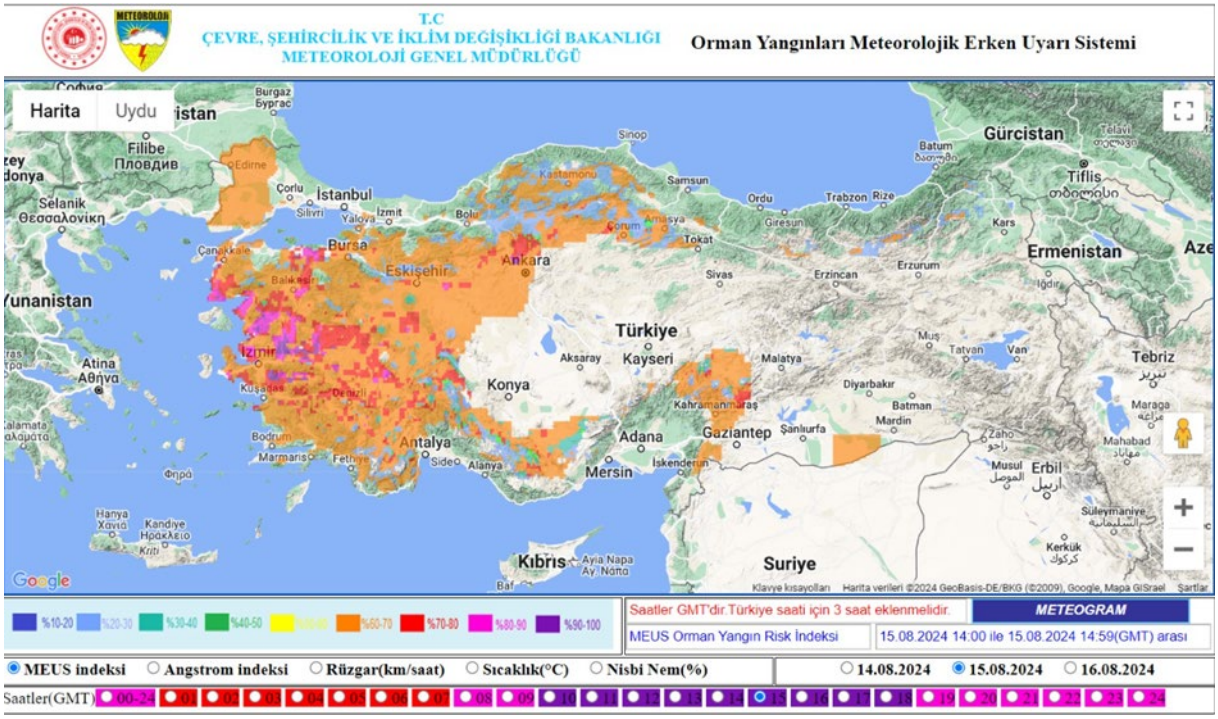
Figure 177. Preventive measures in Türkiye.

Source: General Directorate of Forestry, Ankara, Türkiye.

MEUS (Meteorological Early Warning System)

We have been using MEUS (meteorological early warning system) with wind, wind direction, temperature and humidity to create our 3-day daily fire risk maps. Measures are increased by evaluating hourly changes and relative risks.

Figure 178. Example of daily fire risk map in Türkiye.



Source: General Directorate of Forestry, Ankara, Türkiye.

Education, public awareness and information campaigns

Several education/training and awareness raising campaigns have been carried out.

A Fire Expert Training Program has been put into effect for personnel who will take charge in forest fires. Subjects such as fire-fighting methods, application of fire-use, first aid etc., have been given to technical staff in this training program.

In Antalya International Forestry Training Center for Personnel Training (**Figure 180**), a total of 4 300 OGM personnel were trained, including 1 248 forest engineers for Fire Specialization Training, 1 073 sprinkler operators for advanced driving techniques, and 1 979 forest guards. Within the scope of the Fire Management System Training, 238 people from 21 different countries were trained, and 744 people were trained within the scope of other trainings. A total of 5 270 people received training at the Training Center.

Awareness-raising activities for target groups.

Figure 179. Awareness-raising activities in schools in Türkiye.

Source: General Directorate of Forestry, Ankara, Türkiye.

Awareness-raising activities at national level

- Activities for specific days and weeks. (e.g. World Forestry Day)
- Coordination meetings with local authorities.
- Cooperation with radio and television channels
- Cooperation with media and voluntary organizations
- Training of personnel working in travel agencies and tourist facilities in fire risk areas about forest fires and the preventative measures needed to be taken
- Training of soldiers and local fire departments.
- We reach our citizens through education and awareness-raising activities in schools throughout the year.

Figure 180. International Forestry Training Centre in Antalya, Türkiye.

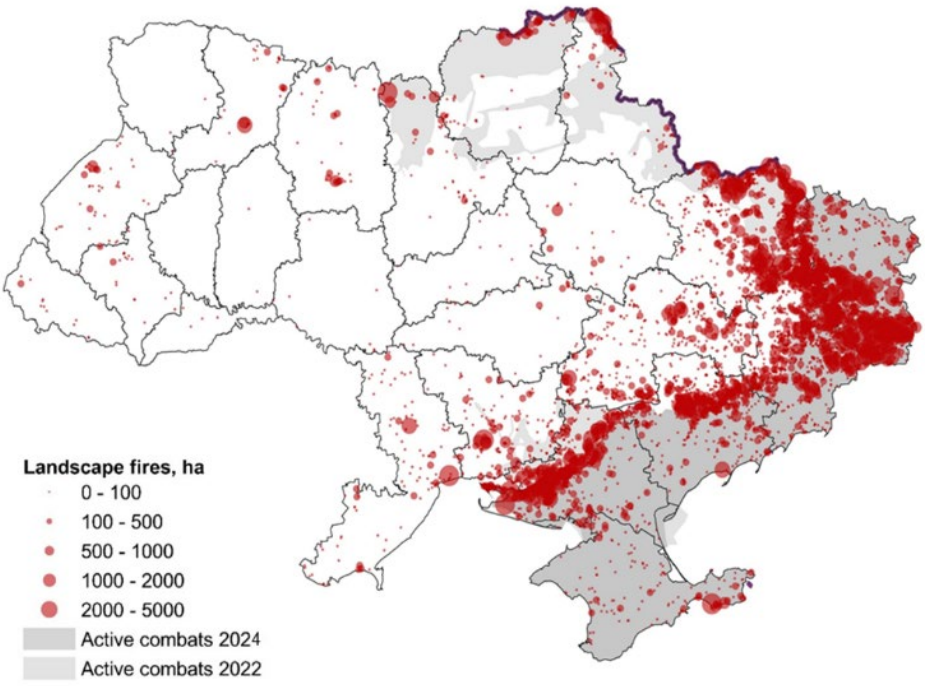
Source: General Directorate of Forestry, Ankara, Türkiye.

(Source: General Directorate of Forestry, Ankara, Türkiye).

1.2.30. Ukraine

Through 2024, full-scale invasion of the Russian Federation - third year - and active combats continue to be the primary driver affecting spatial and temporal trends in landscape fire distribution. Both sides (the Russian invasion forces and the Ukrainian Military Forces) continue to use forests and windbreaks as a shelter for masking of one's forces and military means as well as for fortification settings. Usually, the largest forest fires in Ukraine occurred in locations where pine forests dominate. Last three years (2022-2024) spatial distribution of forest fires was determined mostly by the proximity to the front line and the combat intensity (**Figure 181**) and partly by UXO / mine pollution.

Figure 181. Landscape fires spatial distribution in Ukraine in 2024, based on European Forest Fire Information System (EFFIS) data.



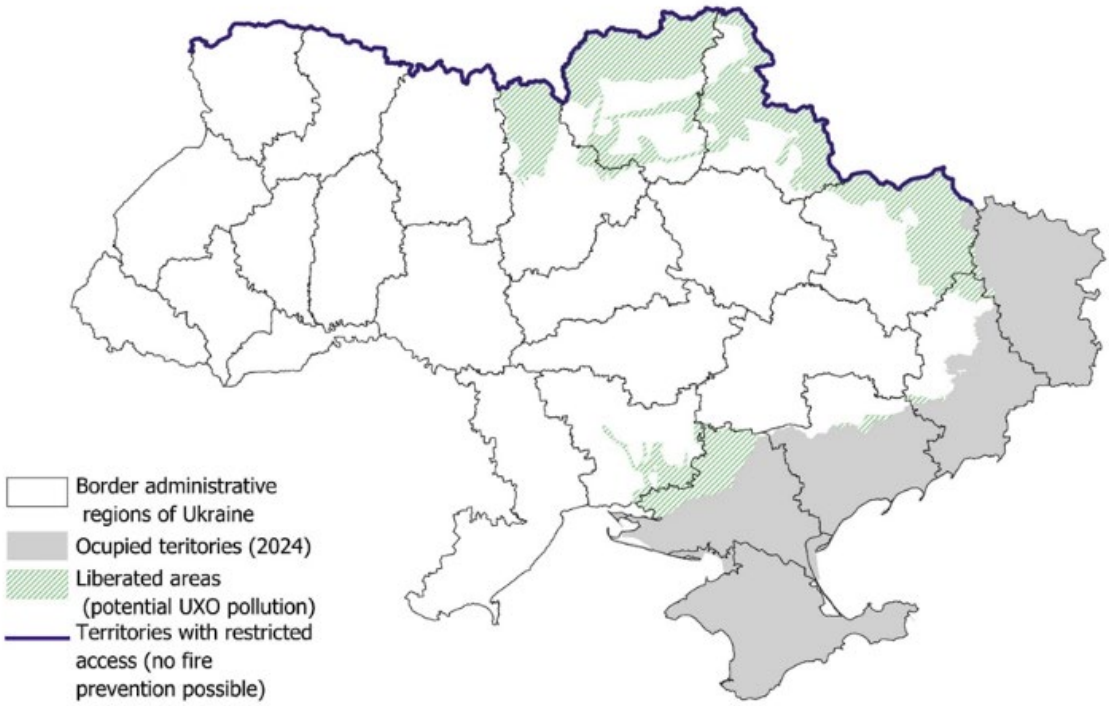
Source: Authors of the country report for Ukraine.

In 2024, we continue to report significant impact of war to fire regime in Ukraine. Large areas of forest lands in Ukraine remain without fire prevention treatments and without any protection due to height risk to firefighter's lives, especially in occupied territories and areas close to the frontline.

By the end of 2024, over 0.9 million hectares of forests that are managed by forest enterprises, institutions and organizations that are coordinated by the State Forest Resources Agency in the territory controlled by Ukraine were designated as impacted by war (potentially has UXO pollution) and 0.214 million hectares were designated as contaminated by mines and UXO. This situation still had a serious impact on fire management effectiveness in Ukraine for now and potentially for decades in advance. The situation regarding forests contamination by UXO on temporally occupied territories of the forest fund (Autonomous Republic of Crimea, part of Donetsk, Zaporizhzhya, Luhansk, Mykolaiv, Kharkiv and Kherson regions) remains unknown.

Access to parts of the forest fund territories along Ukraine's northern border is also restricted, in particular within Volyn, Rivne, Zhytomyr, Kyiv, Chernihiv, and Sumy regions bordering the Republic of Belarus and the Russian Federation (**Figure 182**).

Figure 182. Map of Ukraine showing areas with restricted or no access for forest fire suppression and fire prevention.



Source: Authors of the country report for Ukraine.

Suppression of forest fires in the initial stage is usually the responsibility of the appropriate departments of forestry enterprises (branches of SE "Forests of Ukraine"). Usually if there is a threat of a large forest fire, units from the State Emergency Service of Ukraine, regional state administrations and other services are involved within their competence in order to extinguish the fire. Despite this the implementation of Martial Law by the Ukrainian Parliament in February 2022 changed situation with a scale of involvement of these services for large wildfires suppression – firefighters from the State Emergency Service of Ukraine have priority for fast response on fires in cities, towns and villages and fires connected with critical and civil infrastructure that are still remain the prime target for Russian missile and rocket attacks. During the 2024 fire season interagency cooperation were improved: with the more active involvement of the State Emergency Service of Ukraine (SESU) – 1 117 forest fires were extinguished, accounting for 57% of all forest fire cases.

Significant amount of foresters 2 461 - every 7th (data from August 2024) that were involved in fire prevention and suppression activity had joined the Ukrainian Military Forces as a result highly experienced personnel were temporally excluded from fire protection system.

During 2024 wildfires, occur mainly in the War zone regions (Kharkiv, Luhansk, Donetsk,

Kherson and Zaporizzya directions). Distribution of fires were caused by changes in the nature of hostilities in 2024 with the transition to positional war and battlefront line became more stable compare to 2022 (it should be noted that new front line was open in north-east part of Ukraine – Kharkiv and Sumy regions), there was a significant increase in the density of fires near the frontline (up to 30 km buffer zone).

Fire danger in the 2024 fire season

Spring 2024 was warmer than average. In the western and northern regions, there was a risk of floods, while in the east and south – droughts. In April, the average fire danger index (KPN) across Ukraine exceeded class 3, and in Kharkiv, Zaporizhzhia, and Donetsk regions it reached class 4 (high fire danger) (**Figure 183**). In May, the KPN exceeded class 4, and in Poltava, Dnipropetrovsk, Kherson, and Donetsk regions it almost reached class 5 (extreme fire danger), leading to an increase in the number of fires. Summer began with warm days without extreme heat, but with a deficit of precipitation. In June, the KPN reached class 3, and in Zaporizhzhia and Kherson – class 4. The number of fires decreased, but their area grew to over 6.4 thousand hectares. In July, due to rising temperatures, the KPN rose to classes 4–5, resulting in an increase in the number of fires. In August, the KPN in Sumy, Poltava, Zaporizhzhia, Dnipropetrovsk, and Mykolaiv regions reached class 5, with a significant number of fires recorded. September was dry and warm, causing the number of fires to increase almost threefold, and the burned area to rise elevenfold compared to the average monthly indicators during the fire season. In October, the KPN decreased to class 3, and in November it dropped to class 1 (low fire danger). According to the number of recorded fires within the forest fund of the State Forest Resources Agency, the peaks of forest fires in Ukraine in 2024 occurred in three months – May, August, and September.

Figure 183. Average fire danger classes by national KPN index in Ukraine during 2024 compared to average.

Source: Authors of the country report for Ukraine.

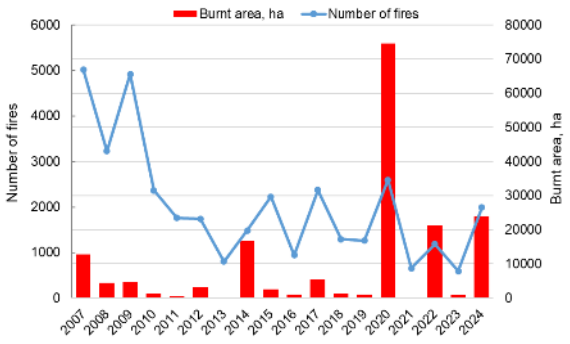
The warm, windy, and dry weather conditions during the 2024 fire season undoubtedly contributed to a significant increase in the number of forest fires compared to previous years; however, most large forest fires were caused by the military aggression of the Russian Federation.

Fire occurrence and affected surfaces

The fire monitoring was carried out without taking into account a large part of the forests (in particular, Zaporizhzhya, Luhansk, Mykolaiv, Donetsk, Kherson and other regions), where military operations were conducted, and part of the territories of these regions are currently under the control of the occupiers. Due to this, total burnt area will be corrected only after the liberation and demining of temporarily occupied territories. The fire statistics comes only from enterprises that are under subordination of State Forest Resources Agency of Ukraine (73% of all forests).

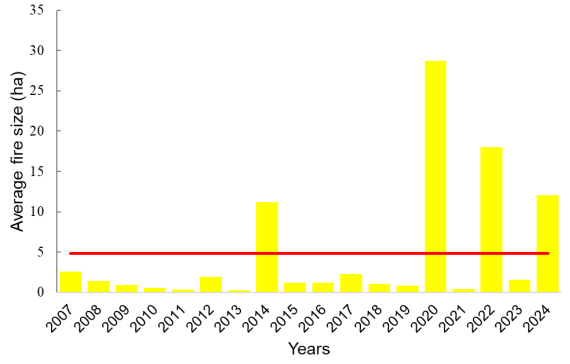
In 2024, on controlled by Ukrainian government forests –1993 fires with the total burnt area of 23 963.14 hectares were recorded in the forests belonging to the State Forest Resources Agency of Ukraine (**Figure 184**). The average area of one fire amounted to 12.02 hectares (**Figure 185**).

Figure 184. Burnt areas and number of in Ukraine from 2007 to 2024 (official statistics is available only from liberated areas and only after verification by ground teams, so the real burnt area is much larger).



Source: Authors of the country report for Ukraine.

Figure 185. Average fire size in Ukraine from 2007 to 2024 (official statistics is available only from liberated areas and only after verification by ground teams, so the real burnt area is much larger).



Source: Authors of the country report for Ukraine.

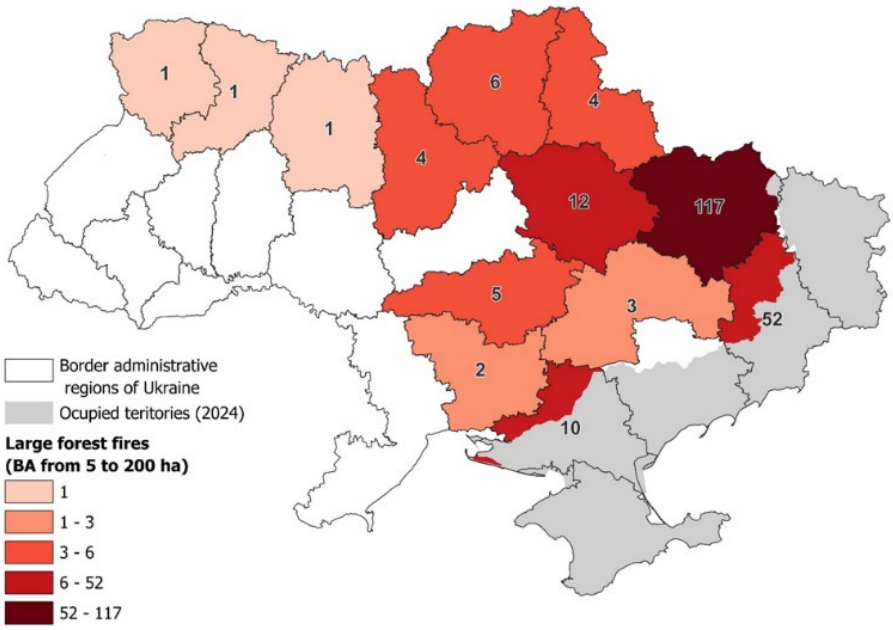
The highest number of forest fires were recorded in Kharkiv region (464 cases with the burnt area of 13 681.8 ha), Dnipropetrovsk region (260 cases with the burnt area of 461.1 ha), Donetsk region (242 cases with the burnt area of 4 629.9 ha), Kyiv region (236 cases with the burnt area of 24 351.4 ha), and Poltava region (152 cases with the burnt area of 3 063.8 ha). These account for 68% of the total number of fires and 93% of the total burned area.

During 2024 fire season a total of 23 emergency events caused by forest fires were recorded on 17 946.1 ha of forests, including: Kharkiv region – 12 fires covering 11 540.2 ha, of which 97.4 ha were crown fires; Donetsk region – 9 fires covering 3 611.6 ha; Poltava region – 2 emergencies that damaged 2 794.3 ha of forests, including 1 335 ha of crown fires.

At the same time, it is currently impossible to fully assess and include all forest fires in the database due to security factors. Therefore, the data are planned to be adjusted after the end of hostilities and the liberation and demining of temporarily occupied territories.

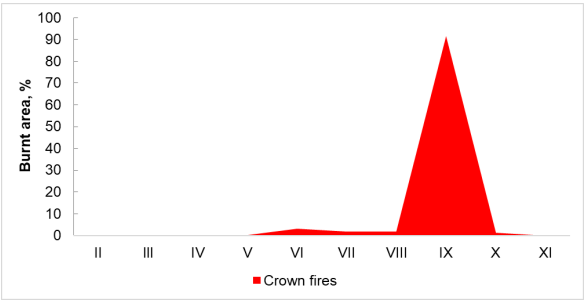
In the course of 2024, a total of 1 994 forest fires were extinguished within the forestry sector, including 215 large-scale forest fires (**Figure 186**) that affected a total area of 22.0 thousand hectares, of which more than 1.6 thousand hectares were crown fires (**Figure 187**). Most of them occurred in Kharkiv (117) (**Figure 189**) and Donetsk (52) region.

Figure 186. Distribution of large forest fires by regions in Ukraine during 2024 fire season.



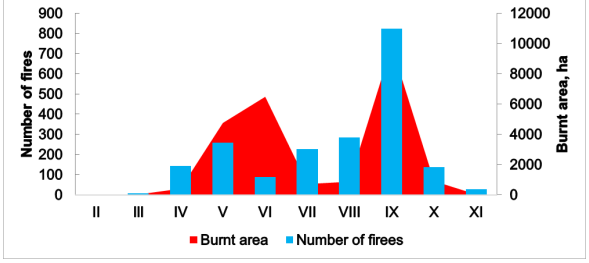
Source: Authors of the country report for Ukraine.

Figure 187. Crown fires distribution by month in 2024 fire season in Ukraine.



Source: Authors of the country report for Ukraine.

Figure 188. Number of fires and burnt area distribution by month in 2024 fire season in Ukraine.



Source: Authors of the country report for Ukraine.

Most forest fires on 2024 occur in the early autumn – during September (41.3% of all fires by number and 40.9% by burnt area) and late spring – in May (12.9 % of all fires by number and 19.9% by burnt area). In autumn active combats were combined with fuel availability and extreme fire weather (**Figure 188**).

Fire causes

During the last decade, the majority of forest fires (more than 85%) were caused mainly by the negligence of local people. The main cause of forest fires was the violation of the fire safety requirements in forests during the fire season. But last 3 years in a row the main cause of forest fires was the ignitions as a result of active hostilities, and shelling, as well as the presence of UXO and their detonation in the forested lands, 62% of all forest fires – in 2022 and 48% in 2023 respectively. The main causes of forest fires in 2024 were still ignitions in the forest stands resulting from Russian aggression (45%).

The share of forest fires caused by the negligence of local people was around 35%, while other causes account for 20%.

Figure 189. Forest fire near Balakleya (Kharkiv region, Ukraine), Vysokobirske Forestry, September 2024.

Source: The State Forest Resources Agency of Ukraine.

Figure 190. Remnants of a Russian strike UAV (Shahed/Geran) that caused a forest fire upon detonation. More than 7 thousand UAVs of this type were launched by Russia against the territory of Ukraine throughout 2024. Most of them were either shot down by the defence forces or lost in location. The falling fragments of such UAVs often become a source of ignitions in forests and open landscapes.

Source: Authors of the country report for Ukraine.

Fire trainings

In 2024, the Forest Fire Centre of SE "Forests of Ukraine" conducted training courses on "Forest Firefighter" (for 969 foresters) and "Incident Commander" (for 1 229 foresters).

Safety remains a top priority for forestry employees, especially under wartime conditions. A total of 2 963 staff members of enterprises, institutions, and organizations under the State Forest Resources Agency of Ukraine and its regional bodies completed specialized training on risks associated with mines and UXO (**Figure 191**).

In 2025, this initiative is planned to continue, with around 600 employees expected to undergo training. The educational programs include 22 theoretical and practical sessions, instruction in the identification of hazardous objects, and step-by-step procedures to follow upon their detection.

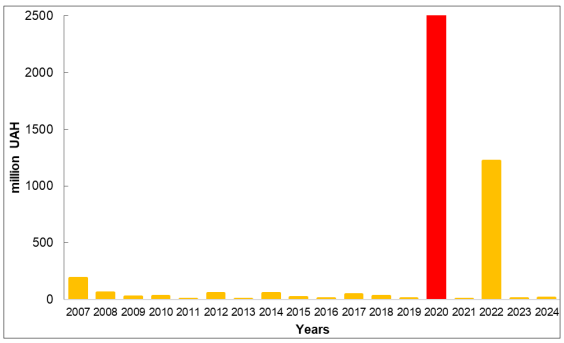
Figure 191. Specialized training in Ukraine on risks associated with mines and UXO.

Source: SE "Forests of Ukraine".

Economic losses

The economic losses caused by forest fires are shown in **Figure 192**. In 2017 they are estimated to be around 43 800 000 Ukrainian hryvnia (UAH), in 2018 – 27 200 000 UAH, in 2019 – 6 700 000 UAH, in 2020 – 19 100 000 000 UAH, in 2021 – 2 100 000 UAH in 2022 – 1 220 577,000 UAH, in 2023 – 7 000 000 UAH and in 2024 – 13 800 000 UAH.

Figure 192. Economic losses caused by forest fires.



Source: The State Forest Resources Agency of Ukraine and State Service of Statistics.

Fire fighting means and fire prevention activities

A vast proportion of Ukraine's forested areas remain untreated and unprotected from fire with a limited fire prevention possibility due to the extreme risks to firefighters' lives posed by landmines and unexploded ordnance, particularly in territories near the frontline and in areas under occupation (**Figure 193**).

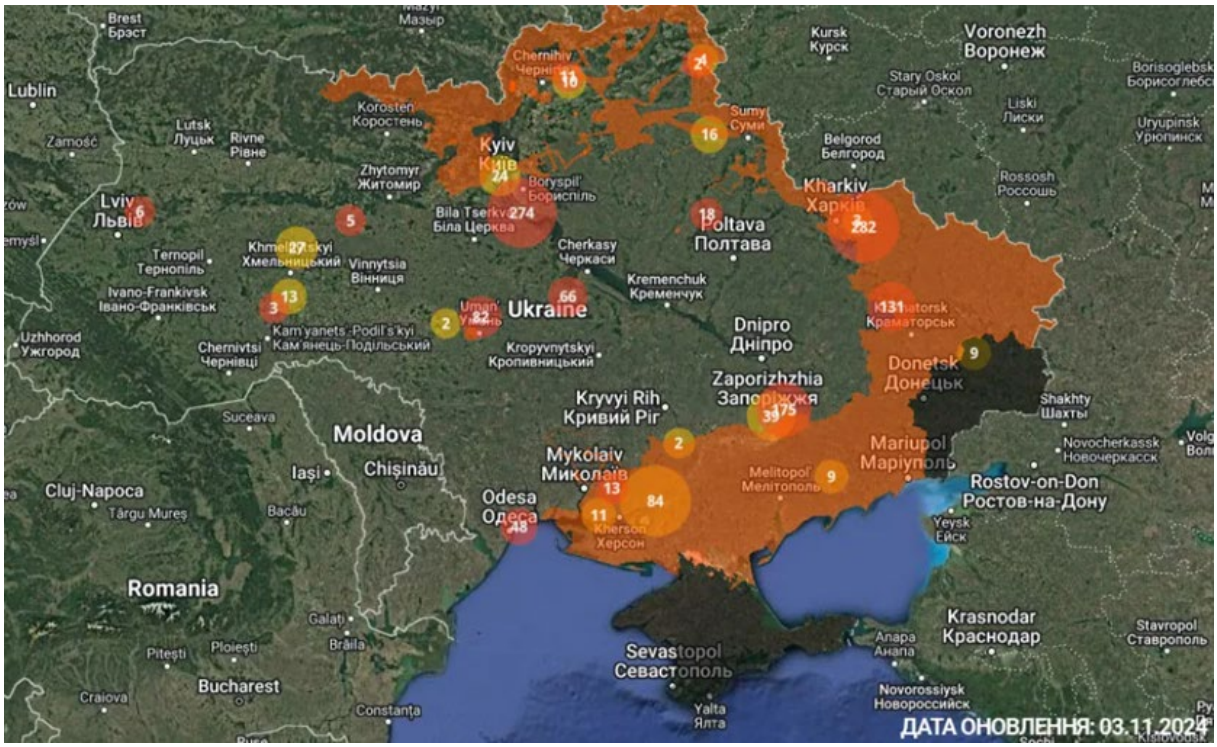
In the territories liberated from the occupation of the Russian federation, demining activities are currently underway. As of the end of 2024, a total of 75.3 thousand hectares have been cleared (surveyed). SE "Forests of Ukraine" is actively demining forest areas by engaging contractors through open tenders, which strengthens forest fire prevention and opens opportunities for large-scale international projects.

At the same time, by the end of the year, approximately 450 thousand hectares of forest lands remained potentially contaminated with UXO and required detailed surveys and

clearance. The demining of forests is further complicated by their classification under the third priority category out of three existing ones, which places them below critical infrastructure and agricultural lands in terms of urgency. As a result, the process of clearing forests from mines and UXO may take decades, restricting access to natural resources and recreational areas.

Ongoing shelling in or near combat zones prevents the full assessment of forest damage by fires, meaning that the overall extent of damage will continue to grow due to the inability to conduct surveys in occupied and mined areas.

Figure 193. Map of the State Emergency Service of Ukraine (SESU) showing potentially contaminated areas with UXO/mines.



Source: https://demininqua.com/karta-rozminuvannya.

Once the situation normalizes in territories that were liberated from temporary occupation, forestry enterprises carry out the following priority actions:

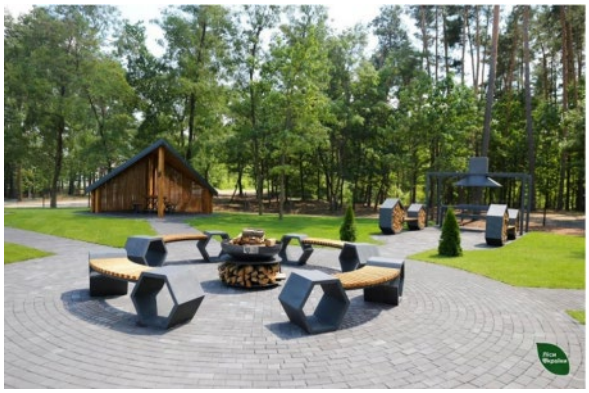
- inventory of forest stands to assess fire damage during occupation period;
- inventory of fire-fighting vehicles, equipment, and tools;
- restoration of the forest fire protection system;
- a set of measures aimed at protecting forests from fires, damage, weakening, and other harmful impacts, including pests and diseases;
- restoration of State Forest Protection Service (Forest Guards).

One of the main tools for addressing forest fires in Ukraine is the network of fire observation towers. These structures enable surveillance of large areas of forest land, contributing to the timely detection of ignitions. Currently, Ukraine operates a network of 486 fire observation towers, of which 402 are

equipped with modern television monitoring systems for the rapid detection of forest fires. In addition, to enhance accuracy and timeliness, the State Forest Resources Agency have started to use satellite imagery to identify thermal anomalies within forest areas. These data help to detect ignitions even in remote or hard-to-access regions, particularly those not covered by fire observation towers.

Furthermore, enterprises, institutions, and organizations in the forestry sector actively participate in extinguishing fires occurring in natural ecosystems outside forest lands (fields, meadows, peatlands, dumps, agricultural lands, etc.). To prevent the occurrence of forest fires, 39.7 thousand km of narrow firebreaks (up to 5 m width) were established, and 177.3 thousand km were maintained. In addition, 8 094 visual fire-prevention posters were installed. Public outreach included 1 122 media appearances (including 70 on television and 415 on radio), 613 published articles, and 8 470 lectures and discussions. The State Forest Guard conducted approximately 11 000 patrols to ensure compliance with the Fire Safety Rules in the Forests of Ukraine.

Figure 194. Standard recreational site of SE "Forests of Ukraine".



Source: Authors of the country report for Ukraine.

To improve visitor control and reduce potential fire sources in forests, within the framework of the nationwide recreation development program, the State Enterprise "Forests of Ukraine" established 55 new standard recreational sites in 2024. It is planned to create five categories of recreation facilities across the country — ranging from small, basic sites to complexes with full infrastructure. The design follows a modular approach based on standardized small architectural forms, ensuring high fire safety standards and enhanced fire-prevention measures in buffer zones surrounding these sites. During 2024, these recreational facilities were visited by over 2 million Ukrainians.

Fire research

Ukrainian wildfires of war: changes in fire regimes as a result of the direct and indirect effects of war / *Sydorenko S.H., Cathelijne R. Stoof. Postdoctoral research has received funding from the MSCA4Ukraine under grant agreement No 1233687.*

The objective of the study is to describe main fire regime in Ukraine and determine direct and indirect influence of war on this fire regime. Direct influence of war on fire regimes studied according to a three temporal periods for all types of landscape and protective areas (Emerald network): 1) during normal period (before war); 2) on a period of local war on the East (2014-2021) and 3) a total war period (since 24 February 2022). Indirect impact of war assessed due to land use and demographic changes in Ukraine (effects on human activity in terms of ignitions and fuel buildup as well as influence of people replacement into safer regions and change of their activity). As a final output of the study, maps of fire regimes for Ukraine will be developed as well as quantitative estimation of war impacts on natural landscapes.

Landscape Fire and Safety Advisories Bulletin during the War in Ukraine / *Zibtsev S., Goldammer J.G., Myroniuk V., Sydorenko S., Soshenskyi O., Bogomolov V., Borsuk O.*

Implementing organisation: Regional Eastern Europe Fire Monitoring Center (REEFMC), in cooperation with GFMC.

The project monitors wildfires in Ukraine during the ongoing war, assessing both collateral and

intentionally set fires. Fire bulletins include updated maps, statistics, and large fire reports, while safety advisories address risks from UXO- and radiation-contaminated terrain. Using Copernicus Sentinel-2 data and land cover maps, over 17 000 fire perimeters were analysed to assess severity, burned land types, and carbon emissions. The Emerald Network was applied to evaluate conservation areas affected by fire.

Publication: Zibtsev, S., Goldammer, J.G., Myroniuk, V., Sydorenko, S., Soshenskyi, O., Bogomolov, V., & Borsuk, O. (2024). Wildfires in Ukraine in times of war. In Report on the large wildfires of 2022 in Europe (pp. 157–169). Publications Office of the European Union, Luxembourg. https://data.europa.eu/doi/10.2760/19760 (JRC138859)

Forest management as a prerequisite for the development of productive, fire-resistant and climate-resilient forests in Ukraine (ManUk) / Joint Research project *Partners: HNEE (Germany), GFMC (Germany), REEFMC, UNFU (Ukraine). Financial support: BMEL/BLE, grant decision 24.09.2024.*

The project aims to strengthen fire resilience of Ukrainian forests through modern silvicultural practices and capacity building. Activities include developing and testing forest management approaches, and delivering trainings to enhance community and landscape resilience to wildfires under changing climatic and socio-economic conditions.

Recommendations for Assessing Fire-Induced Damage and Enhancing the Resilience of Forests to Fires in the Lowland (Plain) Part of Ukraine / *Voron V.P., Koval I.M., Melnyk Ye.Ye., Sydorenko S.H., Kharkiv: URIFFM, 2024. 36 p.*

The document outlines approaches to assessing pyrogenic damage and enhancing the fire resilience of forests in the plain regions of Ukraine. It is based on a comprehensive analysis of field data on fire-damaged pine stands across the Polissia, Forest-Steppe, and Steppe zones, considering stand characteristics, fuel complexes, and fire intensity. This document also addresses the challenges of managing forests on de-occupied territories in Ukraine that are contaminated with mines and unexploded ordnance (UXO). It explains why silvicultural and fire prevention activities must be suspended until demining is complete, highlights the particular risks in forests, and outlines measures to protect nearby settlements.

(Source: Ukrainian Research Institute of Forestry and Forest Melioration named after G. M. Vysotsky; The State Forest Resources Agency of Ukraine; The State Enterprise "Forests of Ukraine"; State Enterprise Forestry Innovation and Analytical Centre, Ukraine).

1.2.31. United Kingdom

Introduction

Parts of the UK experienced an eighth consecutive year of a prolonged dry period and England experienced above-average temperatures throughout the year. However, this was accompanied by persistent and widespread rainfall, resulting in one of the wettest years on record, ranking as the eighth wettest year ever recorded nationally. While these wetter conditions helped reduce the number of wildfires by maintaining high levels of soil and vegetation moisture, they also contributed to increased vegetation growth, potentially setting the stage for heightened wildfire risk in future dry periods.

Fire danger in the 2024 fire season

The Met Office reported that the Winter 2023/24 was in the top 10 warmest and wettest for the UK, with significantly fewer ground frosts than average. A mean average temperature of 5.29°C across the three months made it provisionally the fifth warmest winter on record.

We experienced the warmest February on record for both England and Wales, with the average temperature in England reaching 7.5°C. The UK's top 10 warmest Februarys on record in a series from 1884 now include 2019, 2022, 2023 and 2024, highlighting a trend in rising winter temperature.

The South of England experienced the wettest February since 1836, with many parts of southern England recording well over twice the average rainfall.

May 2024 set a new record with an average mean temperature of 13.1°C for the UK, surpassing the previous record of 12.1°C set in 2008. It was a record which surprised many at the time, with cloudy and dull conditions not typical for a record-breaking month. A Met Office study completed later in the year using a new technique examined the influence of a marine heatwave that was surrounding the UK through Spring and into June 2024. The team found the marine heatwave provided a significant influence on land temperatures, particularly overnight.

May was part of the warmest spring on record, with the UK experiencing its sixth wettest spring overall and the wettest since 1986. The UK saw 301.7mm of rain over spring, 32% more than average. England and Wales had their respective fifth and eighth wettest springs on record.

The UK experienced the coolest summer since 2015, with an average mean temperature of 14.37°C, which is 0.22°C cooler than the long-term average. The last time the mean temperature was this low was in 2015, when the summer's average was 13.91°C.

September saw huge rainfall differences across the UK through Autumn, with England seeing far more than Scotland and Northern Ireland in particular.

Gloucestershire for example, had its wettest Autumn since the series began in 1836. Autumn started off wet, with a succession of low-pressure systems bringing exceptionally heavy rainfall to southern and central England in the latter part of September, and ten English counties experienced their wettest September on record. For Bedfordshire and Oxfordshire, September 2024 was the wettest calendar month the counties have experienced, in a series dating back to 1836.

United Kingdom

UK Health Security Agency

In December 2023, the UK Health Security Agency (UKHSA) included a chapter on wildfires and public health in the latest update to their Health Effects of Climate Change (HECC) Report. This was the first time that wildfires have been included in the report and reflects the growing awareness of the potential impacts of wildfires on public health in the UK and climate change projections that suggest that, in

the future, the UK may experience conditions more favourable for wildfires.

The chapter reviewed evidence on smoke composition and toxicity, health effects from smoke exposure, impacts on soil and water quality and potential mental health effects. Several key research gaps and priorities were identified, including the need for:

- research into characterisation of UK wildfire smoke and emissions, and the composition of wildfire smoke in the UK
- improved understanding of how short-term and long-term exposure to wildfire smoke in the UK impacts health, including mental health and health equity
- health studies to better estimate morbidity and mortality estimates of current and future wildfire risk in the UK

Following on from this report, UKHSA is working with the UK Met Office and the Atmospheric Dispersion Modelling Liaison Committee (ADMLC) to run a workshop on dispersion modelling of wildfire smoke (planned for February 2025).

The UK Parliamentary Office of Science and Technology (POST) also produced a research briefing on wildfire risks to UK landscapes, which included contributions from academics, Fire and Rescue Services (FRSs), Government Departments, UKHSA, Met Office and Forestry Commission (Wildfire risks to UK landscapes - POST).

England and Wales

Natural England reported from its Site of Special Scientific Interest (SSSI,) Wildfire Register that in 2024, 112.6 hectares of SSSI land were burnt across England.

UK FRSs apply the following criteria to differentiate between more severe and impactful wildfires and other vegetation fires. A wildfire is defined as 'any uncontrolled vegetation fire where a decision or action is needed about its suppression' and will meet one or more of the following criteria:

- Involves a geographical area of at least one hectare (10 000 square metres)
- Has a sustained flame length of more than 1.5 metres
- Requires a committed resource of at least four FRS appliances/resources
- Requires resources to be committed for at least six hours
- Presents a serious threat to life, environment, property and infrastructure

This definition is taken from the National Fire Chief Council's (NFCC) Operational Guidance for Wildfires (2016).

In 2024, there were 200 recorded wildfires in England and Wales compared to 293 in 2023 and 994 in 2022. The busiest month was August 2024, recording 69 wildfires. Most of these fires were in the Southeast of England in London, Kent and Essex.

The wet years of 2023 and 2024 have led to significant fuel accumulation, which now increases the potential for more intense fires in future dry seasons. Early fires in 2025 illustrate the changing threat to the UK with a lengthening fire season, highlighting the differences between early season fires, which burn over moist ground, and high-risk summer fires, where sub-surface spread often features and makes firefighting more challenging and protracted.

The wildfires that took place in 2024 were operationally easier to manage and contain than the wildfires that took place in the year of 2022. 2022 was an unprecedented year for wildfires which raised the profile of the risk across the fire sector and since then, progress has been made in the following areas to support FRS incident response:

Development of Wildfire Frameworks and Strategies: Actions include collaboration with the Home Office (responsibility now moved to MHCLG) and stakeholders to develop the Home Office Wildfire Framework for England and investigate the need for a national wildfire

strategy. These efforts aim to enhance wildfire management and strategic planning.

Enhancement of Wildfire Training and Standards: The development of a national wildfire training framework to provide a standardised approach to FRS Wildfire training and minimum standards for Wildfire training at different levels (from basic/foundation through very specialist training for National Wildfire Tactical Advisors) is nearing completion.

In 2024, NFCC also produced and published a level 1 Wildfire e-learning course, which fits within the base level of the national framework. This e-learning course has been made available to all UK FRS. During 2025, work will commence on developing standard wildfire training for fire control.

Improvement of wildfire data and reporting: Actions include enhancing wildfire data collection and analysis processes, improving the Incident Recording System, and developing guidance for accurate data entry. These initiatives aim to improve wildfire risk assessment and inform future prevention strategies.

Strengthening wildfire response and equipment: Actions include reviewing operational response tactics, developing guidance for aerial asset operations, and showcasing innovations in wildfire vehicles and equipment.

During 2024 the Home Office funded a National Resilience Wildfire Capability Advisor to coordinate the response to wildfires within England (Government responsibility for the fire portfolio, including wildfires has now moved to the Ministry of Housing Communities and Local Government as of 1 April 2025).

There are approximately 50 FRS Wildfire Tactical Advisors in the UK who are specially trained advisors that can be deployed nationwide to support wildfire incidents and provide expert tactical advice. As well as providing national-level capability and leadership, they support Incident Commanders by providing advice on fire behaviour and its likely progression, tactical suppression techniques, pre-planning and risk assessments and strategic deployment of resources on the fire ground.

England and Wales Wildfire Forum

The England and Wales Wildfire Forum (EWWF) is a multi-agency stakeholder group of public, private and third-sector parties which works to address wildfire issues. Throughout 2024, the forum welcomed new member organisations and shared updates amongst members about relevant policy, guidance, research, opportunities and news about wildfires.

In 2024, the forum expanded its activities by setting up new working groups. These groups aim to explore an area of activity on behalf of the forum, review current best practice or activity, and identify opportunities and challenges. This will then help the forum to progress the issue with our partners. A wildfire management planning working group was set up in May 2024 to explore best practice around wildfire management planning, both across the UK and internationally. The group will report in 2025 and further working groups are planned in future.

England

Dept. for Environment, Food and Rural Affairs (Defra)

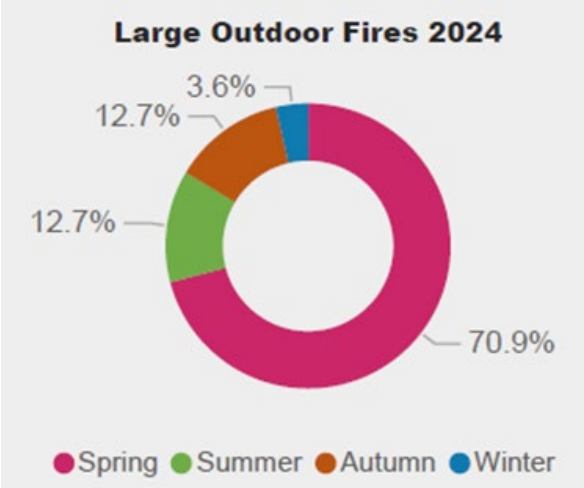
Working with Forestry Commission, Defra continued to support the development of a training programme, designed to consolidate knowledge, skills and understanding of vegetation fires including wildfire incidents and prescribed fire operations. Since its development in 2021, more than 1300 Lantra accredited training modules have been completed by both public and private land managers, firefighters and researchers.

Scotland

On average, Scottish FRS attends 170 large outdoor fires each year.

In 2024, they attended 55, the lowest number to date.

Figure 195. Seasonal distribution of large outdoor fires in 2024.



Source: Forestry Commission, United Kingdom.

Over the last 14 years (2010 - 2024), 32% of large outdoor fires were recorded as deliberate.

The percentage of deliberate fires varies over the years from as low as 23% in 2018 to a high of 44% in 2020. In 2024, this figure was 23%.

The UK's highly variable climate means that every year is different. However, much like 2023, 2024 broke both temperature and rainfall records, with storms and snow also hitting the headlines and having real-life impacts.

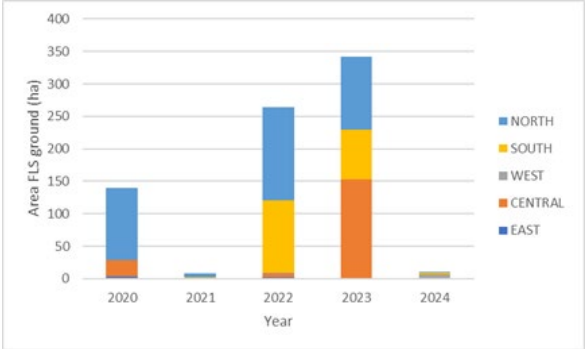
In Scotland, the Muirburning Season runs from 1st October through to 15th April. This allows landowners to burn, for example, grasslands and heather for effective land management.

Scottish Fire and Rescue Service – the SFRS Strategic Asset Management Plan for property across 2023-28, outlines how the SFRS aims to achieve a modern and fit for purpose estate that supports the effective delivery of services across the whole organisation. SFRS' current wildfire strategy considers the increased risk of wildfire and changing climate in Scotland and includes the roll-out of new equipment and Personal Protective Equipment (PPE) on a phased and risk assessed basis, as well as developing a number of pilot projects to test an enhanced response to wildfires.

Scottish National Adaptation Plan 2024 – 2029 was publish in September 2024 and includes a national response to managing wildfire risk (https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2024/09/scottish-national-adaptation-plan-2024-2029-2/documents/scottish-national-adaptation-plan-2024-2029/scottish-national-adaptation-plan-2024-2029/govscot%3Adocument/scottish-national-adaptation-plan-2024-2029.pdf)

Fires on Forest and Land Scotland ground were substantially down in 2024 due to the wet winter weather with only 10 ha burnt and 5 fires recorded through May, June and July.

Figure 196. Area burnt between 2020 to 2024.on forest and land Scotland property.



Source: Forestry Commission, United Kingdom.

The Wildlife Management and Muirburn (Scotland) Bill was passed on the 21st March 2024 and became an Act on the 30th April 2024. Muirburn licensing will be introduced in January 2026.

Scottish Wildfire Forum

The Scottish Wildfire Forum exists to raise awareness of the work being undertaken to minimise the impact and incidence of wildfire in Scotland. The SWF Executive Committee is chaired and administered by the Scottish Fire and Rescue Service. The Forum is comprised of representatives from key organisations

committed to developing a mutual understanding of, and a reduction in the number of unwanted wildfire occurrences in Scotland.

The aim of the Forum is to create a focus to enhance joint working between Fire and Rescue Services, agencies and those with land management interest within Scotland which will be able to develop and communicate strategic wildfire protection and prevention initiatives to ministers, stakeholders and the wider community. Home | Scottish Wildfire Forum (https://www.scottishwildfireforum.co.uk/).

The Scottish Wildfire Forum in conjunction with the SFRS and other agencies release fire danger information and maps when conditions are "very high" or "extreme".

UK Wildfire Conference

Held in Aberdeen in November 2024, Wildfire2024 was the UK Wildfire Conference's bi-annual flagship event, attracting delegates, sponsors, industry experts, scientists and thought-leaders from all over the globe.

The 2024 theme was 'Resilience in a Changing World', exploring the challenges and opportunities presented by the climate emergency, evolving landscapes and emerging science.

To help continue the conversations on wildfire prevention and suppression beyond the conference, the expert presentations have been made available on the Scottish Wildfire Forum's website: https://www.scottishwildfireforum.co.uk/wildfire2024.

Northern Ireland

The Northern Ireland Forest Services reported no crop losses in 2024.

Fire prevention activities and information campaigns

As there were fewer wildfires in 2024, NFCC prepared for potentially challenging 2025 conditions by reviewing and enhancing its Wildfire Aware advice, updating webpages, and ensuring they were linked from the Government's Prepare site.

Working with partners such as the RSPB, NFCC delivered targeted prevention messages and maintained links with partners to ensure ongoing support for wildfire prevention messaging.

Working alongside its National Resilience function, NFCC agreed access to historic and future data to prepare for future communication campaigns and continued development of the media plan.

Adopting an "always-on" approach, the Wildfire Aware campaign now runs as needed throughout the extended wildfire season rather than only in a single awareness week.

Additionally, a Level 1 wildfire e-learning module was developed by NFCC and made available to all UK FRSs.

DEFRA, including Forestry Commission, National Parks and Natural England as well as Devolved Administrations, supported FRSs using social media and other approaches to inform and warn the public of a period of high wildfire risk.

Lantra accredited Vegetation Fire Training was funded DEFRA)and developed and implemented by Forestry Commission for land managers and researchers. This includes training modules on wildfire response, prescribed fire operations and planning and wildfire management planning.

Operations of mutual assistance

No requests were made to the United Kingdom for mutual assistance for wildfire incidents during 2024.

Research activities aimed at improving fire management

"Toward a UK fire danger rating system: Understanding fuels, fire behaviour and impacts"

During 2024 we continued to progress the programme of research across the UKFDRS

project. Field and laboratory work continued across the country, along with our modelling and remote sensing work. We also started work on a series of wildfire threat analysis case studies around the UK.

A key output from the project was launched during 2024. FireInSite is a fire behaviour prediction system for key UK fire prone vegetation types and builds on the work of the project assessing fuel moisture dynamics, flammability and fuel types. Further developments will continue into 2025 and beyond. For further details of the system, visit www.fireinsite.org.

Team members attended and presented at a range of conferences across the UK and Europe, including the UK Wildfire Conference in November 2024, and we continued to provide media contributions to print, TV and radio. Several papers from the project were published during 2024 open access in peer-reviewed academic journals. For more information on all project activities, please visit the project website www.ukfdrs.com.

Leverhulme Centre for Wildfires, Environment and Society

The Leverhulme Centre for Wildfires, Environment and Society has continued their work on global wildfires, with key progress in 2024 including (amongst other achievements), various publications, international assessments of social, ecological and governance drivers; an assessment of the effects of land cover and land use change scenarios in Scotland; field campaign in Alberta, Canada, expanding the work using thermal cameras to validate satellite measurements of fire characteristics; air quality analysis of the Southeast Asia; continued assessment of the effects of present-day wildfires on the earth's energy balance compared to pre-industrial times; continued experiments and modelling relating to peat fire emissions; developing of a fractal model for wildfire propagation; enhancement of methods to link fire radiative power estimates with excess carbon monoxide concentrations; and in collaboration with the National Physical Laboratory and Southampton University, the launch of a new ESA-funded project FRM4Fire which aims to consolidate information on the uncertainties associated with satellite Fire Radiative Power measurements.

The Centre has also launched six new research teams for their second five year period (2024-2029): 1) Air Quality Team 2) Fire-Veg Team 3) WIR3 Team 4) Just Fire Team 5) Fire Info Team and 6) Climate Team (fire, atmosphere and climate). For more information please visit the project website: www.centreforwildfires.org or email wildfire@imperial.ac.uk and follow on Twitter: @centrewildfires.

UK partners in Pyrolife

This is a large ITN network funded by EU H2020 programme to train a new generation of fire scientists embracing diversity of knowledge, approaches, views and cultures. UK partners in Pyrolife are Nick Kettridge at University of Birmingham and Guillermo Rein at Imperial College London.

UK Wildfire Research Group

The UK Wildfire Research Group continues to link wildfire researchers to practitioners by raising awareness of opportunities and key research.

To connect with the group, visit https://ukwildfireresearch.co.uk/.

HAZELAB

The Hazelab research group at Imperial College London has made significant contributions to wildfire protection research through several initiatives:

- Protection of homes firebrands- defining the most likely deposition locations of firebrands around a home and the means to avoid them.
- Computer simulations of wildfire behaviour- defining the best existing models of wildfire behaviour and compare them in terms of accuracy and computational requirements.

— Finding the time of evacuation in case of wildfire- creation of an algorithm that calculates the time for evacuation of any rural community so they are prepared ahead of the fire season and can avoid either unnecessary evacuation or dire evacuations.

— Field trip- Visited to the Palisade in Los Angeles, California, to study the damages and the partner of wildfire spread across home and vegetation.

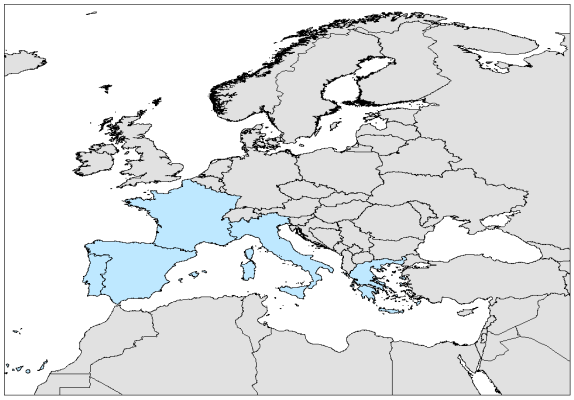
(Source: Forestry Commission, United Kingdom).

— Arctic wildfires- Study into experimentally the behaviour of smouldering fires in frozen soils and find the threshold for their ignition and spread.

To learn more about their research in wildfires and the built environment, please take a look at our website https://www.imperial.ac.uk/hazelab/.

1.3. Comparison of Southern EU countries with longer time series (1980–2024)

Figure 197. The five Southern EU countries with longer time series.



Source: JRC's elaboration.

The long time series of forest fire data available for these Portugal, Spain, France, Italy and Greece justifies a separate analysis as in previous reports.

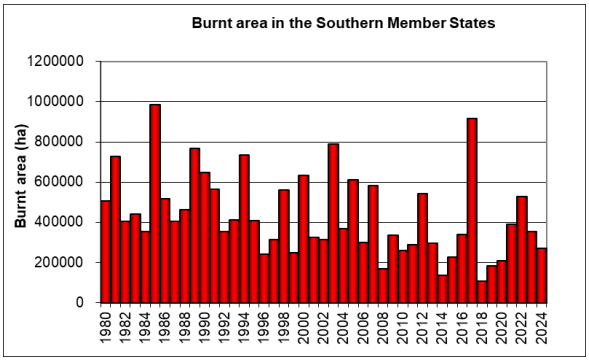
Figure 198a shows the burnt area in the five large Southern Member States since 1980. The annual variations reflect dependence on seasonal weather. The total burnt area in 2024 was 269 223 ha (Figure 198a), less than the previous three years and less than the average of the last decade. Of the five countries, Portugal was the most affected country in 2024, with 137 651 ha burnt.

Figure 198b shows the yearly fire count in the same five countries since 1980. After a 1990s increase (partially due to improved recording), fire numbers stabilized for a decade before generally decreasing in the last ten years. In 2024 the total number of fires was 18 606, the lowest value since recording started in 1980; see **Table 57** and **Annex 1** for details.

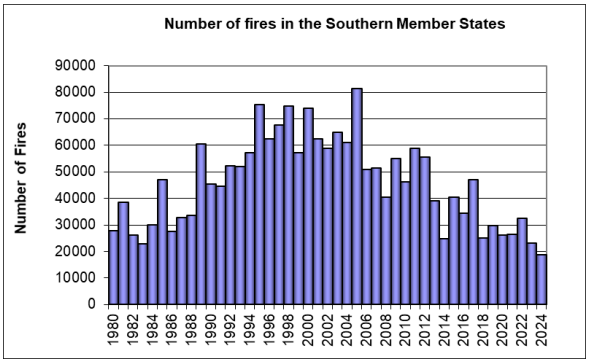
Figure 198c shows that the average fire size in the five countries has generally decreased since 1980, with a notable change after 1990. This trend mirrors the number of fires, partly because improved statistical systems now record more of the smallest fires and is largely due to better fire protection services. However, some recent years show values comparable to the 1980s.

In 2024 the average fire size was 14.5 ha, similar to the previous three years, although above the mean for the previous 2 decades. Greece and Portugal had the highest average fire size among the five countries in 2024, while France had the smallest.

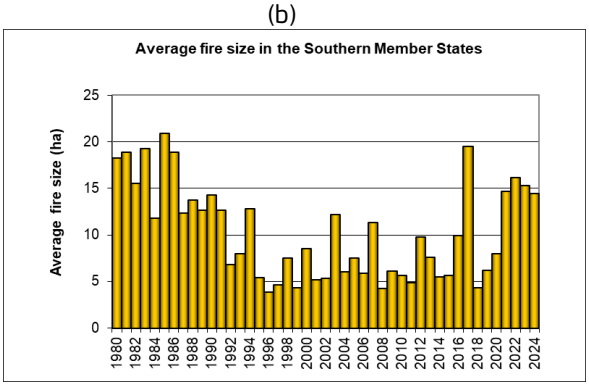
Figure 198. Burnt area (a) number of fires (b) and average fire size (c) in the five Southern Member States since 1980.



(a)



(b)

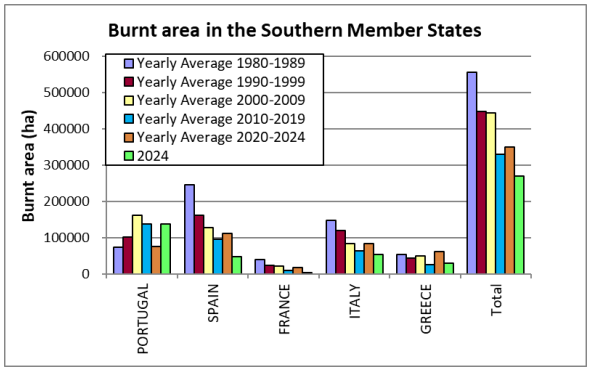


(c)

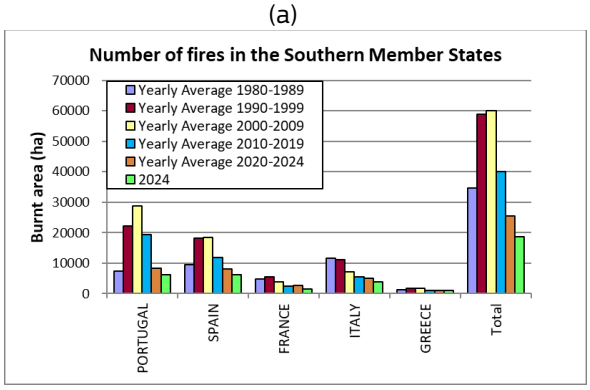
Source: JRC's elaboration of the country reports for the five Southern EU countries.

Figure 199 compares the yearly averages of burnt areas, number of fires and average fire size for the periods 1980-1989; 1990-1999, 2000-2009, 2010-2019 and 2020-2024 with the figures for 2024. It shows each of the 5 countries separately and also their total.

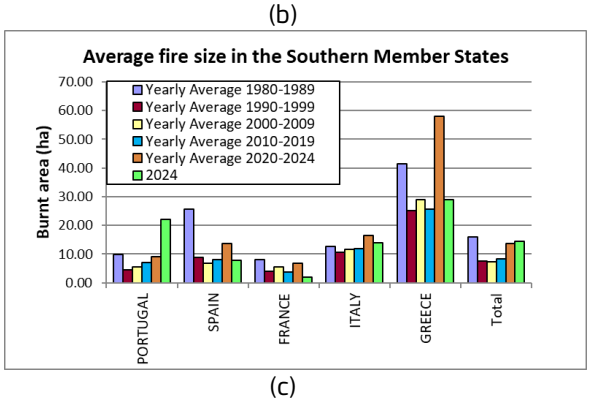
Figure 199. Burnt areas (a), number of fires (b) and average fire size (c) in the five Southern Member States in the year 2024 as compared with average values for previous decades.



(a)



(b)



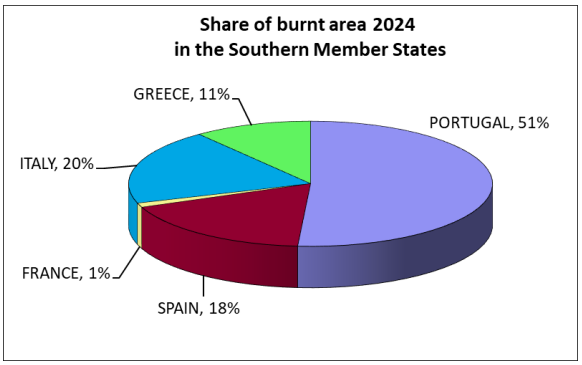
(c)

Source: JRC's elaboration of the country reports for the five Southern EU countries.

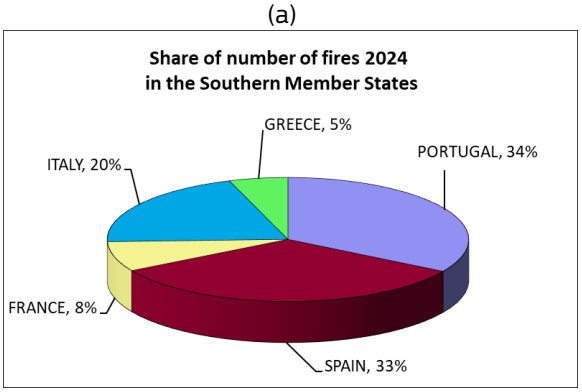
Figure 200 shows the contribution of each of the five Member States in terms of burnt areas and number of fires to the overall figures for all five countries in 2024.

Since the area of each country is different, and the exposed area in each country is also different, the comparisons among countries cannot be absolute. It should also be borne in mind that different ways of recording fires, e.g. through satellite mapping rather than ground measurements, may lead to an under-representation of the smallest fires and result in an inflated figure for average fire size.

Figure 200. Share of the total burnt area (a) and the total number of fires (b) in each of the five Southern Member States for 2024.



(a)



(b)

Source: JRC's elaboration of the country reports for the five Southern EU countries.

In 2024, Spain and Portugal recorded 33% and 34% respectively of the total number of fires in the region (**Figure 200b**); Portugal experienced the highest proportion of burnt area (51% of the total, **Figure 200a**).

Table 57 gives a summary of the number of fires and burnt areas for the period 1980-2024, the average for the decades, the last 5 years and the 2024 alone. The patterns of the burnt area and number of fires over time are presented in **Figure 201**.

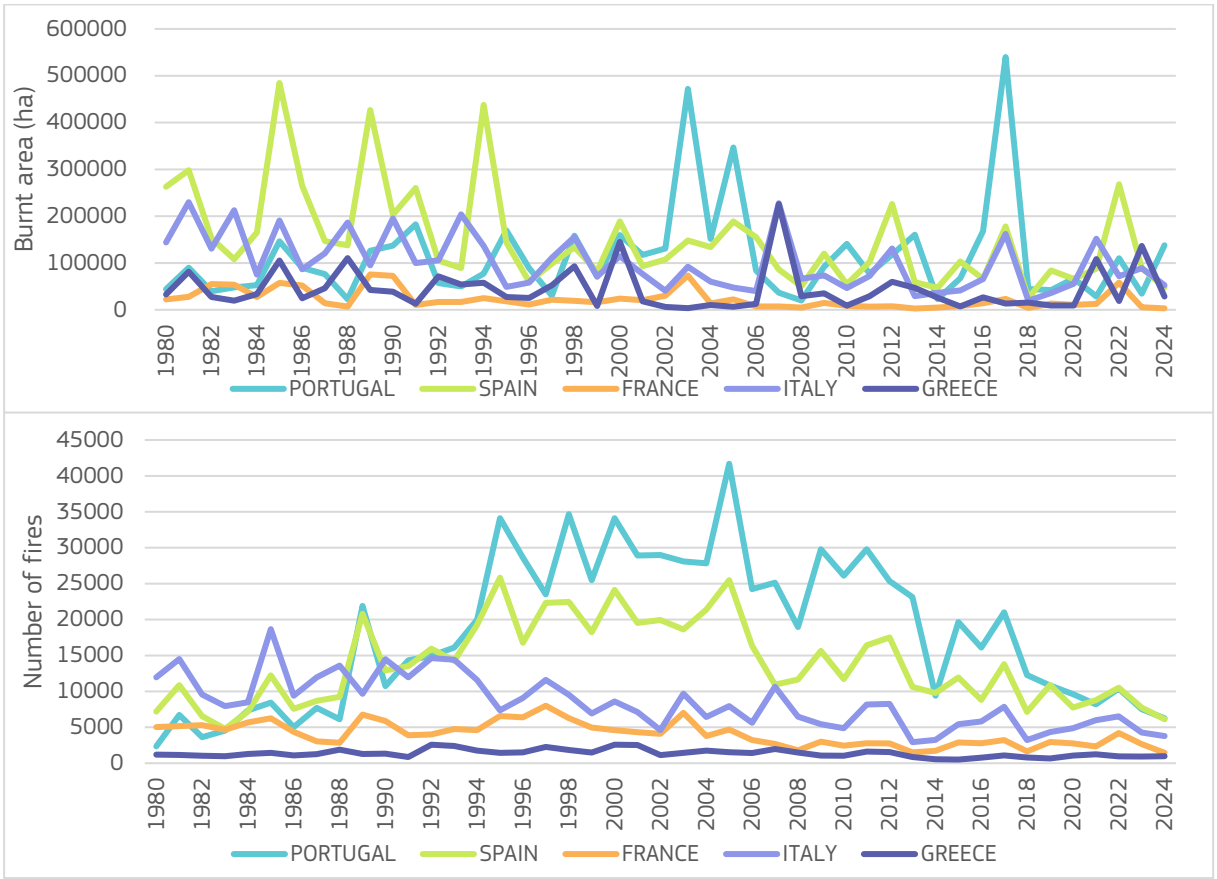
Table 57. Number of fires and burnt area in the five Southern Member States in the period 1980-2024.

Number of fires	PORTUGAL	SPAIN	FRANCE	ITALY	GREECE	TOTAL
2024	**6 255**	**6 134**	**1 452**	**3 784**	**981**	**18 606**
% of total in 2024	34%	33%	8%	20%	5%	100%
Average 1980-1989	7 381	9 515	4 910	11 575	1 264	34 645
Average 1990-1999	22 250	18 152	5 538	11 164	1 748	58 851
Average 2000-2009	28 774	18 369	3 924	7 259	1 695	60 020
Average 2010-2019	19 362	11 860	2 470	5 420	946	40 057
Average 2020-2024	8 395	8 183	2 685	5 086	1 039	25 388
Average 1980-2024	18 214	13 775	4 041	8 436	1 371	45 837
TOTAL (1980-2024)	819 646	619 868	181 833	379 605	61 710	2 062 662

Burnt areas (ha)	PORTUGAL	SPAIN	FRANCE	ITALY	GREECE	TOTAL
2024	137 651	47 711	2 949	5 2623	28 288	269 223
% of total in 2024	51%	18%	1%	20%	11%	100%
Average 1980-1989	73 484	244 788	39 157	147 150	52 417	556 995
Average 1990-1999	102 203	161 319	22 735	118 573	44 108	448 938
Average 2000-2009	160 985	127 229	21 741	83 878	49 238	443 071
Average 2010-2019	138 084	94 514	9 308	63 907	24 220	330 033
Average 2020-2024	75 558	111 706	17 987	84 149	60 262	349 661
Average 1980-2024	113 897	151 934	22 652	101 240	44 470	434 193
TOTAL (1980-2024)	5 125 356	6 837 028	1 019 331	4 555 820	2 001 138	19 538 672

Source: JRC's elaboration of the country reports for the five Southern EU countries.

Figure 201. Time series comparing burnt area and number of fires in the 5 large EU-Med countries.



Source: JRC's elaboration of the country reports for the five Southern EU countries.

1.4. Middle East and North Africa Countries

1.4.1. Israel

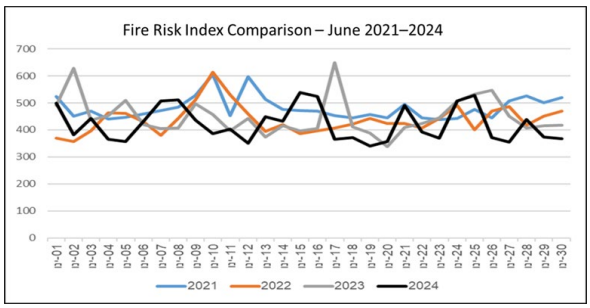
Fire danger in the 2024 season

The year 2024 was significantly warmer than the multi-annual average for the reference period of 1991–2020. In historical context, 2024 ranks as the second warmest year in Israel since the beginning of systematic meteorological observations in 1950.

The annual average temperature exceeded the long-term norm by approximately 1°C, a deviation that reflects the ongoing warming trend observed since the late 20th century. This trend has become especially pronounced over the past 15 years, aligning with broader regional and global patterns of climate change. The data confirm a statistically significant warming trajectory over the past three decades.

The 2023/2024 rainy season concluded with above-average precipitation in most non-arid regions of the country. Rainfall amounts in central and northern Israel were well above the multi-annual norm, exceeding 120% of the 1991–2020 average. In contrast, southern regions, particularly in arid and semi-arid zones, experienced below-average rainfall, highlighting the spatial variability typical of Israel's precipitation regime.

Figure 202. Fire risk index comparison for 2021-2024 in Israel.



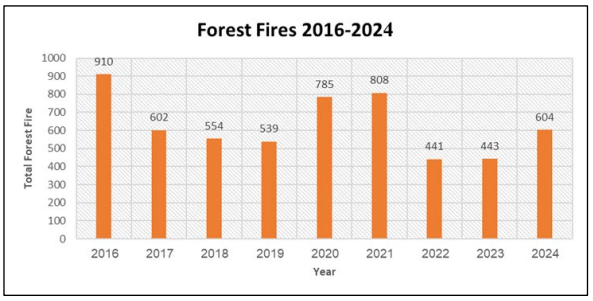
Source: Fire and Rescue Authority, Ministry of Public Security, Israel.

Despite the warmer temperatures, the Fire Weather Index (FWI) for 2024 remained within the multi-annual average range, indicating no exceptional increase in meteorological fire risk relative to previous years (**Figure 202**).

Fire occurrence and affected surfaces

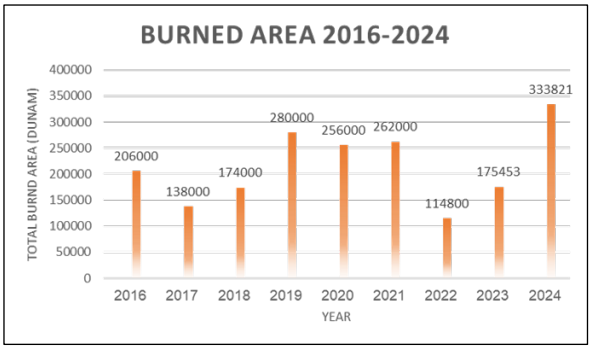
The 2024 fire season in Israel saw a marked increase in wildfire activity compared to the previous year. Preliminary figures indicate that the number of wildfires rose by over 36% between 2023 and 2024, while the total burned area nearly doubled.

Figure 203. Forest fires in Israel 2016-2024.



Source: Fire and Rescue Authority, Ministry of Public Security, Israel.

Figure 204. Total Burnt area in Israel 2016-2024.



Source: Fire and Rescue Authority, Ministry of Public Security, Israel.

In terms of regional distribution, northern Israel was most affected: roughly 48% of all wildfire incidents in 2024 occurred in the Northern District, up from about 50% the year prior.

This spike is largely attributed to military operations along the northern border, which led to numerous fires in open areas. In fact, the national aerial firefighting unit reported that a

major share of 2024's aircraft dispatches were due to the fighting in the north.

Many of these conflict-related wildfires featured multiple simultaneous ignition points and burned in areas where ground crews had limited access for safety reasons. Despite the challenging conditions, most fires were contained before they could grow to extreme sizes, and no civilian fatalities were reported during the 2024 season

The clear increase in 2024's fire activity – especially in open areas of the north – reflects extraordinary circumstances (security-related ignitions) layered on top of the usual fire-weather risks. This will be an important consideration in trend analysis, as the data point to both climatic factors and human factors (in this case, conflict) as drivers of wildfire occurrence.

Fire prevention activities

In 2024, Israeli authorities continued to prioritize wildfire prevention and risk reduction measures, with several notable initiatives coming into effect. Foremost was a nationwide program to create and maintain community firebreak zones aimed at stopping or slowing the spread of fires near towns and villages. Under a government resolution, about 65 million (Israeli shekels) have been budgeted over five years for establishing fuel-breaks around communities across the country. An additional 40 million was specifically allocated for firebreak implementation in high-risk communities along the northern "confrontation line" – areas adjacent to the Lebanon border that faced heightened fire threats in 2024. Dozens of kilometers of firebreaks were created or widened in these zones.

To ensure resources go where they are needed most, officials developed a risk-ranking system for communities based on criteria such as local vegetation and topography, historical fire incidence, population demographics, access routes, and emergency response times. This risk assessment guided the prioritization of firebreak projects and other preventive actions.

In locations where physical firebreaks were not feasible, authorities installed protective sprinkler systems at the forest-community interface. These automated sprinklers can wet critical greenbelts and create humid buffer zones during extreme risk days, providing an additional line of defense for homes adjacent to woodlands.

Public awareness and education campaigns accompanied the physical prevention measures. The Fire and Rescue Authority, together with the Jewish National Fund (KKL-JNF) and local governments, ran outreach programs to increase public awareness of wildfire risks. These included community workshops, drills, school education programs, and media campaigns at the start of the dry season to encourage safe practices (such as avoiding open fires, agricultural burning precautions, and reporting of ignitions). Informational brochures and local meetings were used in rural communities to emphasize the importance of clearing brush around private properties and maintaining defensible space. Overall, Israel's prevention strategy in 2024 focused on building resilient communities: reducing fuel loads near villages, improving water supply infrastructure for firefighting (e.g. mapping water points and adding forest water reservoirs), and ensuring the public is vigilant and prepared.

Detection and Rapid Response

Early detection of wildfires and a swift response upon ignition remained crucial priorities throughout the 2024 season. Israel has continued to upgrade its fire detection systems, combining modern technology with traditional methods. By 2024, a network of PTZ cameras had been expanded to monitor high-risk forests and wildlands in real time, automatically scanning for smoke plumes and alerting dispatch centers. These camera systems, some of which employ artificial intelligence for smoke recognition, greatly increase the chances of catching a fire in its initial stages. Additionally, the KKL-JNF maintained dozens of fire lookout towers staffed during peak danger periods, providing

visual surveillance over large forest tracts. Ground patrols were also intensified. Another innovative aspect was the use of volunteer "forest guardians", who are local residents trained to patrol and watch for fires in their communities and nearby parks. These layers of detection ensured that when fires did break out, they were detected quickly – often within minutes of ignition – enabling a rapid mobilization of firefighting resources.

On the response side, Israel bolstered its initial attack and rapid intervention capabilities in 2024, with a strong emphasis on local preparedness. Over the year, more than 600 new volunteers were recruited and trained to join municipal and regional rapid response teams. Many of these volunteers come from farming communities and small towns; they can often reach an emerging fire before the central forces, given their proximity.

To equip these responders, the government distributed 40 specialized pickup trucks (light fire engines) to fire stations around the country and 156 all-terrain vehicles (ATVs) outfitted with water tanks and pumps to volunteer firefighter units. These agile units can access rugged terrain and begin suppression efforts immediately, even before larger viecal arrive. By pre-positioning equipment and personnel in fire-prone regions, Israel has dramatically improved its response times – in many high-risk zones, an initial attack can now commence within 10 minutes or less of fire detection, often preventing small fires from erupting into major incidents.

Figure 205. All terrain vehicles for fire fighting in Israel.

Source: Fire and Rescue Authority, Ministry of Public Security, Israel.

These adaptive strategies in detection and rapid response proved their worth in 2024, as many fires – including those sparked by rockets or other security incidents – were controlled quickly, minimizing damage.

Aerial fire fighting

Aerial firefighting plays a central role in Israel's wildfire suppression strategy, and 2024 was an exceptionally busy year for the country's aerial squadron. The Israeli Fire and Rescue Authority operates a dedicated airborne unit consisting of 14 Air Tractor AT-802 firefighting airplanes and 6 firefighting helicopters equipped with Bambi Bucket water delivery systems.

Figure 206. Aerial fire fighting in Israel.

Source: Fire and Rescue Authority, Ministry of Public Security, Israel.

Throughout 2024, the aerial unit was mobilized at an extraordinary pace: it responded to 231 wildfire incidents and flew a total of 2 831 sorties during the year. In terms of flight time, this translated to about 2 075 hours of flying, of which 1 695 hours were in direct firefighting operations (the remainder being patrol, ferry, or training flights). This level of activity is significantly higher than in the previous two years – for comparison, 2023 saw roughly 911 operational flight hours, meaning 2024's fire flying hours increased by over 85%.

Technological Developments

2024 saw significant progress in Israel's pursuit of advanced technologies to support wildfire management. Several research and development (R&D) projects, initiated in recent years, reached important milestones in 2024, promising to enhance fire prevention, detection, and suppression capabilities in the near future. One flagship initiative is the "Smart Forest" remote monitoring system, which aims to use networks of sensors and cameras to continuously monitor forest conditions (such as temperature, humidity, and wind) and detect fires at the earliest possible moment. Pilot installations of Smart Forest sensors in the Carmel region have already demonstrated success in catching ignition signatures (like a sudden temperature spike or smoke detection) and automatically alerting dispatch centers.

In addition, Israel is developing intelligent navigation and decision-support software for firefighting units. One such tool provides off-road navigation for fire engines and teams, using up-to-date maps of trails and vegetation to suggest the fastest and safest routes to reach a fire in rough terrain. This can be critical for remote wildfires where response time is key and every minute saved in reaching the flame front counts. Another software project focuses on fire front and hotspot diagnosis using infrared imaging. By equipping drones and aircraft with advanced infrared cameras and processing the imagery with AI, the system can distinguish active flame fronts, smoldering hotspots, and unburned pockets in real time. This helps incident commanders target water drops and ground efforts where they are most needed, even though heavy smoke. All of these technological developments – from Smart Forest sensors to AI prediction models – were in advanced stages of development and integration by the end of 2024. The fire authorities plan to roll them out more broadly in the 2025 season. These innovations, many of which have been developed in collaboration with academic and industry partners, are expected to significantly improve early warning, situational awareness, and strategic decision-making in Israel's wildfire response. The continued investment in technology reflects a forward-looking strategy to cope with increasing wildfire challenges through smarter, data-driven approaches.

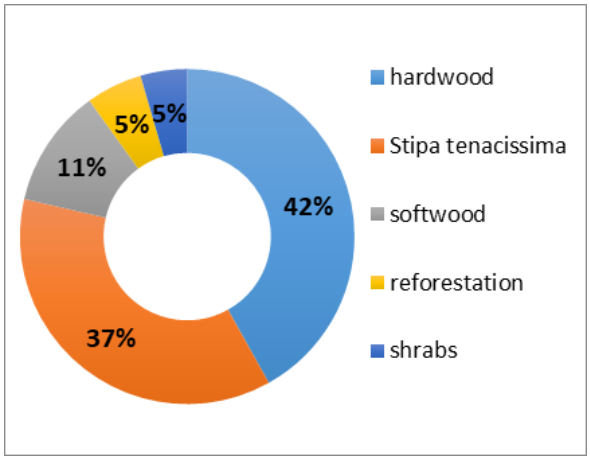
(Source: Fire and Rescue Authority, Ministry of Public Security, Israel).

1.4.2. Morocco

Background

In over 9 million hectares of forests domain representing more than 12 % of the national area, forest formations in Morocco cover an area of 5 814 000 ha (broadleaves, conifers ...) and 3 318 260 ha of stippa tenacissima (**Figure 207**), and are distributed among the different bioclimatic zones, from semi-arid to humid.

Figure 207. Composition of forest land in Morocco.



Source: Authors of the country report for Morocco.

As in Mediterranean countries, forested areas in Morocco are subject to a recurrent risk of fires, favoured by the extreme flammability of forest species during the summer.

The consequences of this risk are prejudicial in terms of social, economic and environmental components: the forest land is an open space where access (except rare situations) is free.

Riparian forest population live in a subsistence economy (using forests for their needs of construction wood and firewood, various non-timber forests products, and pasture). Consequently, forests are under a very strong human pressure.

Fire occurrence and affected surfaces

From 1960 to 2024

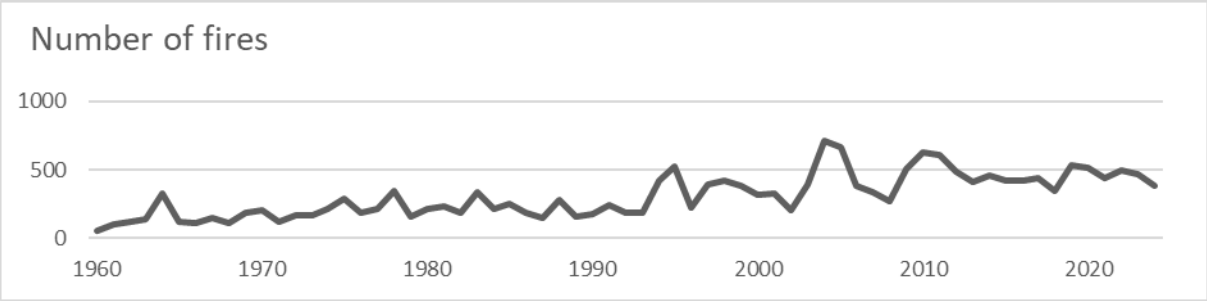
Through the analysis of annual reports of forest fires during the years 1960 to 2024, it appears an average of 308 fires per year for an annual average of affected area of 3345 ha (ANEF, 2024), with maxima of 22 762 ha in 2022 and 11 000 ha in 1983.

The absolute minimum is recorded in 2002 with 593 ha. While the burned area may seem limited in comparison to other Mediterranean countries sharing similar climate and ecological conditions, its significance becomes apparent when considering the pivotal roles forests play and the difficulties associated with their rehabilitation and post-fire regeneration within the national socio-economic and environmental framework. It's noteworthy that globally, since 1960, there has been a consistent upward trend in both the number of fires and the affected area.

However, when we compare the past two decades, there's a notable shift: the average number of fires has actually decreased from 475 between 2004-2013 to 445 forest fires in the most recent decade (2015-2024) (**Figure 208** and **Figure 209**).

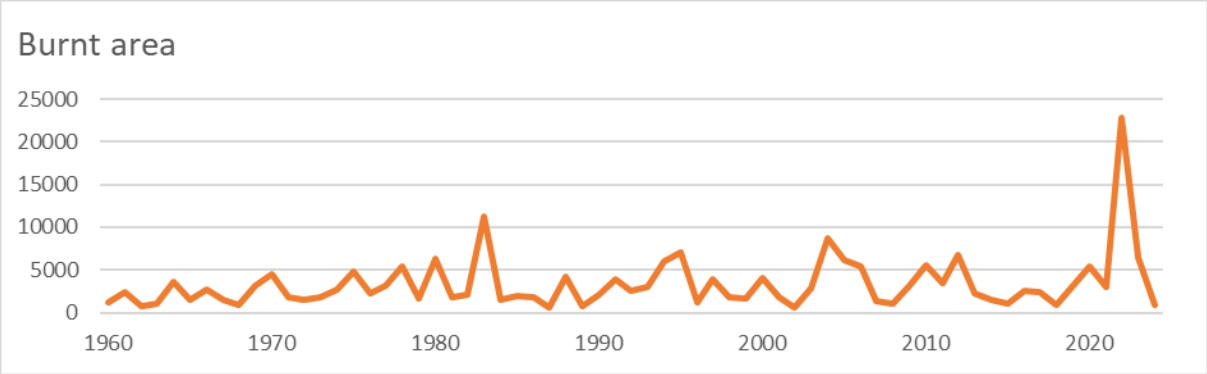
It's worth noting that the affected area per fire, which peaked at 10 hectares during the period from 2015 to 2024, has decreased compared to the national average recorded since 1960 (11 hectares per fire). (**Figure 210**)

Figure 208. Evolution of number of forest fires from 1960 to 2024 in Morocco.



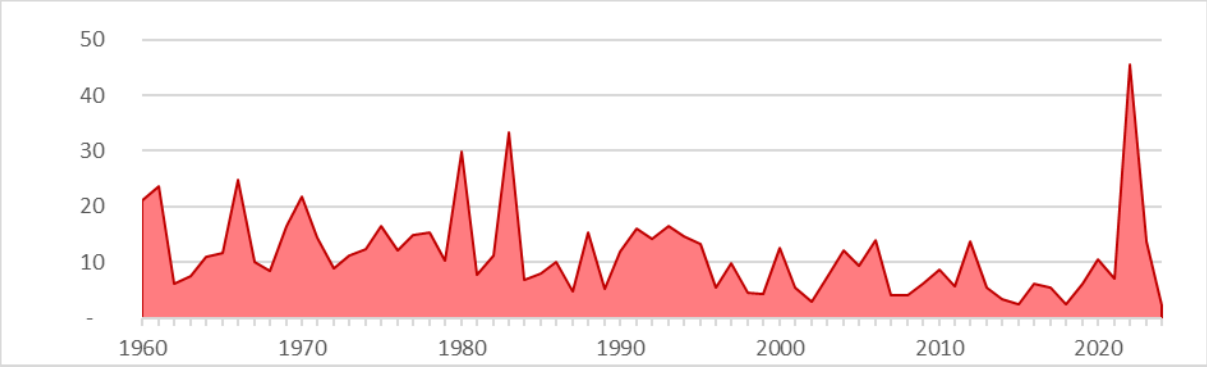
Source: ANEF, 2024.

Figure 209. Evolution of number of forest fire area from 1960 to 2024 in Morocco.



Source: ANEF, 2024.

Figure 210. Evolution of area affected per fire from 1960-2024 in Morocco.

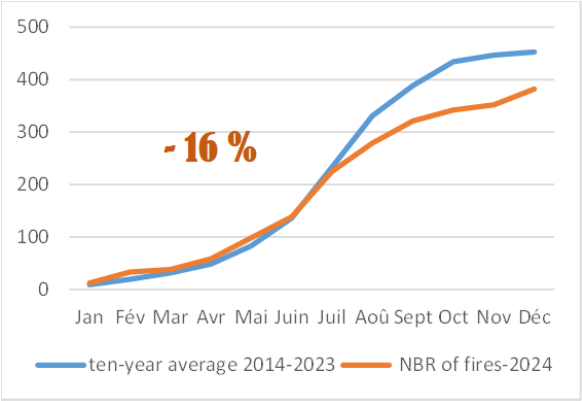


Source: ANEF, 2024.

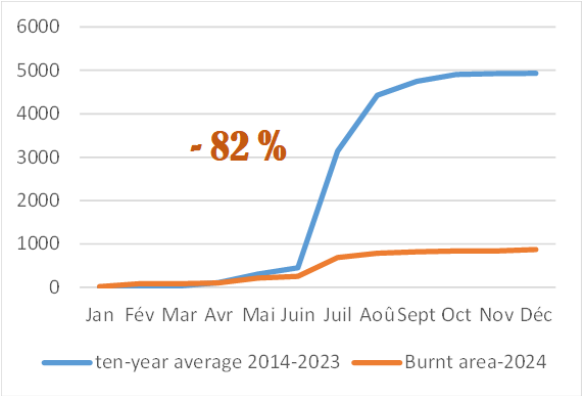
<u>2024 fire season</u>

In 2024, a total of 382 fire incidents were recorded, impacting a total area of 874 ha, averaging approximately 2 ha per fire. In 2024, there was a notable decrease in both the number of fires, falling by about 16%, and the burnt area, which dropped by about 82% compared to the previous decade (2014-2023).

Figure 211. Evolution of number of fires (a) and burned area (b) in 2024 compared to the last decade in Morocco.



(a)



(b)

Source: Authors of the country report for Morocco.

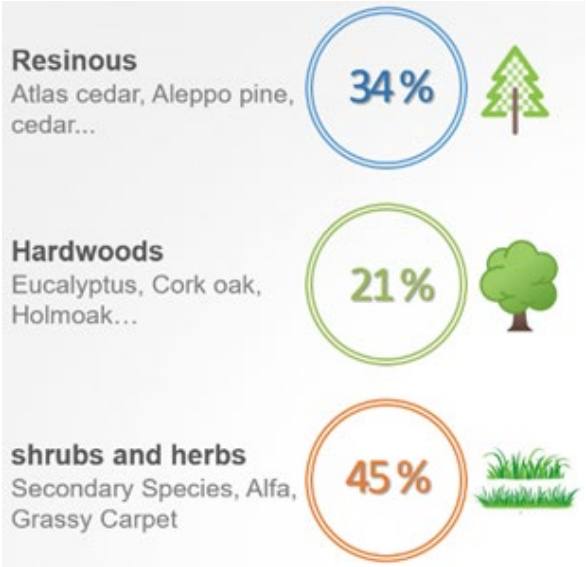
These results can be attributed to several factors, such as improved fire prevention and monitoring systems, the adoption of more appropriate land management strategies, as well as climatic conditions less conducive to fires. This decrease is a positive sign in the fight against fires, but it remains essential to maintain and strengthen these efforts to continue to limit the impacts of fires on ecosystems (**Figure 211**).

Distribution of fires

The distribution of fires recorded in 2024, based on the type of vegetation affected, is as follows:

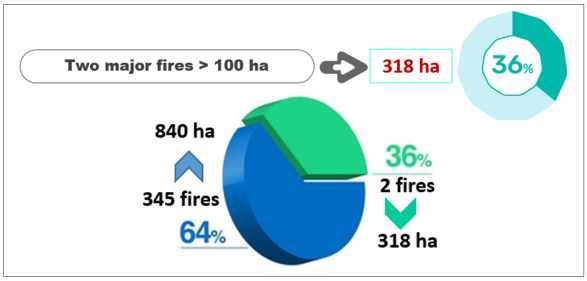
- For Wooded land formations, an area of 478 ha (55% of the total area burned in 2024) was affected by fires;
- The shrub and herbaceous covers have known fires that have covered an area of 396 ha, equivalent to 45% of the total area burned in 2024;
- Holm oak trees are in first place with an area of 174 ha affected, equivalent to 20% of the total area burned in 2024.

Figure 212. Burnt area distribution by affected vegetation type in 2024 in Morocco.



Source: Authors of the country report for Morocco.

Figure 213. Impact of the two major fires in Morocco in 2024.



Source: Authors of the country report for Morocco.

In 2024, only two big fires (1% of the total number of fire) have been ravaged an area of 318 ha (36 % of the total burned area). Human and material resources for all partners concerned were mobilized to deal with these fires.

Main achievement of forest fire management in 2024

A Community Engagement and Awareness Campaigns

The National Agency for Water and Forests has designated, and for the first time, May 21 as a National Day to raise awareness of forest fires dangers and to inform populations about fire prevention methods, the importance of maintaining fire-resistant landscapes, and procedures to follow in case of wildfires.

This specific environmental initiative aims to increase awareness of forest fires risks and the behaviours that must be adopted to avoid the outbreak of fires and maintain the environmental balance among various forest visitors and users, including residents of neighbouring neighbourhoods and villages, farmers, owners and exploiters of lands adjacent to forests, hunting associations and forest exploiters, as well as for campers, and sports practitioners.

In 2024, and on the occasion of the National Forest Fire Awareness Day, targeted actions were organized in schools and urban forests, with the aim of raising awareness among the younger generations and citizens living near sensitive natural areas.

Awareness campaigns were conducted in several schools where information sessions and interactive workshops were held to explain the risks associated with fires and the prevention measures to be adopted. At the same time, awareness-raising actions also took place in urban forests, with the distribution of brochures and demonstrations on fire-fighting methods.

These awareness campaigns reached approximately 27 000 students and forest visitors in 240 schools and 100 urban forests.

Figure 214. Community engagement and awareness campaigns in Morocco.

Source: Authors of the country report for Morocco.

B Implementation of the Incident Command System (ICS)

As part of the implementation of the strategic orientations of the Intersectoral Master Plan for Integrated Forest Fire Management (2023-2033), and more specifically of strategic axis No. 4 concerning the improvement of preparation processes, effectiveness and efficiency of interventions, the National Agency of Water and Forests organized a workshop for the exchange and sharing of experiences.

This workshop, which took place from October 15 to 17, 2024 in Marrakech, was led by experts from the United States Forest Service (US Forest Service) specialized in forest fires. Participants included the Ministry of the Interior, Civil Protection, the Royal Armed Forces, the Royal Air Force, the Royal Gendarmerie and auxiliary forces.

Figure 215. Workshop in Marrakech (Morocco), October 2024.

Source: Authors of the country report for Morocco.

The main objective of this event was to examine the opportunity to establish a unified incident command system (ICS) for firefighting operations.

The discussions and exchanges made it possible to identify avenues for collaboration and improvement of existing practices, thus strengthening the capacities of all stakeholders to respond effectively to forest fires.

C Strengthening the land fleets to combat forest fires

The National Water and Forest Agency worked to strengthen the firefighting strategy by strengthening the fleet of Initial Intervention Vehicles, through the acquisition of 20 new vehicles (VPI) with a tank capacity of 600 litres.

The total number of first response vehicles now stands at 134, which will be strategically pre-positioned in the most vulnerable and high-risk forests during the summer season.

Figure 216. New vehicles of the land fleet in Morocco.

Source: Authors of the country report for Morocco.

Figure 217. Some vehicles of the land fleet in Morocco.

Source: Authors of the country report for Morocco.

(Source: National Centre for Forest Climate Risk Management, National Water and Forest Agency - Rabat, Morocco).

2. The European Forest Fire Information System (EFFIS)

The European Forest Fire Information System (EFFIS) has been established jointly by the European Commission services (DG ENV and JRC) and the relevant fire services in the EU Member States and European countries (Forest Services and Civil Protection services). Research activities for the development of the system initiated at JRC in 1998 and the first EFFIS operations were in the year 2000.

In 2003, EFFIS was embedded in the new Regulation (EC) No 2152/2003 (Forest Focus) [7] of the European Council and Parliament on monitoring of forests and environmental interactions until it expired in 2006. Since then, EFFIS operated as a voluntary system of information on wildfires until the end of 2015, when it became part of the EU Copernicus program, under the Emergency Management Services.

Acting as the focal point of information on forest fires, EFFIS supports the national services in charge of wildfire management. Currently, the EFFIS network is made up of 43 countries in Europe, Middle East and North Africa. EFFIS provides specific support to the Emergency Response Coordinating Centre (ERCC) of Civil Protection as regards near-real time information on wildfires during the fire campaigns and assists other DGs through the provision both pre-fire and post-fire information on wildfire regimes and impacts. It provides information that supports the needs of the European Parliament with regards to wildfire management, impact in natural protected areas and harmonized information on forest fires in the EU.

EFFIS also centralises the national fire data that the countries collect through their national forest fire programmes in the so-called EFFIS Fire Database. The EFFIS web services allow users to access near-real time and historical information on wildfires in Europe, Middle East and North Africa.

EFFIS provides a continuous monitoring of the fire situation in Europe and the Mediterranean area and regularly sends updates to EC services during the main fire season. The information about the on-going fire season is continuously updated on the EFFIS web site (up to 8 times, daily), which can be interactively queried. EFFIS provides daily meteorological fire danger [8] maps and forecasts of fire danger up to 9 days in advance, updated maps of the latest active fires, wildfire perimeters and post-fire evaluation of damage.

The EFFIS module for the assessment of meteorological forest fire danger is the EFFIS Danger Forecast. This module forecasts forest fire danger in Europe, part of North Africa and the Middle East, on the basis of the Canadian Fire Weather Index (FWI), allowing a harmonized evaluation to be made of the forest fire danger situation throughout Europe and neighbouring countries.

The EFFIS Rapid Damage Assessment (RDA) module estimates the damage from forest fires in Europe and neighboring countries. Since 2000, satellite imagery has been used annually to map burnt areas. The process was more automated after 2003, using MODIS 250m data for near real-time processing. EFFIS now processes two daily image mosaics of Europe to create burnt area maps.

Since 2018, Sentinel-2 imagery has also been utilized, allowing for the mapping of fires smaller than 30 hectares and providing more precise perimeters for fires initially mapped from MODIS imagery. On average, EFFIS maps about 95% of the total area burnt in Europe each year. Additionally, the system analyzes the types of land cover classes [9][10] affected by these fires.

3. Wildfires in 2024: Country reports from EFFIS

The EFFIS Danger Forecast

The EFFIS Danger Forecast was developed to support the European Commission's DG for the Environment and EU Member State forest fire services. Member States steadily requested to extend its operational period: in 2002 it was six months (May – October), then in2006 nine months (February - October) and since 2008, the system operates continuously.

The geographic extent has been enlarged over the years from the Mediterranean region to the whole of Europe and MENA countries.

The system started using forecasted data provided by Météo-France (https://meteofrance.com/) with a spatial resolution of around 50 km. Then over time other providers were included, such as DWD (Deutscher Wetterdienst - https://www.dwd.de) and ECMWF (European Centre for Medium-Range Weather Forecast - https://www.ecmwf.int/) improving the resolution. Now the system runs with three different data sets from three providers: ECMWF (the primary), Météo-France and DWD; with a spatial resolution in a range from around 10 km to 25 km.

In the following chapters the fire danger trends assessed by EFFIS in the different countries for the 2024 fire season are presented, comparing them with long term trends. To make this analysis we use the Fire weather Index (FWI) calculated on the base of the ECMWF ERA5 reanalysis dataset (https://cds.climate.copernicus.eu/cdsapp#!/dataset/cems-fire-historical?tab=overview).

Through the Danger Forecast module of EFFIS the situation has been continuously monitored and the risk level analysed and mapped.

The fire weather index for the current year is compared to the 1980-2023 long-term minimum, maximum, 10th -90th percentiles, and average. This comparison helps identify the occurrence of extreme fire weather conditions.

The methodology calculates the daily FWI for each country over the entire time series, then determine the minimum, maximum, average, 10th percentile, and 90th percentile for each country.

Mapped burnt areas

The country chapters also detail the burnt areas mapped in each country in 2024.

European countries (EU and non-EU) are listed alphabetically, followed by the MENA countries.

Burnt areas are split into different land cover types using the CORINE Land Cover (CLC) 2018 database unless otherwise specified.

The figures may also include agricultural and urban areas that were burned during the wildfires, or prescribed fires, which may not strictly be considered forest fires in the countries concerned. The breakdown of totals into the different land cover types gives some ideas of the different areas affected.

NOTE

In 2024, fires smaller than 30 ha were mapped. These figures are displayed in the tables of land cover types and the charts of monthly numbers of fires/burnt areas.

However, when comparing the latest data with the historic records of previous years, a filter has been applied excluding fires under 30 ha, in order to make consistent comparisons. This applies to the charts showing the annual time series of mapped numbers of fires/burnt areas.

It is also worth noting, however, that almost all burnt area results from fires larger than 30 ha.

3.1. EFFIS Rapid Damage Assessment: 2024 results

The EFFIS Rapid Damage Assessment module initially used MODIS satellite imagery (250m resolution) to provide reliable and harmonized estimates of burnt areas. This methodology allowed mapping of fires of about 30 ha or larger. In 2018, incorporating Sentinel-2 imagery (20m), enabled mapping fires as small as 5 ha.

When comparing current year figures with pre-2018 figures, only fires larger than 30 ha are considered. Higher resolution data is reported for the 2024 season.

While EFFIS maps only a fraction of the number of fires in the countries, these account for roughly 95% of the total burnt area reported by the countries.

EFFIS maps all fires affecting natural land, including prescribed fires for management or conservation. It excludes from the statistics non-wildland fires, while including fires affecting grasslands, shrublands, and other wooded areas. EFFIS estimations include agricultural or urban land affected by fire. Fires mapped in EFFIS include land cover information for each event. However, total burnt areas may differ from national statistics that only consider fires in forest areas. **Table 58**. shows the total area burned in 2024, based on satellite imagery analysis.

Burnt area statistics by land cover type were obtained by overlaying mapped burnt areas with European CORINE Land Cover (CLC) data, generating comparable damage assessment across EU countries.

The next chapters give the EFFIS results for each affected country, listed alphabetically, followed by a section on MENA countries.

Figure 218 shows the fire scars from the 2024 forest fire season. EFFIS mapped fires in 42 countries, with a total burnt area of 1 866 900 ha, around twice that of 2023. Ukraine accounted for over half of this total (965 360 ha), exceeding the entire burnt area recorded across Europe, the Middle East, and North Africa in 2023.

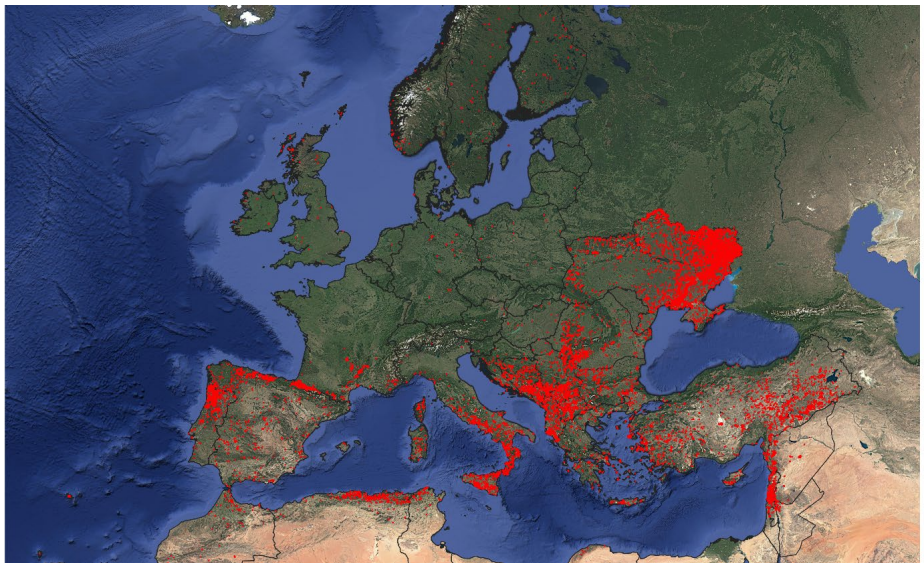
Table 58. Areas mapped in 2024 from satellite.

Country	*Area (Ha)*	*Number of Fires*
Albania	49 189	453
Algeria	10 354	369
Austria	37	3
Bosnia & Herzegovina	45 536	351
Bulgaria	45 435	256
Croatia	16 286	65
Cyprus	3 529	28
Denmark	47	8
Finland	601	61
France	17 321	605
Germany	1 144	48
Greece	43 593	301
Hungary	1 262	15
Ireland	200	10
Israel	17 274	205
Italy	50 844	1 500
Jordan	1 860	49
Kosovo under UNSCR 1244	13 250	246
Lebanon	16 437	717
Lithuania	8	2
Libya	285	12
Moldova	68	1
Montenegro	26 373	340
Morocco	1 074	73
Netherlands	35	2
North Macedonia	97 660	250
Norway	805	42
Palestinian Territory	1 198	12
Poland	211	40
Portugal	147 461	735
Romania	43 003	926
Serbia	43 004	584
Slovakia	6	2
Slovenia	79	2
Spain	47 607	769
Sweden	589	49
Switzerland	3	1
Syria	22 683	254
Tunisia	1 469	78
Türkiye	131 223	1 663
UK	2 497	39
Ukraine	965 360	8 753
Total	**1 866 900**	**19 919**

Summary	**Total Area (Ha)**
EU27	419 298
Other European countries	1 374 968
Middle East and North Africa	72 634
Natura2000/other protected sites	147 609

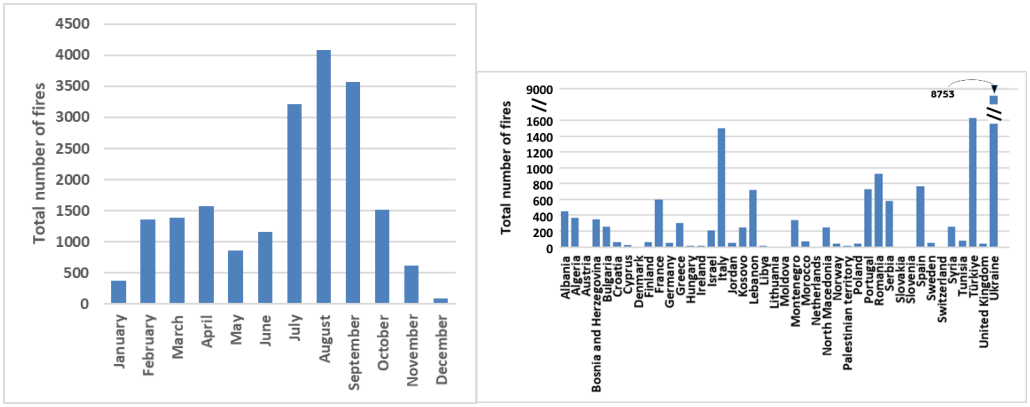
Source: EFFIS.

Figure 218. Burnt scars produced by wildland fires during the 2024 fire season in EFFIS countries.



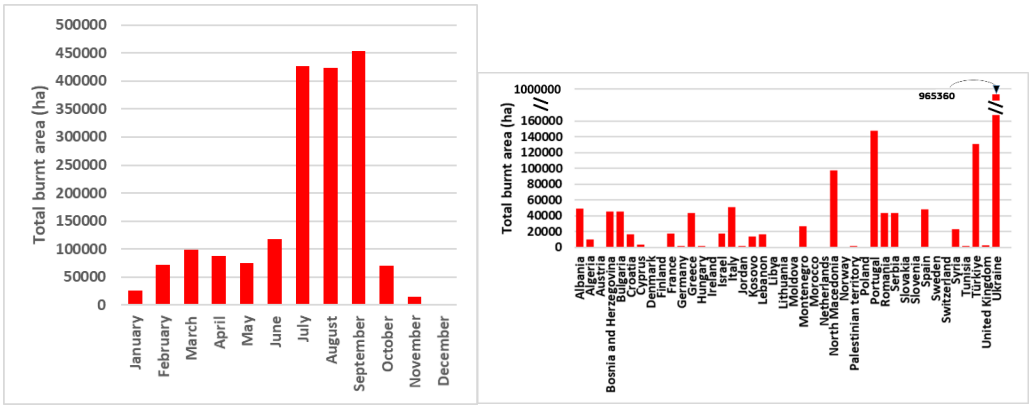
Source: EFFIS.

Figure 219. Total number of fires mapped by month and country in 2024.



Source: EFFIS.

Figure 220. Total burnt area of fires mapped by month and country in 2024.



Source: EFFIS.

Affected areas in Natura2000 sites

Analyzing affected areas in Natura2000 sites is of particular interest, as these areas contain especially important habitats for endangered plant and animal species.

The category of Natura2000 areas only exists in the countries of the European Union, but some other countries also report equivalent protected areas. The area burnt within the Natura2000 sites and other protected areas for which there is information is presented in **Table 59**.

Table 59. area burnt within the Natura2000 sites and other protected areas.

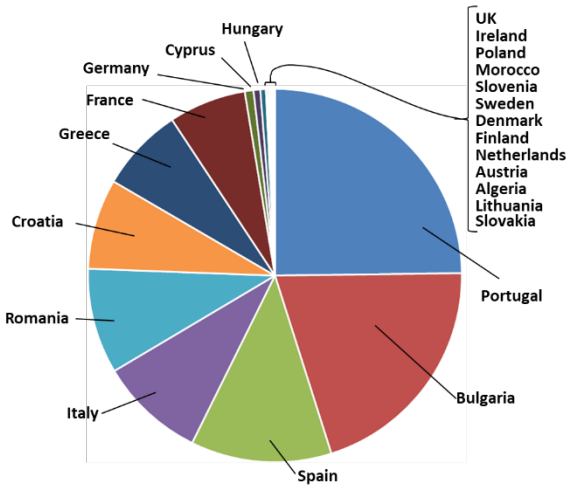
Country	Area (Ha)	% of Natura2000 Area	Number of Fires
Austria	17.0	0.00	1
Bulgaria	29 975.8	0.53	146
Croatia	11 545.5	0.34	38
Cyprus	860.0	0.36	6
Denmark	47.0	0.01	8
Finland	44.6	0.00	6
France	9 867.7	0.11	314
Germany	1 113.9	0.02	46
Greece	10 782.7	0.22	171
Hungary	707.2	0.03	11
Ireland	125.8	0.01	6
Italy	13 506.6	0.19	475
Lithuania	7.0	0.00	1
Netherlands	35.0	0.00	2
Poland	113.0	0.00	27
Portugal	36 661.3	1.53	239
Romania	13 465.8	0.17	293
Slovakia	2.0	0.00	1
Slovenia	79.0	0.01	2
Spain	17 982.0	0.11	276
Sweden	78.3	0.00	8
EU27 total	**147 017.2**		**2 077**
Algeria	15.4		3
Lebanon	241.9		5
Morocco	96.0		3
UK	238.4		12
Non-EU total	**591.7**		**23**
Total (all)	**147 609**		**2 100**

Source: EFFIS.

Note: mapped burnt areas from all fires are presented, including also those that are prescribed for fire management or conservation purposes.

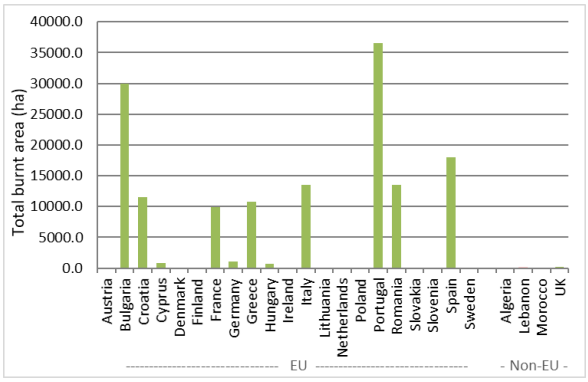
Fires were mapped in 21 of the 27 EU member states (all except Belgium, Czech Republic, Estonia, Luxembourg, Latvia and Malta). Data for non-European protected sites was available for 4 countries. The total burnt area in Natura2000 and other protected sites in 2024 was 147 609 ha, around 70 % of the amount recorded in 2023 and less than half of the 2022 total. Portugal was the most affected country in 2024, followed by Bulgaria and Spain. These three countries accounted for just under 60% of the total area burnt in protected areas in 2024 (**Figure 221**, **Figure 222**).

Figure 221. Total area burnt in Natura2000 sites and other protected areas in 2024.



Source: EFFIS.

Figure 222. Total mapped burnt area in Natura2000 sites and other protected areas in 2024.



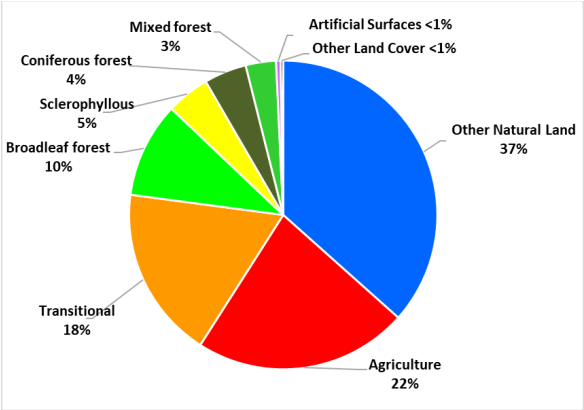
Source: EFFIS.

Affected land cover types

N.B. Totals from Ukraine are excluded from this section because its burnt area was significantly higher than in any other country covered by EFFIS (amounting to half of the total mapped across the entire region), disproportionately affecting the results. Ukraine figures are discussed separately in section 3.2.35 on page 227.

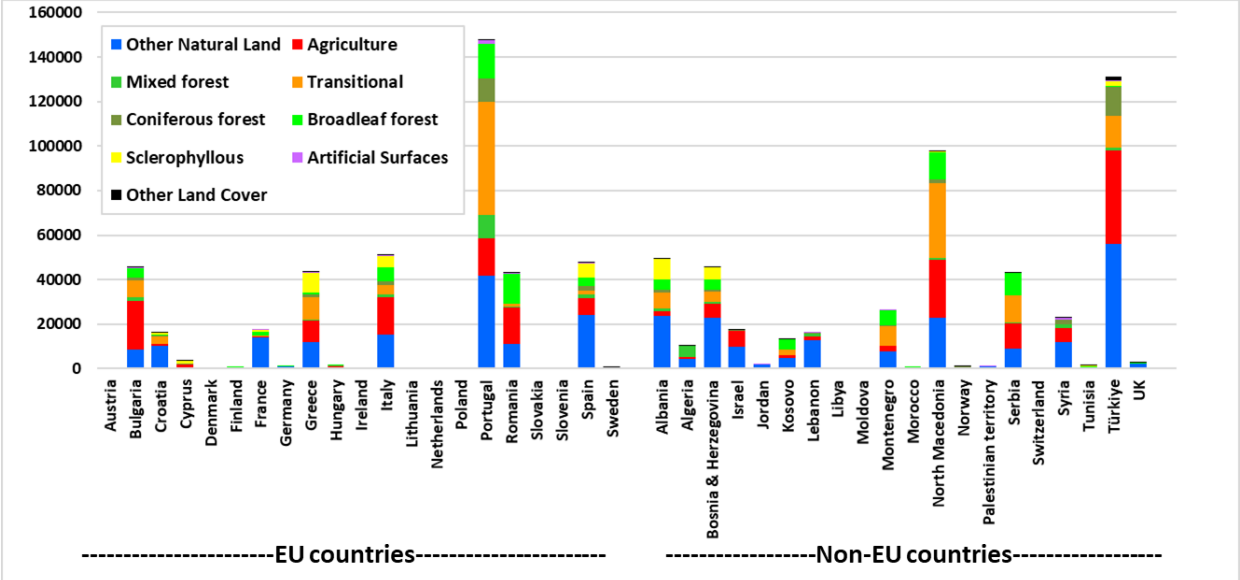
In 2024, excluding figures from Ukraine, around one third of the total burnt area occurred in Other Natural Land as identified by the 2018 CORINE Land Cover Type classification system and the 2019 Copernicus Globcover classification in regions where Corine was not available. A further 22 % was mapped in Agricultural Land, while 17% affected forest (Broadleaf, Conifer or Mixed), a slightly lower proportion than in recent years. (**Figure 223**, **Figure 224**).

Figure 223. Proportions of land cover types affected in 2024 (all countries *excluding Ukraine*).



Source: EFFIS.

Figure 224. Burnt area in each country in 2024 by CORINE land class (*excluding Ukraine*).



Source: EFFIS.

European countries

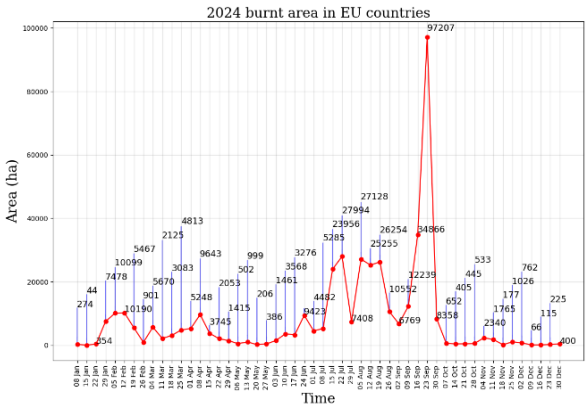
In 2024, fires were mapped in 21 of the EU27 countries (all except Belgium, Czech Republic, Estonia, Luxembourg, Latvia and Malta), burning 419 298 ha, around 80% of the amount recorded in 2023 and only half of 2022's total.

The main peak occurred in September when some of the largest fires of the year were mapped in Portugal.

Of this total, 147 017 ha occurred on Natura2000 sites, less than has been mapped in the last two years.

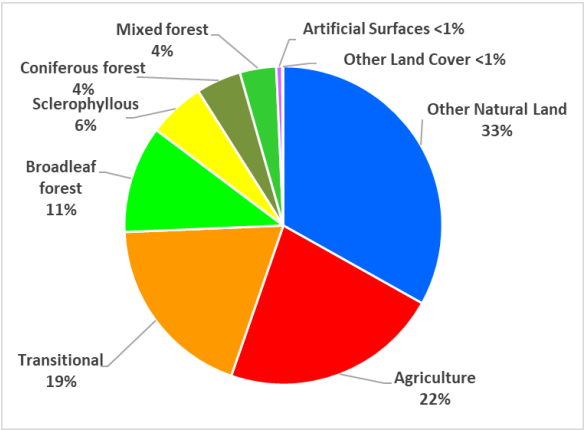
This is equivalent to around 35 % of the total burnt area in European countries, a lower proportion than has been recorded in the last two years. Just under one half of the damage to protected areas came from two countries (Portugal and Bulgaria).

Figure 225. Burnt area weekly evolution in EU27 countries in 2024.



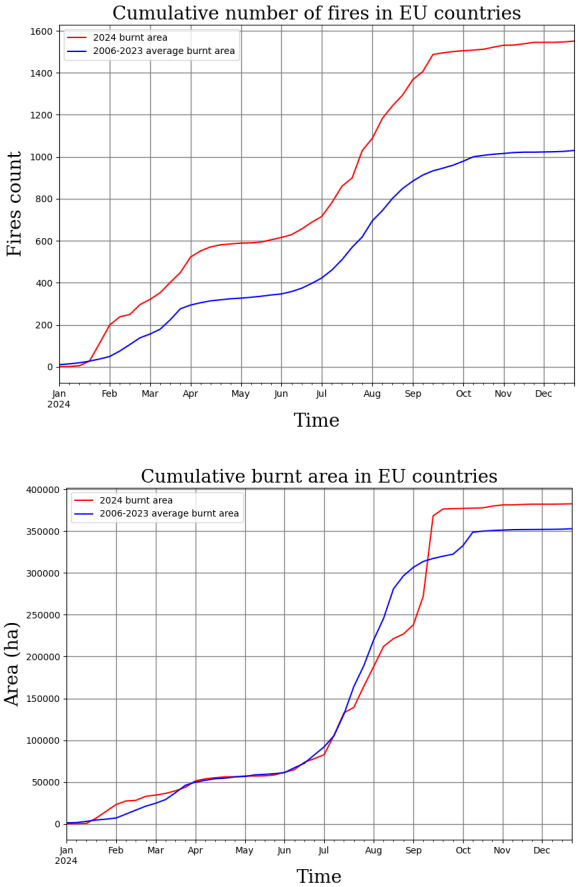
Source: EFFIS.

Figure 226. Proportions of land cover types affected in EU27 countries in 2024.



Source: EFFIS.

Figure 227. Cumulative number of fires and burnt area in 2024 in EU27 countries (red line) compared with the 2006-2023 average (blue line). Fires are filtered to include only those ≥30 ha to allow the comparison with previous years.



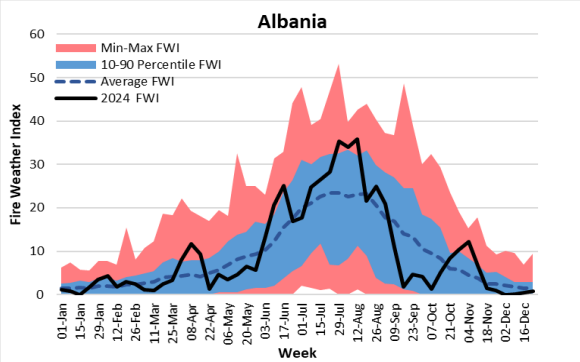
Source: EFFIS.

3.2. Country reports

3.2.1. Albania

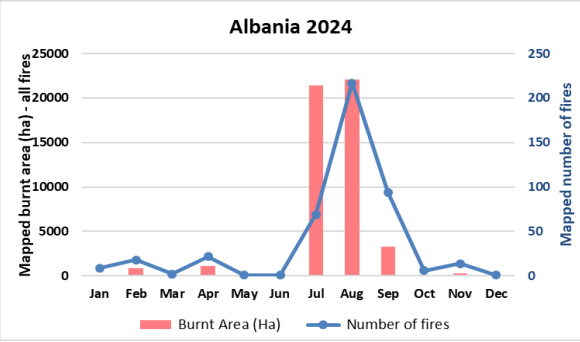
The 2024 fire season in Albania was the most extreme for the last 6 years. 49 189 ha from 453 fires were mapped, mostly in July and August. 19 fires exceeded 500 ha, including one of over 4 000 ha in July.

Figure 228. FWI information for Albania.



Source: EFFIS.

Figure 229. Monthly figures for Albania in 2024.



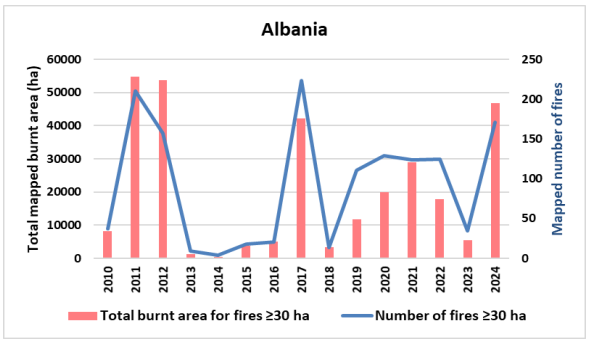
Source: EFFIS.

Table 60. BA (ha) in Albania by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	4681	9.52
Coniferous forest	1281	2.60
Mixed forest	978	1.99
Other Natural Land	23571	47.92
Sclerophyllous vegetation	8931	18.16
Transitional	7352	14.95
Agriculture	2319	4.72
Artificial Surfaces	72	0.15
Other Land Cover	3	0.01
TOTAL	**49189**	**100**

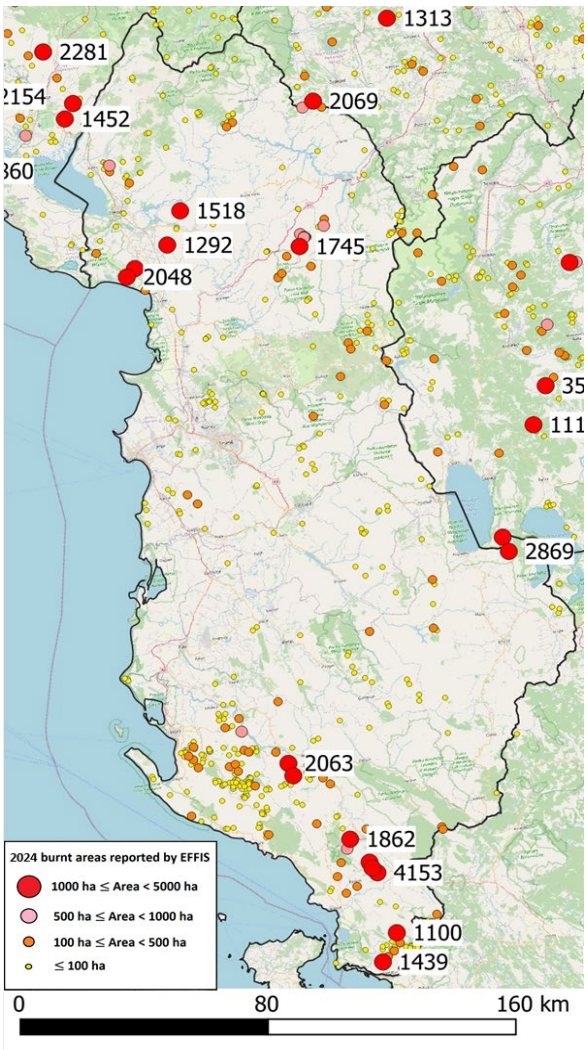
Source: EFFIS.

Figure 230. Annual BA of fires ≥ 30 ha in Albania.



Source: EFFIS.

Figure 231. Locations of fires in Albania in 2024.



Source: EFFIS.

3.2.2. Austria

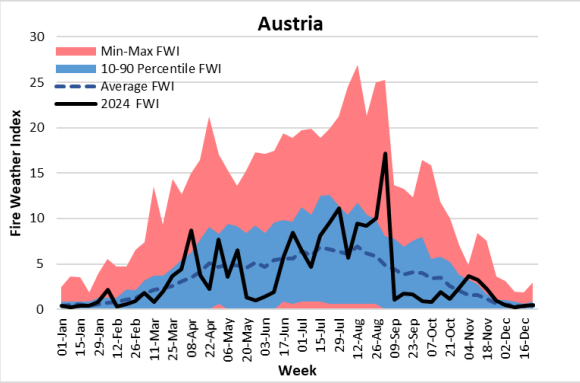
Only three fires were mapped in Austria in 2024, making it the lightest season for several years. Of the total of 37 ha mapped, one fire of 17 ha occurred on a Natura2000 site.

Table 61. BA (ha) in Austria by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	6	16.22
Mixed forest	3	8.11
Other Natural Land	17	45.95
Agriculture	11	29.73
TOTAL	**37**	**100**

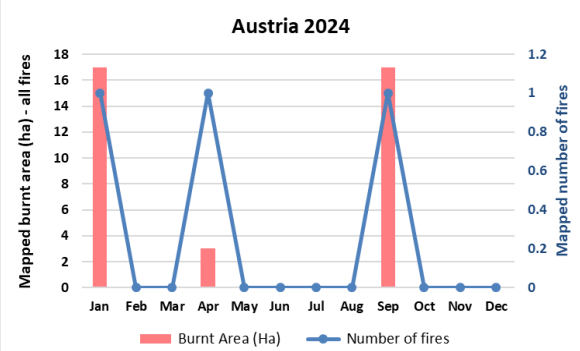
Source: EFFIS.

Figure 232. FWI information for Austria.



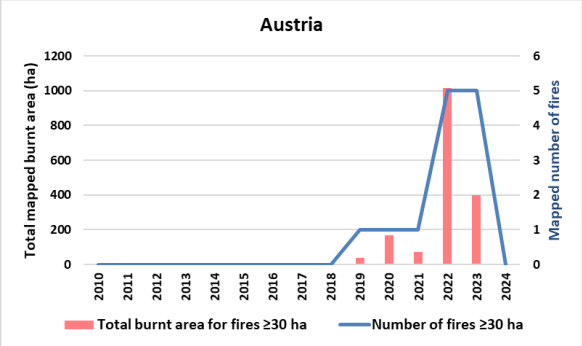
Source: EFFIS.

Figure 233. Monthly figures for Austria in 2024.



Source: EFFIS.

Figure 234. Annual BA of fires ≥ 30 ha in Austria.

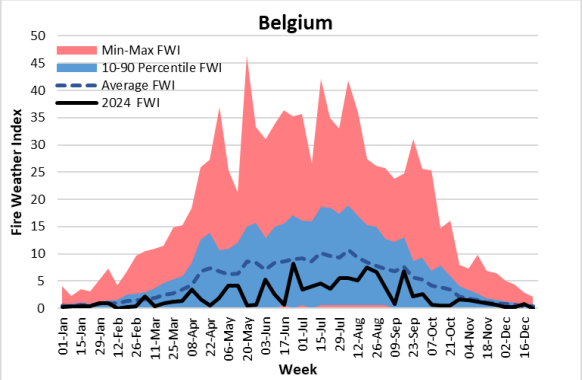


Source: EFFIS.

3.2.3. Belgium

No fires were mapped in 2024. The Fire Weather Index was below average levels for most of the year.

Figure 235. FWI information for Belgium.

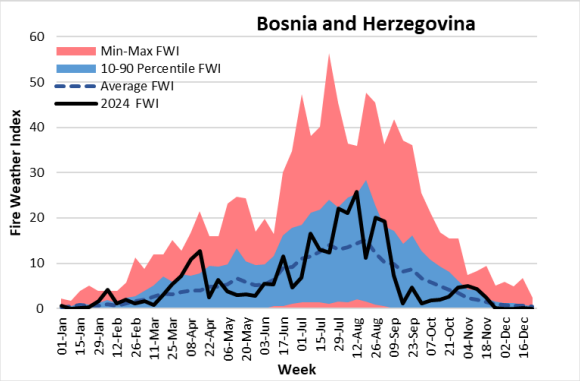


Source: EFFIS.

3.2.4. Bosnia and Herzegovina

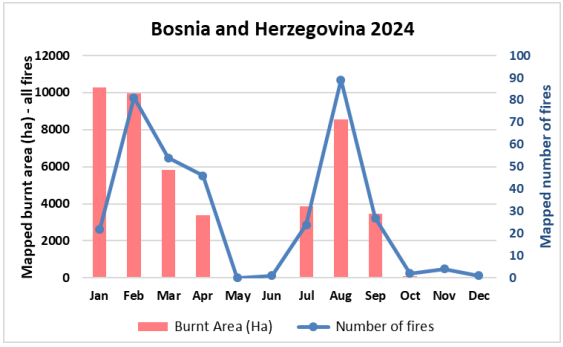
A total of 45 536 was mapped from 351 fires in Bosnia, significantly more than in 2023 but less than the preceding three years. The first peak of activity was early in the year when the two largest fires of the season occurred. A second peak occurred around August and included several other large fires. In total 19 fires of over 500 ha were mapped, of which 8 exceeded 1 000 ha. Around half of the total burnt area occurred in Other Natural Land (**Table 62**).

Figure 236. FWI information for Bosnia and Herzegovina.



Source: EFFIS.

Figure 237. Monthly figures for Bosnia and Herzegovina in 2024.



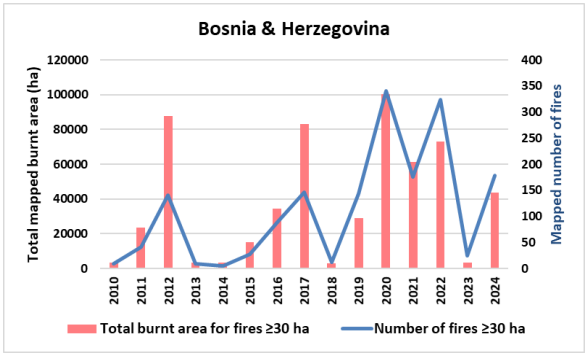
Source: EFFIS.

Table 62. BA (ha) in Bosnia-Herzegovina by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	4873	10.70
Coniferous forest	884	1.94
Mixed forest	960	2.11
Other Natural Land	22927	50.35
Sclerophyllous vegetation	5281	11.60
Transitional	4260	9.36
Agriculture	6290	13.81
Artificial Surfaces	18	0.04
Other Land Cover	42	0.09
TOTAL	**45536**	**100**

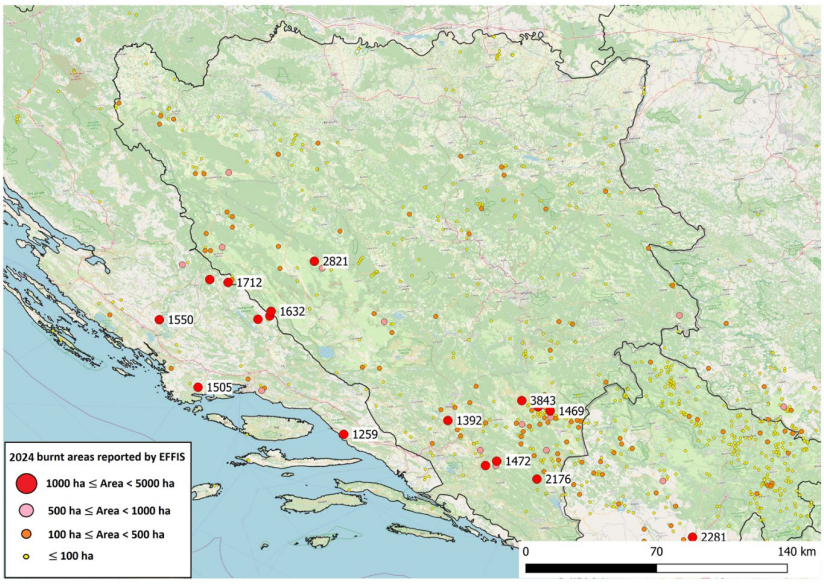
Source: EFFIS.

Figure 238. Annual BA of fires ≥ 30 ha in Bosnia and Herzegovina.



Source: EFFIS.

Figure 239. Locations of fires in Bosnia and Herzegovina in 2024.



Source: EFFIS.

3.2.5. Bulgaria

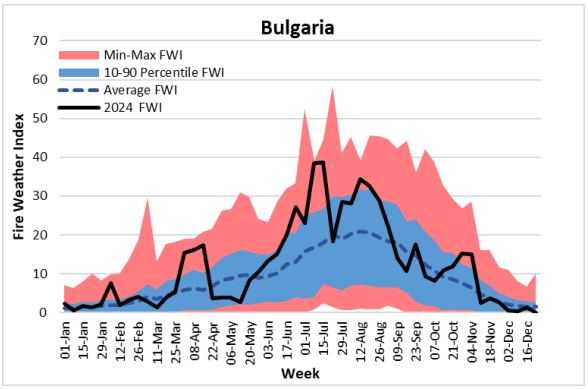
Bulgaria experienced its worst fire season in over a decade, with 45 435 hectares burnt from 256 fires, exceeding the combined totals of the previous four years. The main damage was in July, with the two largest of approximately 8,000 ha each and 15 others exceeding 500 ha.

Table 63. BA (ha) in Bulgaria by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	4345	9.56
Coniferous forest	1275	2.81
Mixed forest	1637	3.60
Other Natural Land	8437	18.57
Transitional	7578	16.68
Agriculture	21865	48.12
Artificial Surfaces	254	0.56
Other Land Cover	44	0.10
TOTAL	**45435**	**100**

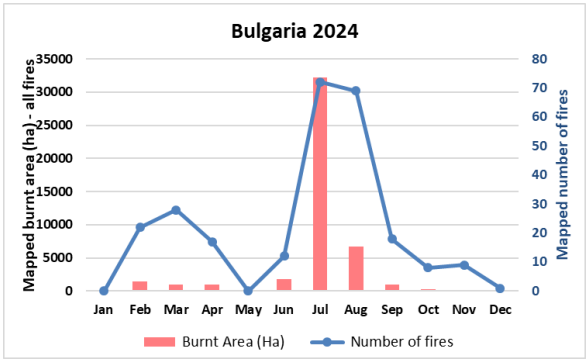
Souce: EFFIS.

Figure 240. FWI Index information for Bulgaria.



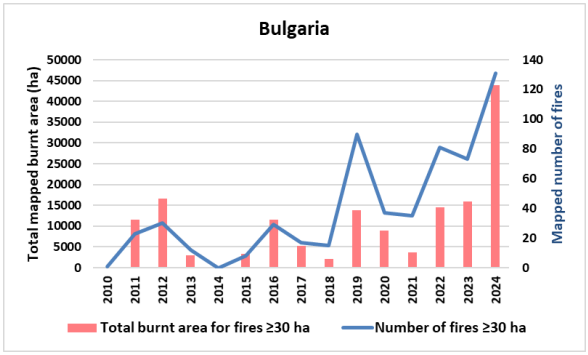
Source: EFFIS.

Figure 241. Monthly figures for Bulgaria in 2024.



Source: EFFIS.

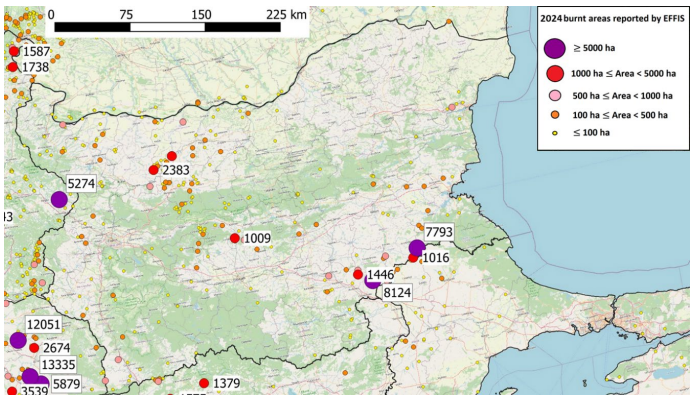
Figure 242. Annual BA of fires ≥ 30 ha in Bulgaria.



Source: EFFIS.

Of the annual total, around two-thirds (29 976 ha) occurred on Natura2000 sites, amounting to 0.53 % of the total protected land in Bulgaria. Agricultural land was particularly impacted in 2024 (**Table 63**).

Figure 243. Locations of fires in Bulgaria in 2024.

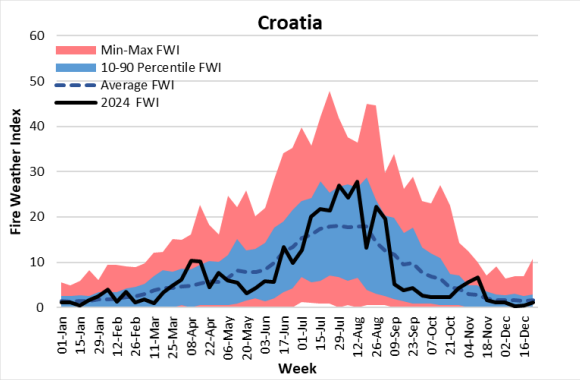


Source: EFFIS.

3.2.6. Croatia

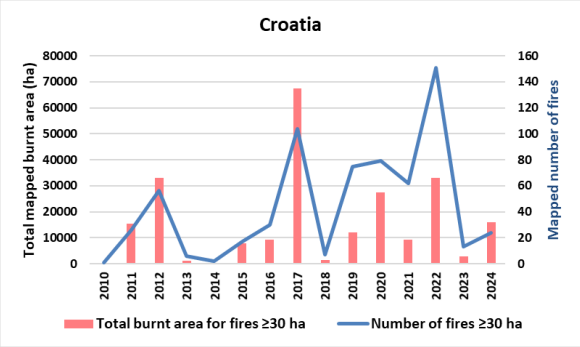
There were 65 mapped fires in Croatia in 2024, burning a total of 16 286 ha. Although this was significantly more than in 2023, that was an unusually light year, and the 2024 total was close to the long term average. Half of the damage occurred in August, but the largest fire of the season, over 2 500 ha in Hrvace municipality, was at the end of January. Seven other fires, all in August or late July, exceeded 1 000 ha. Of the total, 11 546 ha (27 % of the total) occurred on Natura2000 sites, amounting to 0.34 % of the protected areas in the country.

Figure 244. FWI information for Croatia.



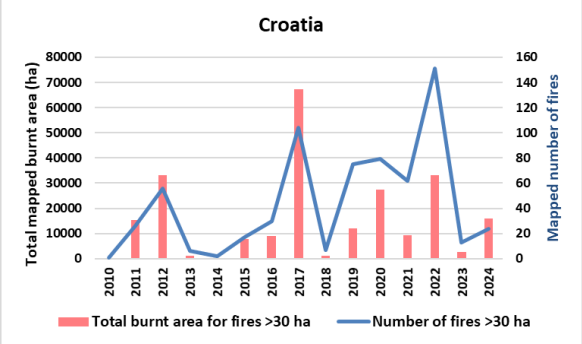
Source: EFFIS.

Figure 245. Monthly figures for Croatia in 2024.



Source: EFFIS.

Figure 246. Annual BA of fires ≥ 30 ha in Croatia.



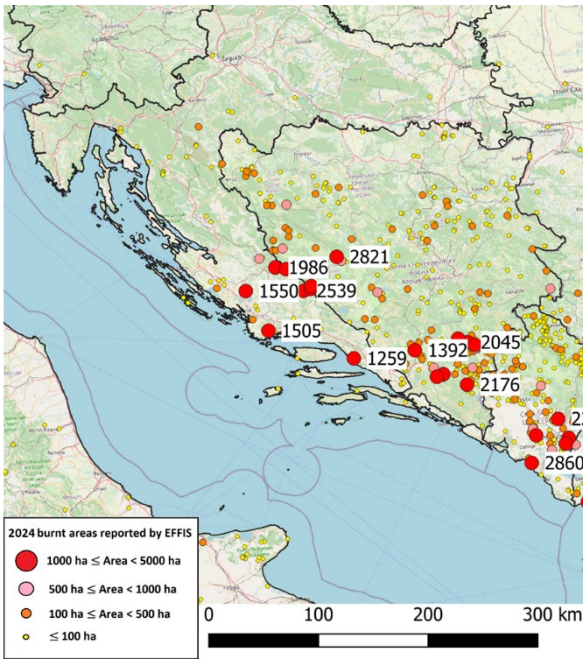
Source: EFFIS.

Table 64. BA (ha) in Croatia by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	460	2.82
Coniferous forest	425	2.61
Mixed forest	44	0.27
Other Natural Land	10212	62.70
Sclerophyllous vegetation	917	5.63
Transitional	3232	19.85
Agriculture	936	5.75
Artificial Surfaces	59	0.36
Other Land Cover	1	0.01
TOTAL	**16286**	**100**

Source: EFFIS.

Figure 247. Locations of fires in Croatia in 2024.

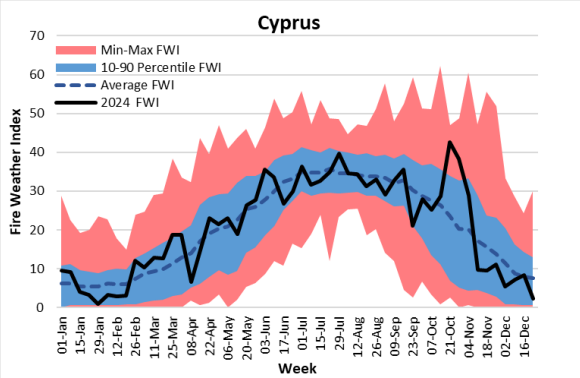


Source: EFFIS.

3.2.7. Cyprus

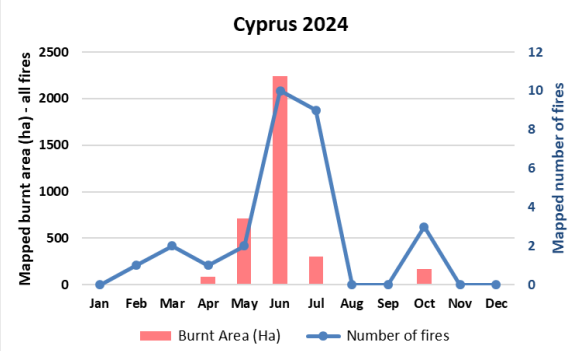
In 2024, 28 fires were mapped in Cyprus covering 3 529 ha, somewhat more than was recorded in the previous two years. Over two thirds of the damage occurred in June, including the largest fire of the year which covered over 1 600 ha in Paphos district. A total of 860 ha was mapped on Natura2000 sites, accounting for a quarter of the total and 0.36% of the total protected land of the country.

Figure 248. FWI information for Cyprus.



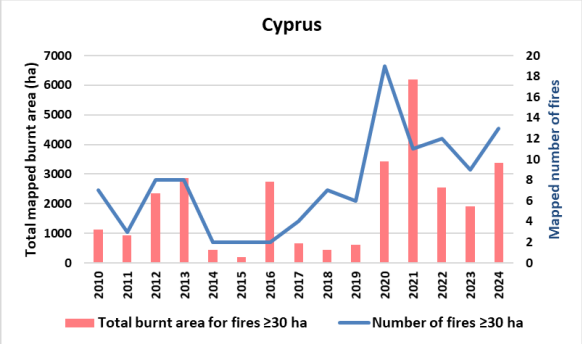
Source: EFFIS.

Figure 249. Monthly figures for Cyprus in 2024.



Source: EFFIS.

Figure 250. Annual BA of fires ≥ 30 ha in Cyprus.



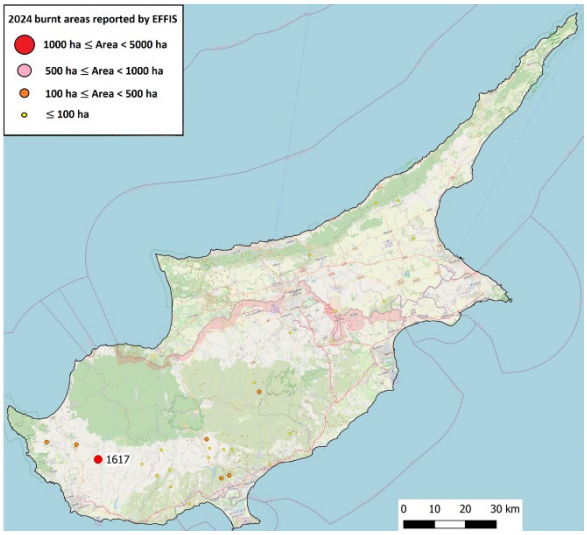
Source: EFFIS.

Table 65. BA (ha) in Cyprus by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Coniferous forest	90	2.55
Other Natural Land	49	1.39
Sclerophyllous vegetation	1389	39.35
Transitional	14	0.40
Agriculture	1957	55.46
Artificial Surfaces	20	0.57
Other Land Cover	10	0.28
TOTAL	**3529**	**100**

Source: EFFIS.

Figure 251. Locations of fires in Cyprus in 2024.

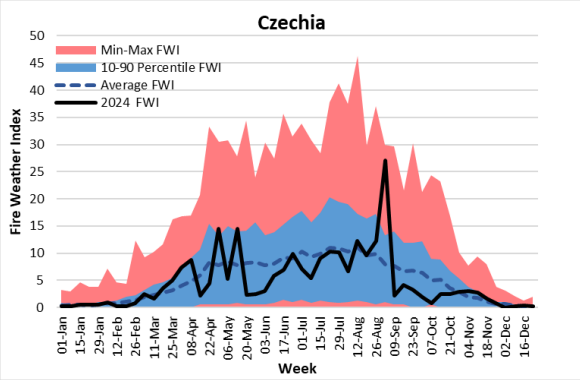


Source: EFFIS.

3.2.8. Czech Republic

No fires were mapped in 2024. The Fire Weather Index was mostly at or below average levels except for some periods in the spring and a short peak at the beginning of September.

Figure 252. FWI information for Czech Republic.

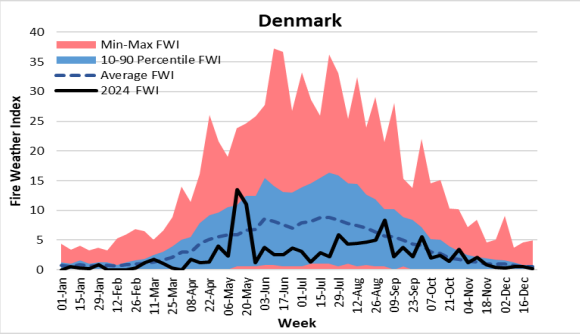


Source: EFFIS.

3.2.9. Denmark

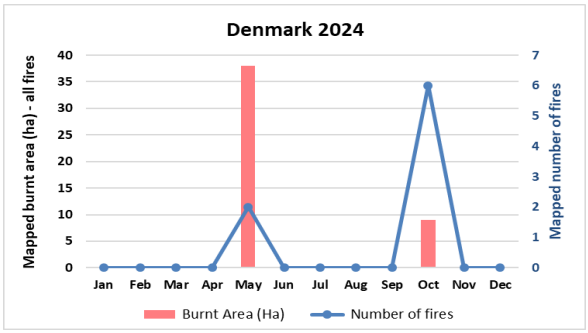
In Denmark, two fires burned around 38 ha in May and six fires burned roughly 9 ha in October (**Figure 254**), all on Natura2000 sites in Other Natural Land. The Fire Weather Index was mostly at or below average levels, except for a spring peak and other minor peaks in summer and autumn.

Figure 253. FWI information for Denmark.



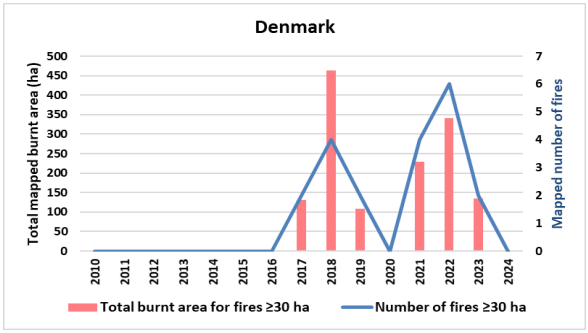
Source: EFFIS.

Figure 254. Monthly figures for Denmark in 2024.



Source: EFFIS.

Figure 255. Annual BA of fires ≥ 30 ha in Denmark.

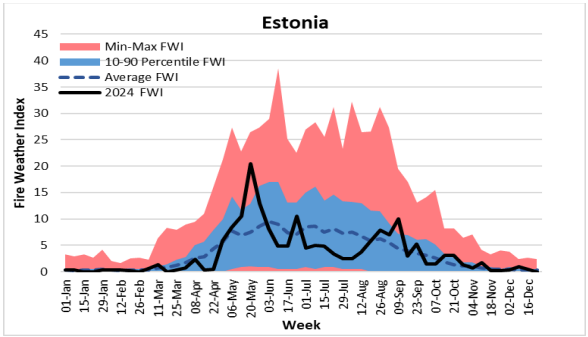


Source: EFFIS.

3.2.10. Estonia

No fires were recorded in Estonia in 2024; the Fire Weather Index was mostly at or below average levels, except for a spring peak and other minor peaks in summer and autumn.

Figure 256. FWI information for Estonia.



Source: EFFIS.

3.2.11. Finland

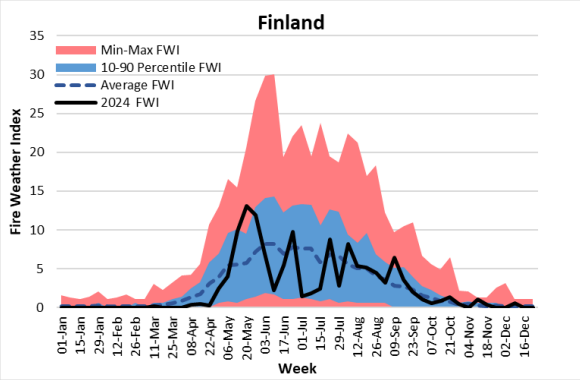
The 2024 fire season in Finland was light and comparable to the previous two years. A total burnt area of 601 ha was mapped from 61 fires, mostly in Coniferous Forest (**Table 66**). Less than 10% (45 ha) of the total was on Natura2000 land. Similar to past years, the fire season ran from May to September (**Figure 258**).

Table 66. BA (ha) in Finland by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	15	2.50
Coniferous forest	476	79.20
Mixed forest	73	12.15
Other Natural Land	11	1.83
Transitional	26	4.33
TOTAL	**601**	**100**

Source: EFFIS.

Figure 257. FWI information for Finland.

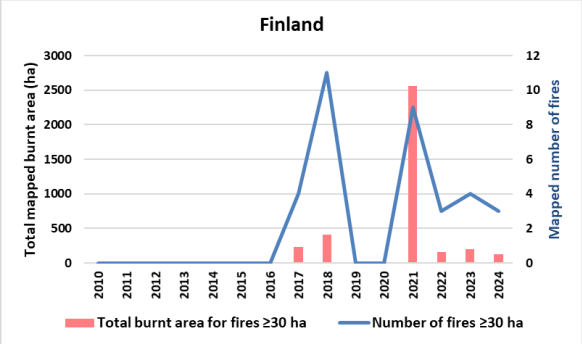


Source: EFFIS.

Figure 258. Monthly figures for Finland in 2024.

Source: EFFIS.

Figure 259. Annual BA of fires ≥ 30 ha in Finland.



Source: EFFIS.

Figure 260. Locations of fires in Finland in 2024.

Source: EFFIS.

3.2.12. France

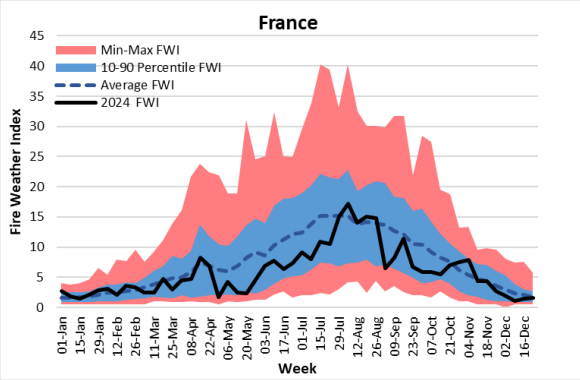
The 2024 fire season in France was light. The total of 17 321 ha from 605 fires was less than the 2023 total and lower than the long term average. Most fires occurred early in the season.

Table 67. BA (ha) in France by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	1435	8.29
Coniferous forest	53	0.31
Mixed forest	198	1.14
Other Natural Land	13883	80.15
Sclerophyllous vegetation	923	5.33
Transitional	286	1.65
Agriculture	530	3.06
Artificial Surfaces	12	0.07
TOTAL	**17321**	**100**

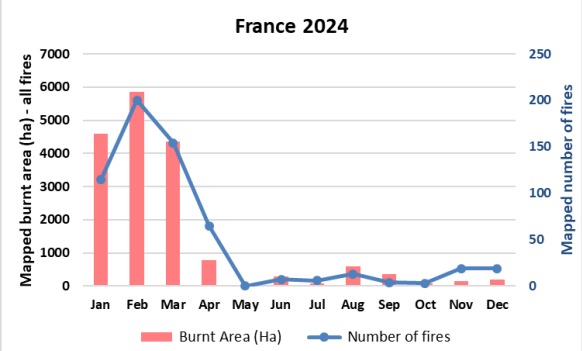
Source: EFFIS.

Figure 261. FWI information for France.



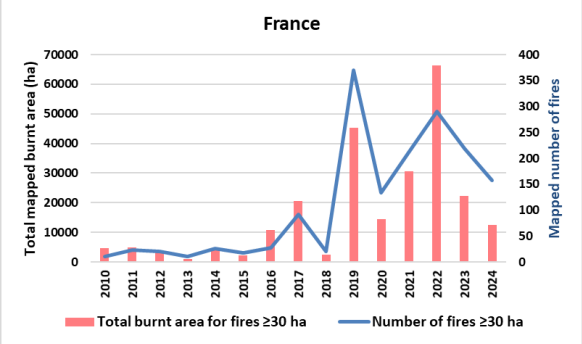
Source: EFFIS.

Figure 262. Monthly figures for France in 2024.



Source: EFFIS.

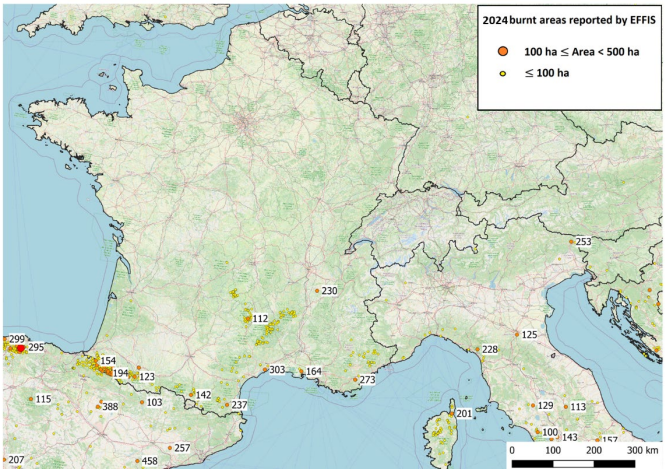
Figure 263. Annual BA of fires ≥ 30 ha in France.



Source: EFFIS.

9 868 ha (57 %) of the total occurred on Natura2000 sites, burning the 0.11 % of the total Natura2000 areas in the country.

Figure 264. Locations of fires in France and Corsica in 2024.



Source: EFFIS.

3.2.13. Germany

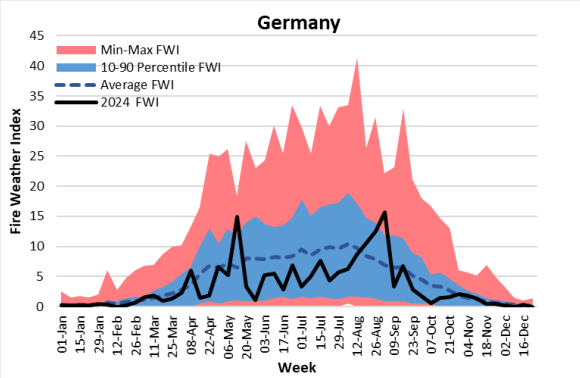
The 2024 fire season in Germany was similar to that of 2023. 48 fires were mapped, burning 1 144 ha, mostly in Other Natural Land. Half of the year's total occurred in August, with smaller peaks in the spring. Almost all of the year's total (1 114 ha, 97 %) occurred on Natura2000 sites, amounting to 0.02 % of the protected area in the country.

Table 68. BA (ha) in Germany by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	114	9.97
Coniferous forest	52	4.55
Mixed forest	11	0.96
Other Natural Land	941	82.26
Transitional	26	2.27
TOTAL	**1144**	**100**

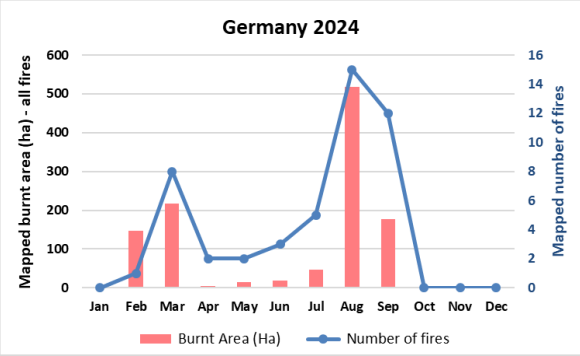
Source: EFFIS.

Figure 265. FWI information for Germany.



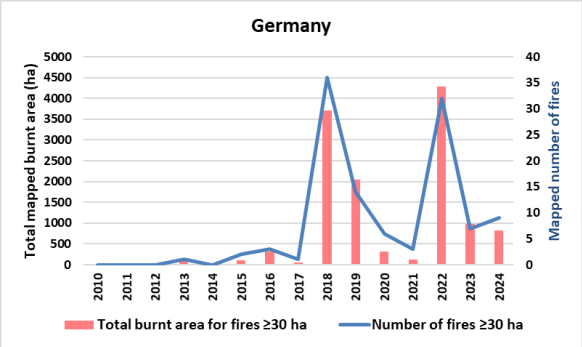
Source: EFFIS.

Figure 266. Monthly figures for Germany in 2024.



Source: EFFIS.

Figure 267. Annual BA of fires ≥ 30 ha in Germany.



Source: EFFIS.

3.2.14. Greece

After a historically bad year in 2023, the 2024 season was much quieter, although slightly above the long-term average. The fire season ran from June to September, with a number of small fires also occurring during November. The largest fire of the year occurred in Eastern Attica and covered nearly 11 000 ha, and was the third largest mapped by EFFIS in Europe in 2024. Six other fires exceeded 1 000 ha, with a further seven greater than 500 ha.

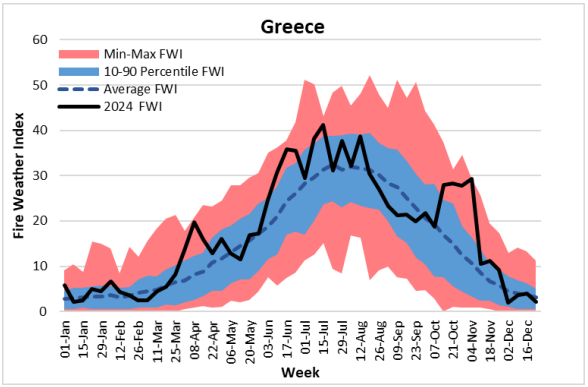
Of the total, around a quarter (10 783 ha) occurred on Natura2000 sites, amounting to 0.22 % of the total protected area of Greece.

Table 69. BA (ha) in Greece by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	619	1.42
Coniferous forest	1637	3.76
Mixed forest	322	0.74
Other Natural Land	11743	26.94
Sclerophyllous vegetation	9007	20.66
Transitional	9853	22.60
Agriculture	9992	22.92
Artificial Surfaces	418	0.96
Other Land Cover	2	0.00
TOTAL	**43593**	**100**

Source: EFFIS.

Figure 268. FWI information for Greece.

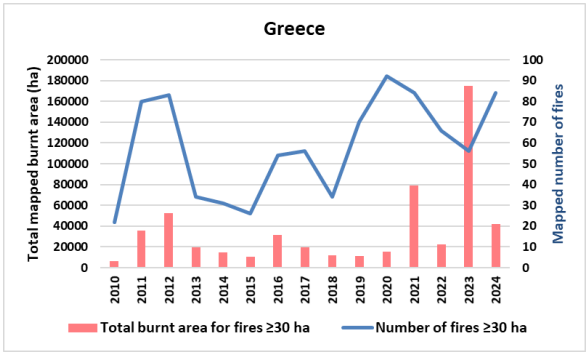


Source: EFFIS.

Figure 269. Monthly figures for Greece in 2024.

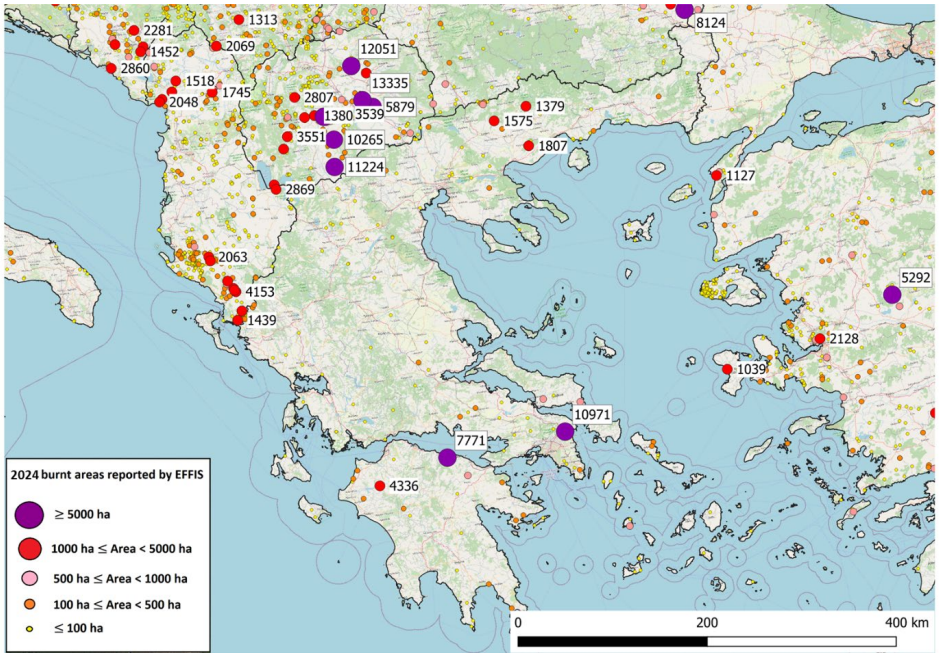
Source: EFFIS.

Figure 270. Annual BA of fires ≥ 30 ha in Greece.



Source: EFFIS.

Figure 271. Locations of fires in Greece in 2024.



Source: EFFIS.

3.2.15. Hungary

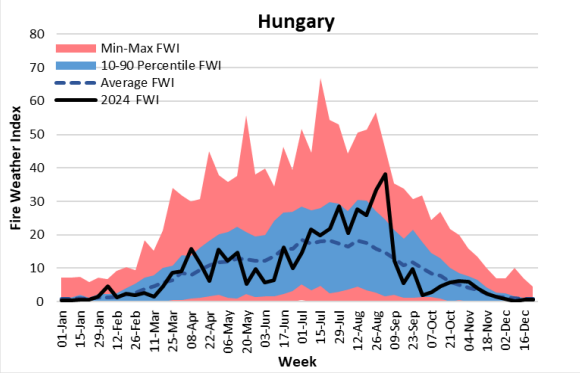
In 2024, 1 262 ha burned across 15 fires, more than 2023 but far less than 2022. Most damage occurred in late summer, including the 600 ha Csönge fire. 707 ha impacted Natura2000 sites, 0.03% of protected areas.

Table 70. BA (ha) in Hungary by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	35	2.77
Coniferous forest	211	16.71
Mixed forest	26	2.06
Other Natural Land	382	30.25
Transitional	96	7.60
Agriculture	513	40.62
TOTAL	**1262**	**100**

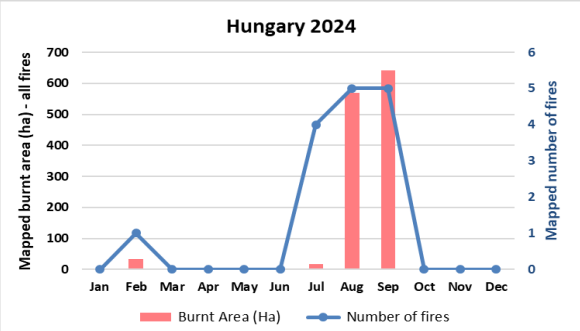
Source: EFFIS.

Figure 272. FWI information for Hungary.



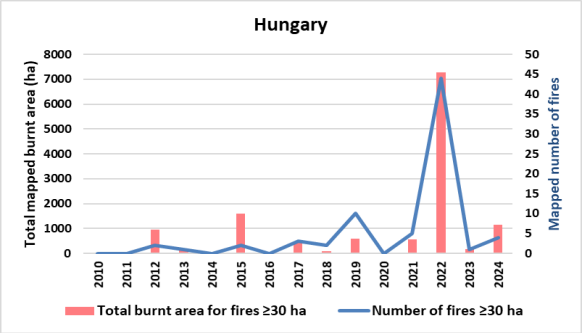
Source: EFFIS.

Figure 273. Monthly figures for Hungary in 2024.



Source: EFFIS.

Figure 274. Annual BA of fires ≥ 30 ha in Hungary.



Source: EFFIS.

3.2.16. Ireland

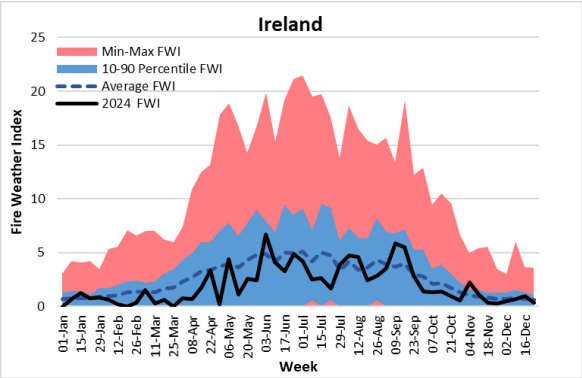
It was a quiet year in Ireland. Only 10 fires were mapped in 2024, covering a total of 200 ha, mostly in Other Natural Land. Around two thirds of the total (126 ha) was on Natura2000 sites, amounting to 0.01% of the protected sites in the country.

Table 71. BA (ha) in Ireland by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Coniferous forest	10	4.98
Other Natural Land	164	82.09
Transitional	15	7.46
Agriculture	11	5.47
TOTAL	**200**	**100**

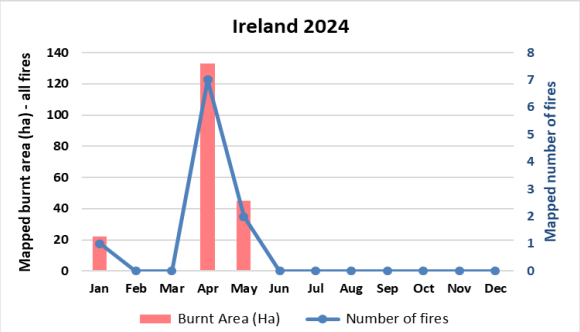
Source: EFFIS.

Figure 275. FWI information for Ireland.



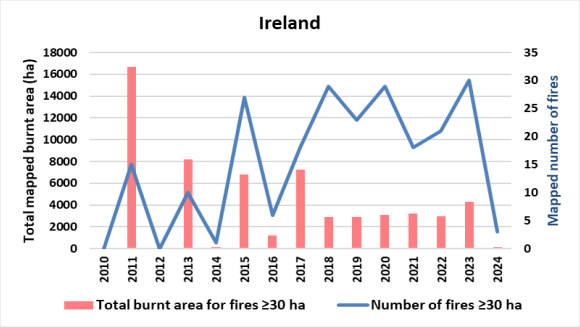
Source: EFFIS.

Figure 276. Monthly figures for Ireland in 2024.



Source: EFFIS.

Figure 277. Annual BA of fires ≥ 30 ha in Ireland.



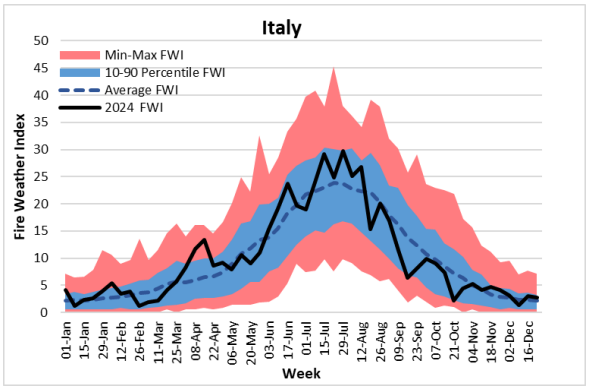
Source: EFFIS.

3.2.17. Italy

The 2024 fire season in Italy was better than average, with the lowest total burnt area recorded for 5 years. A total of 1 500 fires were mapped, resulting in a total burnt area of 50 844 ha. Three quarters of the damage was in July and August, when most of the major fires of the year occurred, including one of over 1 000 ha in Nuoro district. Six other fires exceeded 500 ha, significantly below the 36 mapped in 2023.

A quarter of the total burnt area (13507 ha) occurred on Natura2000 sites, corresponding to 0.19% of the Natura2000 land in Italy.

Figure 278. Fire weather Index information for Italy.

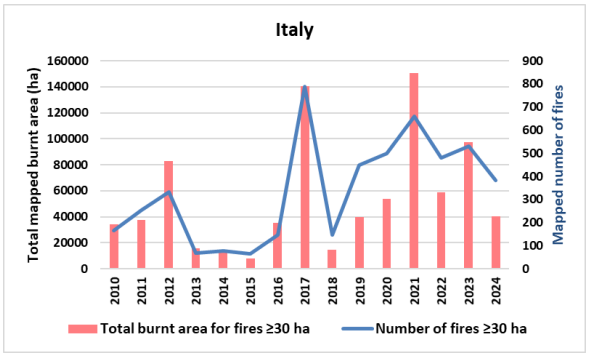


Source: EFFIS.

Figure 279. Monthly figures for Italy in 2024.

Source: EFFIS.

Figure 280. Annual BA of fires ≥ 30 ha in Italy.



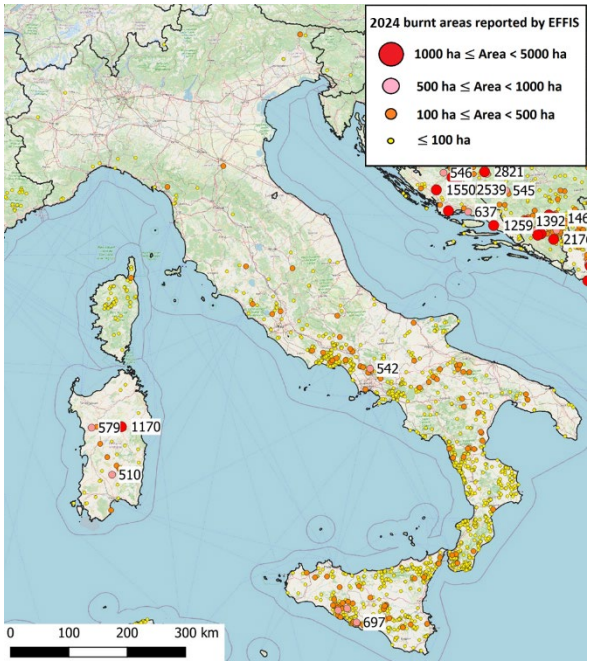
Source: EFFIS.

Table 72. BA (ha) in Italy by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	6264	12.32
Coniferous forest	1462	2.87
Mixed forest	1015	2.00
Other Natural Land	15489	30.46
Sclerophyllous vegetation	5202	10.23
Transitional	4582	9.01
Agriculture	16659	32.76
Artificial Surfaces	130	0.26
Other Land Cover	41	0.08
TOTAL	**50844**	**100**

Source: EFFIS.

Figure 281. Locations of fires in Italy, Sicily and Sardinia in 2024.



Source: EFFIS.

3.2.18. Kosovo under UNSCR 1244

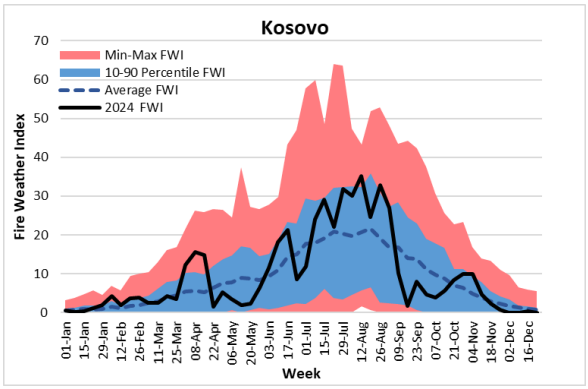
The 2024 fire season in Kosovo was the worst for several years. A total of 13 250 ha was mapped from 246 fires.

Table 73. BA (ha) in Kosovo by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	4523	34.14
Coniferous forest	95	0.72
Mixed forest	60	0.45
Other Natural Land	4582	34.58
Transitional	2728	20.59
Agriculture	1250	9.43
Artificial Surfaces	9	0.07
Other Land Cover	2	0.02
TOTAL	**13250**	**100**

Source: EFFIS.

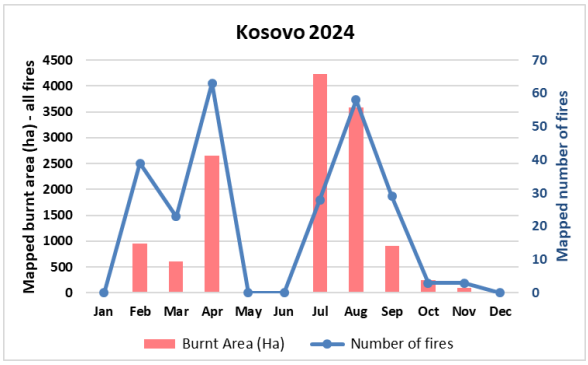
Figure 282. FWI information for Kosovo.



Source: EFFIS.

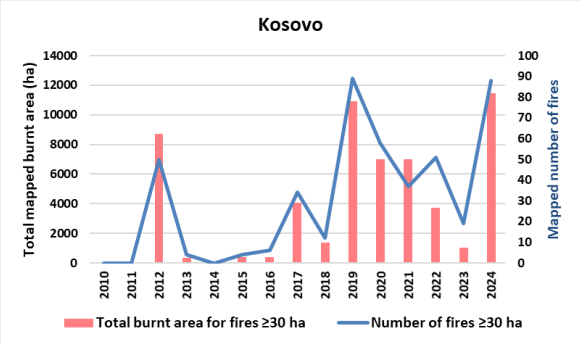
The fires concentrated in two peaks: one in the spring and the other in late summer when the three largest fires of the season occurred.

Figure 283. Monthly figures for Kosovo in 2024.



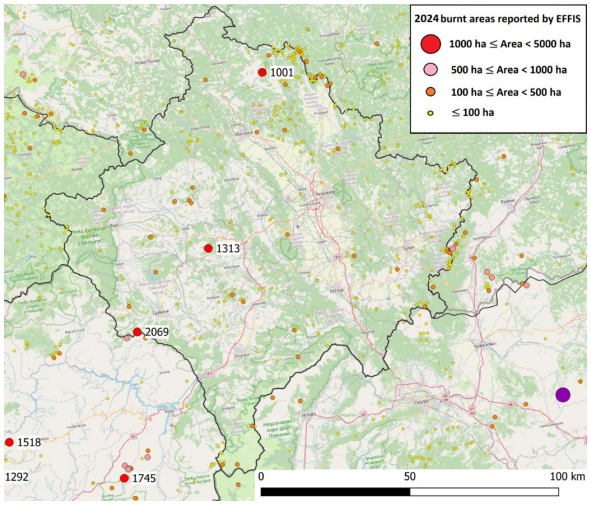
Source: EFFIS.

Figure 284. Annual BA of fires ≥ 30 ha in Kosovo.



Source: EFFIS.

Figure 285. Locations of fires in Kosovo in 2024.



Source: EFFIS.

3.2.19. Lithuania

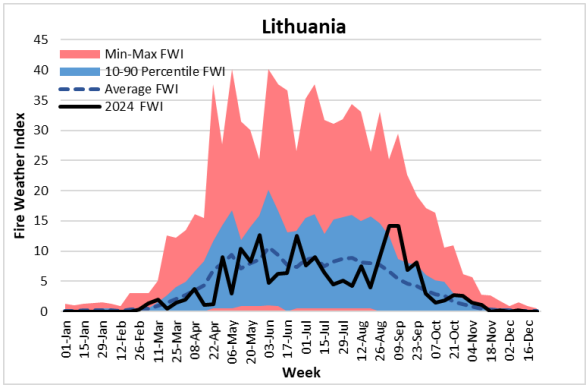
Only two fires were mapped in Lithuania in May, covering a total of 8 ha.

Table 74. BA (ha) in Lithuania by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Coniferous forest	1	12.50
Other Natural Land	7	87.50
TOTAL	**8**	**100**

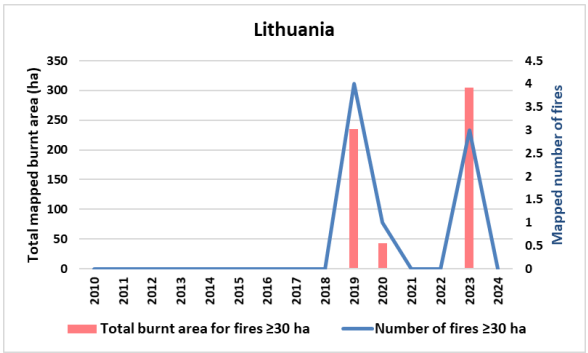
Source: EFFIS.

Figure 286. FWI information for Lithuania.



Source: EFFIS.

Figure 287. Annual BA of fires ≥ 30 ha in Lithuania.



Source: EFFIS.

3.2.20. Moldova

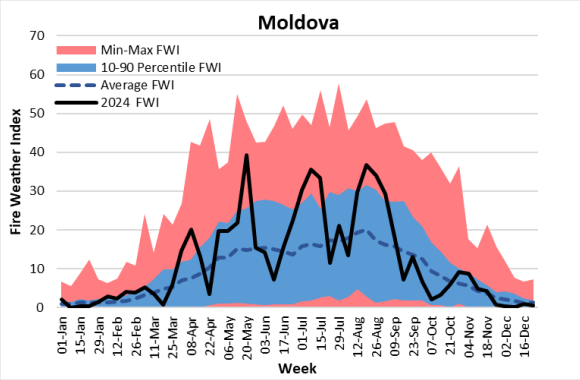
One fire was mapped in Moldova in August, covering 68 ha.

Table 75. BA (ha) in Moldova by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Mixed forest	18	26.09
Other Natural Land	33	47.83
Agriculture	18	26.09
TOTAL	**68**	**100**

Source: EFFIS.

Figure 288. FWI information for Moldova.



Source: EFFIS.

3.2.21. Montenegro

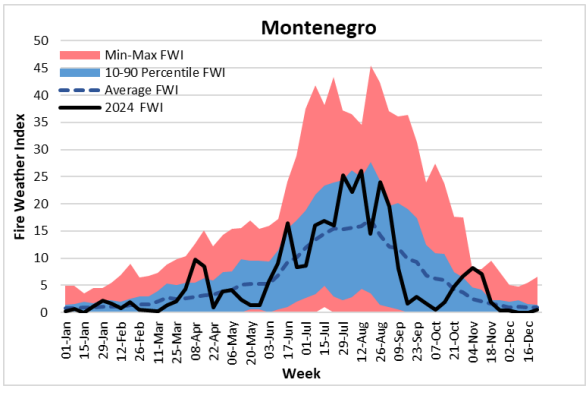
After a quiet year in 2023, the 2024 fire season in Montenegro was closer to the long-term average, with a similar total to that recorded in 2022. A total of 26 373 ha was mapped from 340 fires. There were two fire peaks; one in the first months of the year and a second one in July-August when most of the largest fires occurred. The largest three exceeded 2 000 ha, and a further 5 were greater than 500 ha.

Table 76. BA (ha) in Montenegro by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	6831	25.90
Coniferous forest	517	1.96
Mixed forest	257	0.97
Other Natural Land	7905	29.97
Sclerophyllous vegetation	37	0.14
Transitional	8562	32.47
Agriculture	2219	8.41
Artificial Surfaces	45	0.17
TOTAL	**26373**	**100**

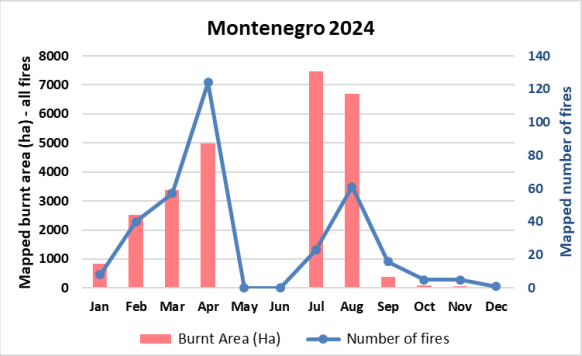
Source: EFFIS.

Figure 289. FWI information for Montenegro.



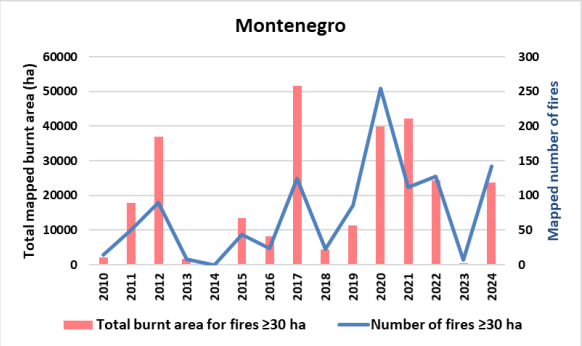
Source: EFFIS.

Figure 290. Monthly figures in Montenegro in 2024.



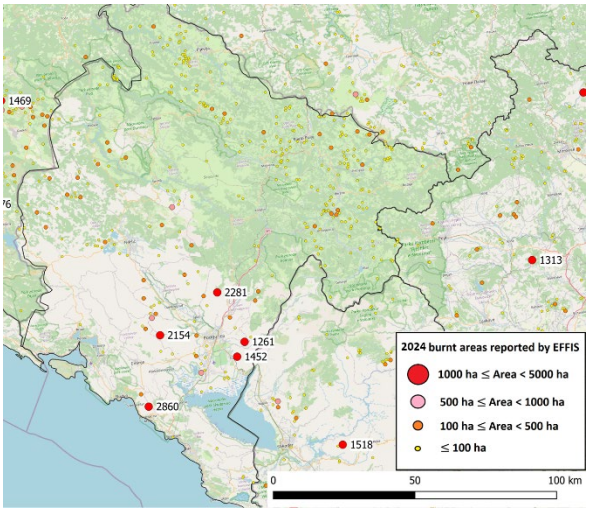
Source: EFFIS.

Figure 291. Annual BA of fires ≥ 30 ha in Montenegro.



Source: EFFIS.

Figure 292. Locations of fires in Montenegro in 2024.

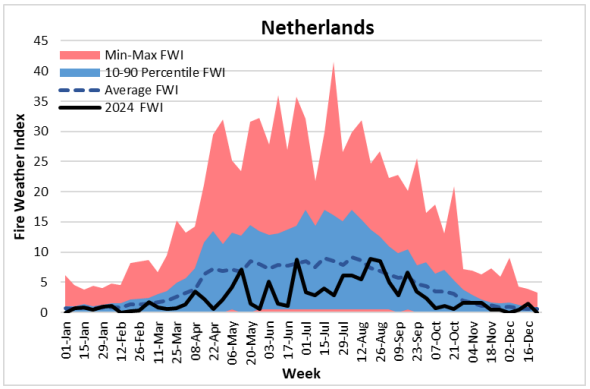


Source: EFFIS.

3.2.22. The Netherlands

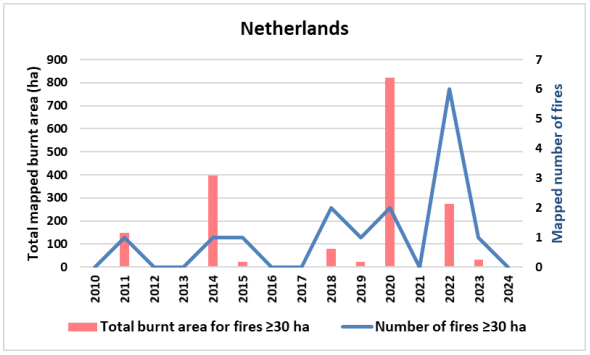
Only two fires were mapped in the Netherlands in March, covering a total of 35 ha, all on Natura2000 sites in Other Natural Land.

Figure 293. FWI information for the Netherlands.



Source: EFFIS.

Figure 294. Annual BA of fires ≥ 30 ha in the Netherlands.



Source: EFFIS.

3.2.23. North Macedonia

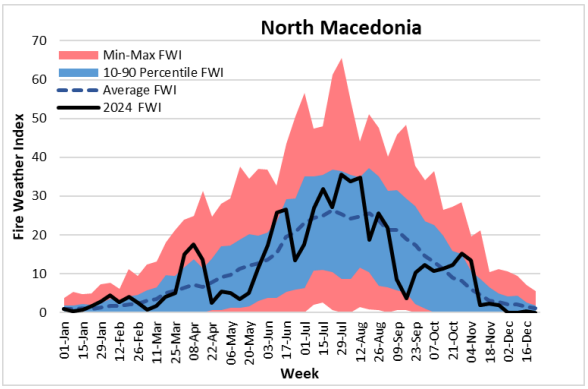
It was the worst year for fires in North Macedonia in over a decade, with 97 660 ha burnt from 250 fires; this exceeds the total recorded for the previous 6 years combined.

Table 77. BA (ha) in North Macedonia by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	12188	12.48
Coniferous forest	1978	2.03
Mixed forest	543	0.56
Other Natural Land	22832	23.38
Sclerophyllous vegetation	215	0.22
Transitional	33569	34.37
Agriculture	26237	26.87
Artificial Surfaces	79	0.08
Other Land Cover	18	0.02
TOTAL	**97660**	**100**

Source: EFFIS.

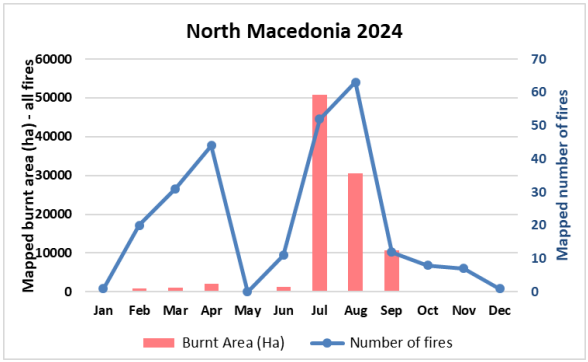
Figure 295. FWI information for North Macedonia.



Source: EFFIS.

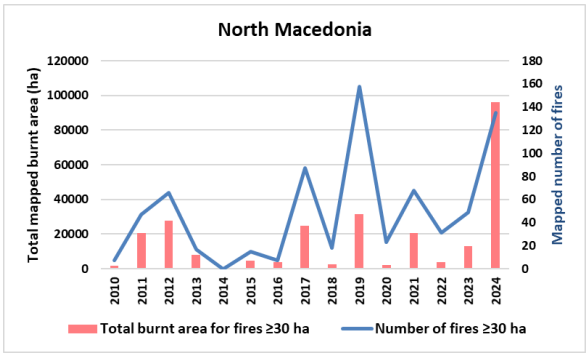
The fire season was running from July to September, with some of the largest fires mapped by EFFIS in 2024, including four over 10 000 ha (**Figure 298**).

Figure 296. Monthly figures in North Macedonia in 2024.



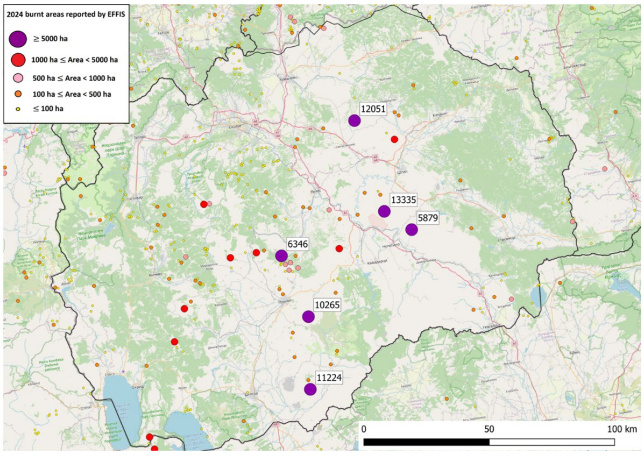
Source: EFFIS.

Figure 297. Annual BA of fires ≥ 30 ha in North Macedonia.



Source: EFFIS.

Figure 298. Locations of fires in North Macedonia in 2024.



Source: EFFIS.

3.2.24. Norway

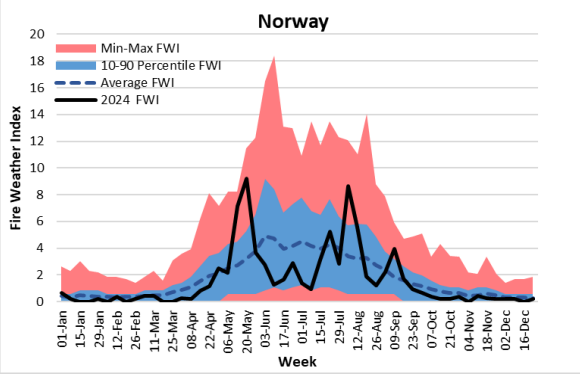
The 2024 fire season was quiet in Norway. 42 fires burned 805 ha, mostly in the spring and almost all in Other Natural Land. **(Table 78**).

Table 78. BA (ha) in Norway by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	6	0.75
Coniferous forest	14	1.74
Other Natural Land	774	96.14
Agriculture	10	1.25
Other Land Cover	1	0.12
TOTAL	**805**	**100**

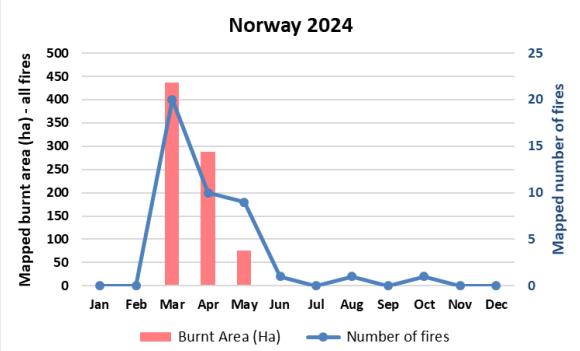
Source: EFFIS.

Figure 299. FWI information for Norway.



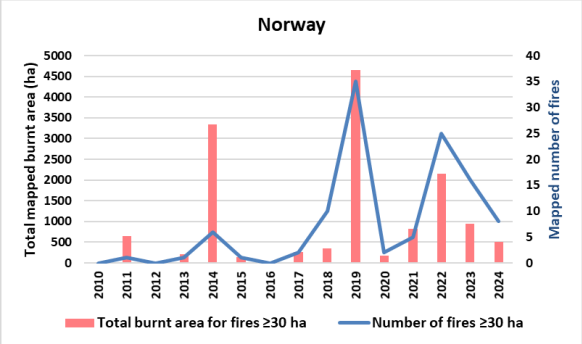
Source: EFFIS.

Figure 300. Monthly figures in Norway in 2024.



Source: EFFIS.

Figure 301. Annual BA of fires ≥ 30 ha in Norway.



Source: EFFIS.

3.2.25. Poland

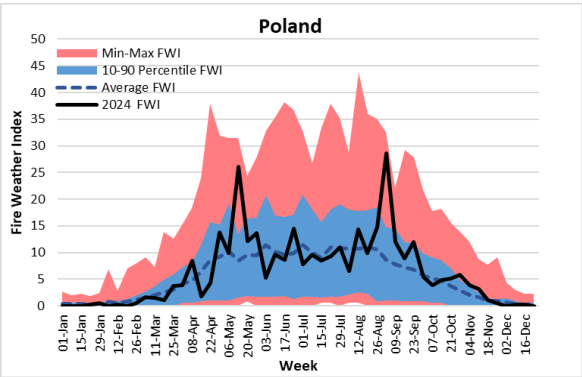
In 2024, 40 fires burned 211 ha in Poland, similar to 2023; 113 ha of this was on Natura2000 land.

Table 79. BA (ha) in Poland by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	13	6.22
Coniferous forest	19	9.09
Mixed forest	9	4.31
Other Natural Land	153	72.73
Transitional	9	4.31
Agriculture	2	0.96
Other Land Cover	5	2.39
TOTAL	**211**	**100**

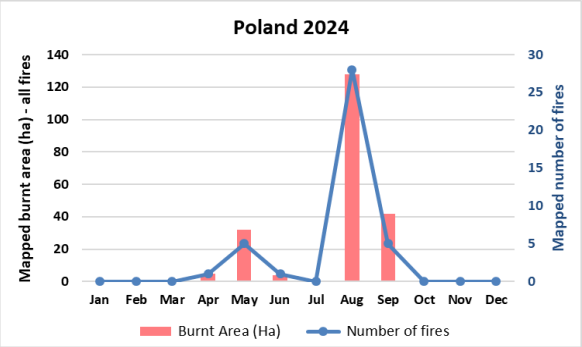
Source: EFFIS.

Figure 302. FWI information for Poland.



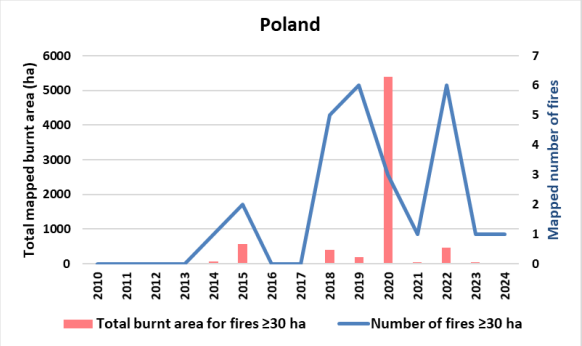
Source: EFFIS.

Figure 303. Monthly figures in Poland in 2024.



Source: EFFIS.

Figure 304. Annual BA of fires ≥ 30 ha in Poland.



Source: EFFIS.

3.2.26. Portugal

In 2024, 735 fires burned 147 461 ha, exceeding the past six years. Nearly 90% of the total area burned in September.

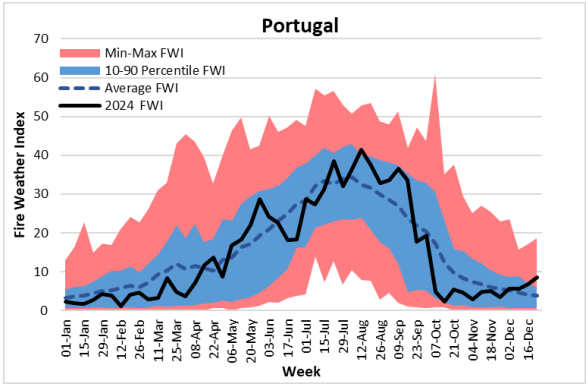
Table 80. BA (ha) in Portugal by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	15357	10.41
Coniferous forest	10799	7.32
Mixed forest	10327	7.00
Other Natural Land	41924	28.43
Sclerophyllous vegetation	207	0.14
Transitional	50792	34.44
Agriculture	16685	11.32
Artificial Surfaces	1344	0.91
Other Land Cover	25	0.02
TOTAL	**147461**	**100**

Source: EFFIS.

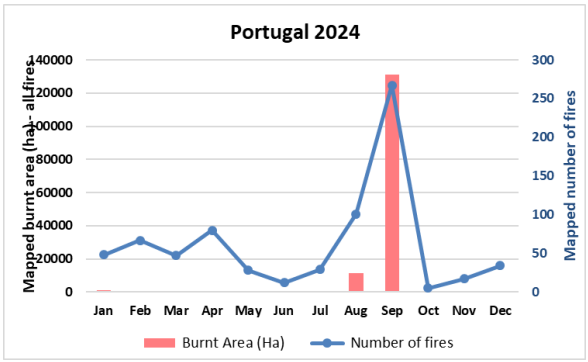
The two largest fires mapped by EFFIS were in Reriz e Gafanhão (>35 000 ha) and in Albergaria-a-Velha e Valmaior (>20 000 ha). 33 other fires surpassed 1,000 ha, and 12 exceeded 500 ha. Approximately 25% of the total mapped area (36 661 ha) was within Natura2000 sites, representing 1.53% of Portugal's total Natura2000 areas.

Figure 305. FWI information for Portugal.



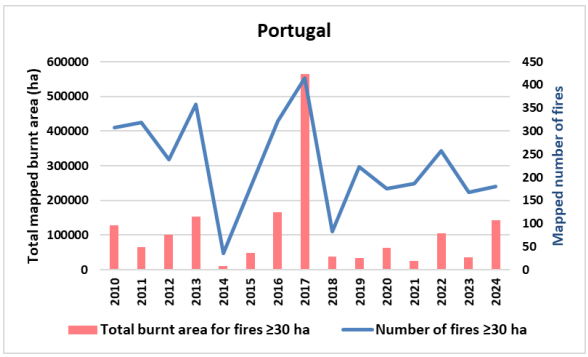
Source: EFFIS.

Figure 306. Monthly figures in Portugal in 2024.



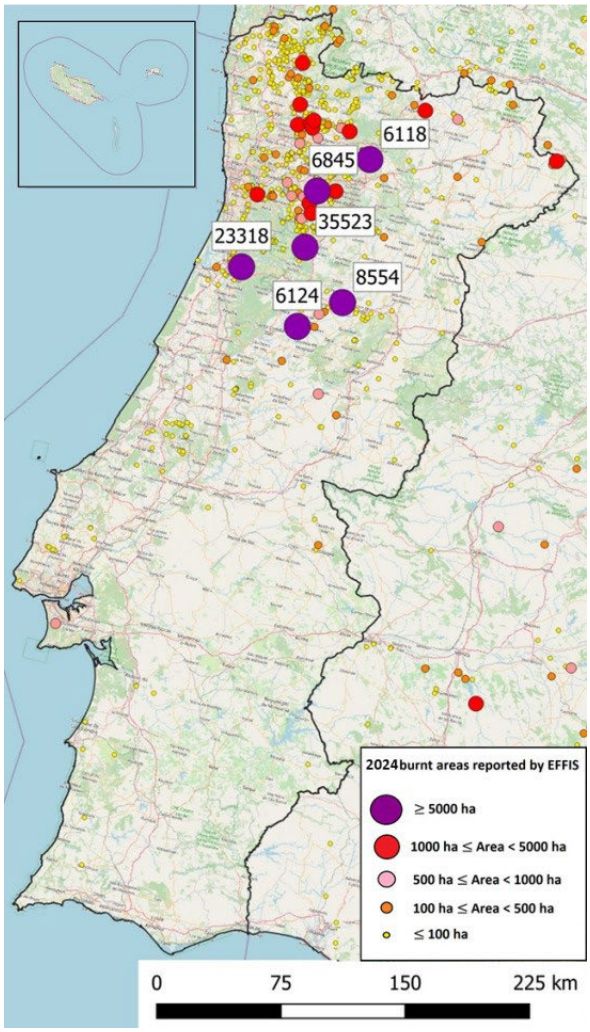
Source: EFFIS.

Figure 307. Annual BA of fires ≥ 30 ha in Portugal.



Source: EFFIS.

Figure 308. Locations of fires in Portugal in 2024.



Source: EFFIS.

3.2.27. Romania

The 2024 fire season in Romania saw an increase in burnt area compared to the previous year. A total of 43 003 ha was mapped from 926 fires.

Two fires exceeded 1 000 ha: one in Tulcea province in July and one in Mehedinți in November. Five other fires were recorded as over 500 ha. Unusually, in 2024 the most affected land cover type was Agriculture (38%) with Other Natural Land (usually the most affected land type) accounting for only 26% (**Table 81**).

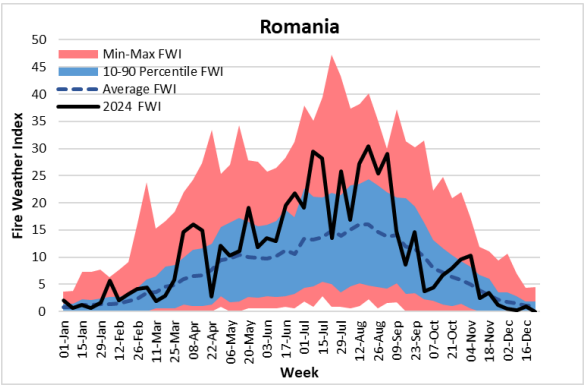
The affected Natura2000 sites accounted for around a third of the total at 13 465 ha, in line with the previous year's value which was around 15 700 ha.

Table 81. BA (ha) in Romania by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	13392	31.14
Coniferous forest	29	0.07
Mixed forest	324	0.75
Other Natural Land	11159	25.95
Transitional	1424	3.31
Agriculture	16280	37.86
Artificial Surfaces	264	0.61
Other Land Cover	131	0.30
TOTAL	**43003**	**100**

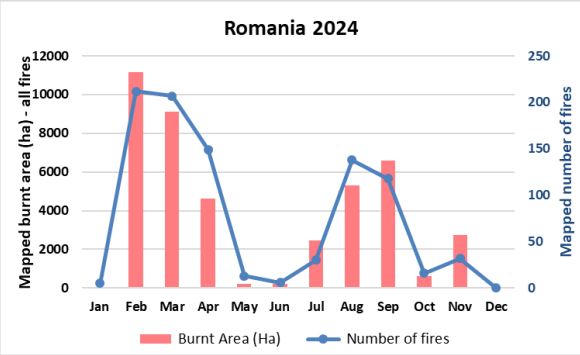
Source: EFFIS.

Figure 309. FWI information for Romania.



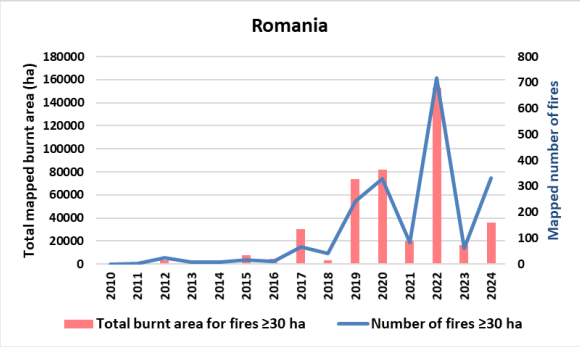
Source: EFFIS.

Figure 310. Monthly figures in Romania in 2024.



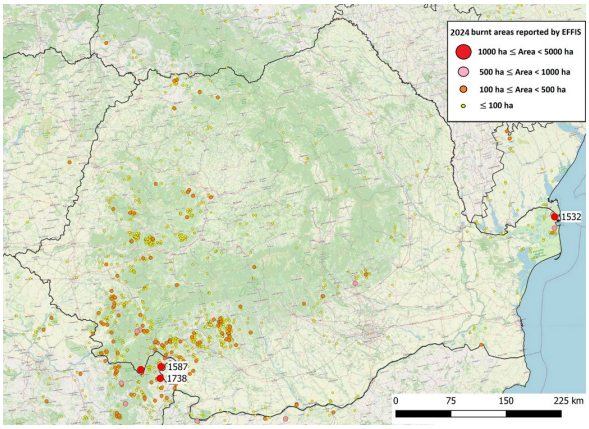
Source: EFFIS.

Figure 311. Annual BA of fires ≥ 30 ha in Romania.



Source: EFFIS.

Figure 312. Locations of fires in in Romania in 2024.

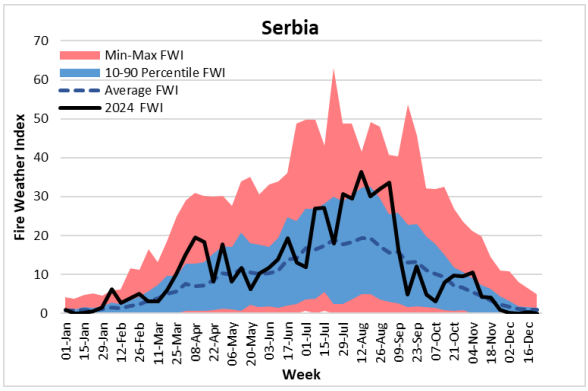


Source: EFFIS.

3.2.28. Serbia

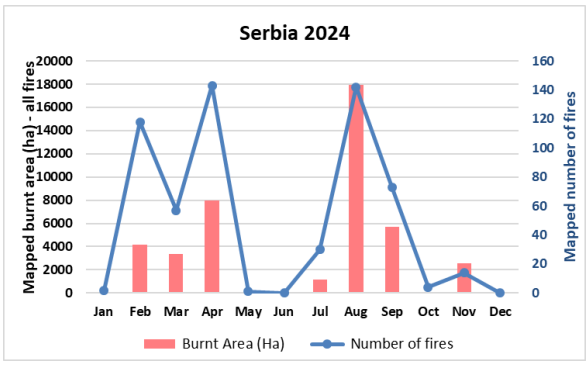
2024 was the worst year ever recorded for Serbia since the beginning of the EFFIS monitoring. The country was affected by wildfires impacting 43 004 ha from 584 events, significantly above previous years' average of 5 847 ha. The majority of the events took place between February and April and in August. The largest event of the year (5 274 ha) which happened in the Pirotski region in August, is the second largest ever Serbian wildfire in the EFFIS database.

Figure 313. FWI information for Serbia.



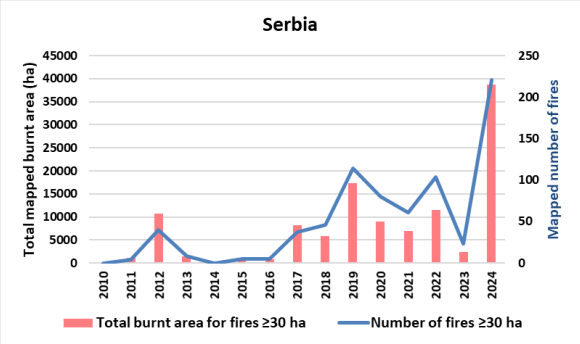
Source: EFFIS.

Figure 314. Monthly figures in Serbia in 2024.



Source: EFFIS.

Figure 315. Annual BA of fires ≥ 30 ha in Serbia.



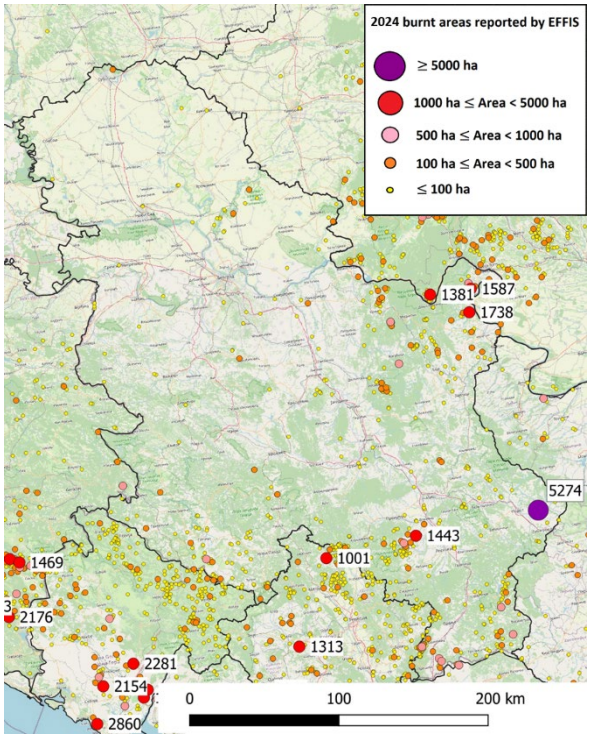
Source: EFFIS.

Table 82. BA (ha) in Serbia by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	9884	22.98
Coniferous forest	200	0.47
Mixed forest	329	0.77
Other Natural Land	9112	21.19
Transitional	12167	28.29
Agriculture	11284	26.24
Artificial Surfaces	2	0.00
Other Land Cover	27	0.06
TOTAL	**43004**	**100**

Source: EFFIS.

Figure 316. Locations of fires in Serbia in 2024.



Source: EFFIS.

3.2.29. Slovakia

Only 2 fires were mapped in Slovakia in late summer 2024 for an overall burnt area of 6 ha.

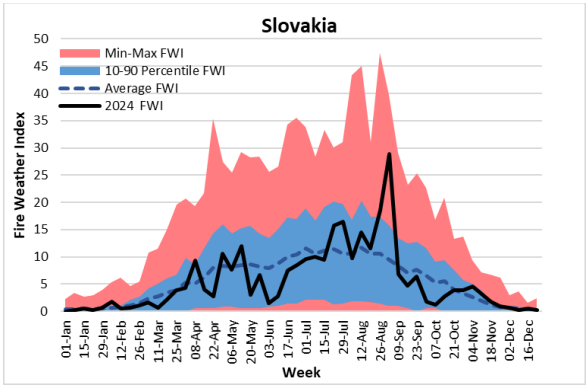
The Fire Weather Index was mostly at or below average levels except for a short period at the end of the summer.

Table 83. BA (ha) in Slovakia by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	3	55.56
Agriculture	3	44.44
TOTAL	**6**	**100**

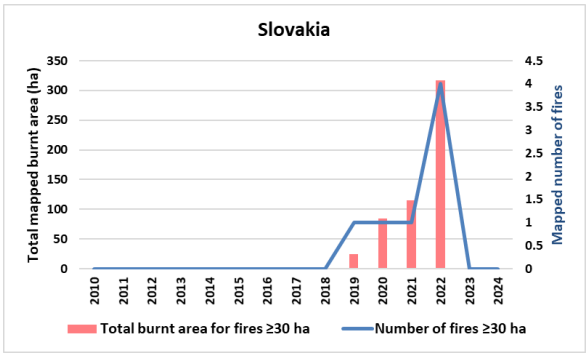
Source: EFFIS.

Figure 317. FWI information for Slovakia.



Source: EFFIS.

Figure 318. Annual BA of fires ≥ 30 ha in Slovakia.



Source: EFFIS.

3.2.30. Slovenia

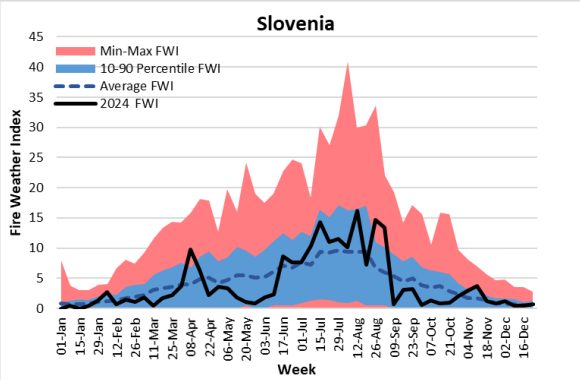
As the previous year, just 2 fires were mapped in Slovenia in 2024, covering a total of 79 ha, all in Natura2000 sites and mostly affecting forested land (Broadleaf, Conifer or Mixed).

Table 84. BA (ha) in Slovenia by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	20	25.32
Coniferous forest	15	18.99
Mixed forest	10	12.66
Other Natural Land	3	3.80
Transitional	31	39.24
TOTAL	**79**	**100**

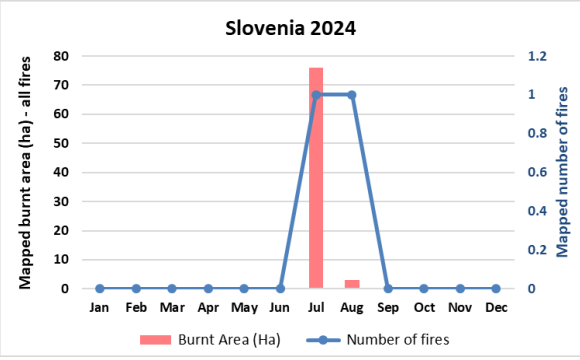
Source: EFFIS.

Figure 319. FWI information for Slovenia.



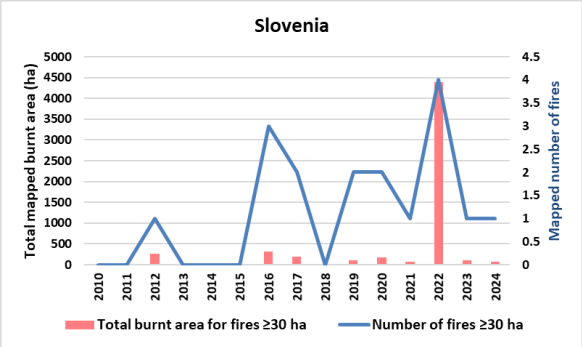
Source: EFFIS.

Figure 320. Monthly figures in Slovenia in 2024.



Source: EFFIS.

Figure 321. Annual BA of fires ≥ 30 ha in Slovenia.



Source: EFFIS.

3.2.31. Spain

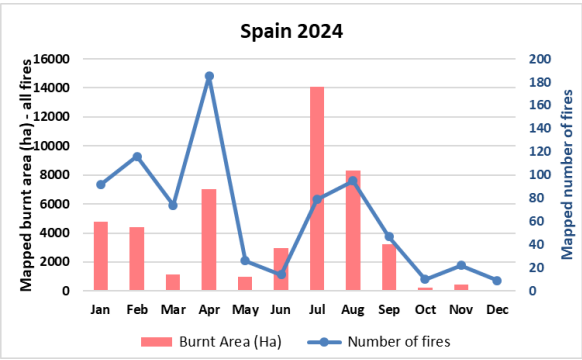
The 2024 fire season in Spain was well below the average, with 47 607 ha mapped from 769 fires. The largest fire (2 471 ha) was in January in Cantabria. The other six fires over 1 000 ha all took place between June and August in central and southern regions.

Table 85. BA (ha) in Spain by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	3631	7.63
Coniferous forest	2138	4.49
Mixed forest	1479	3.11
Other Natural Land	24292	51.03
Sclerophyllous vegetation	6504	13.66
Transitional	1752	3.68
Agriculture	7582	15.93
Artificial Surfaces	64	0.13
Other Land Cover	165	0.35
TOTAL	**47607**	**100**

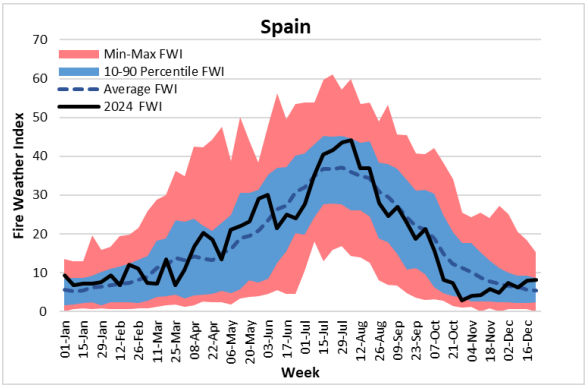
Source: EFFIS.

Figure 322. Monthly figures in Spain in 2024.



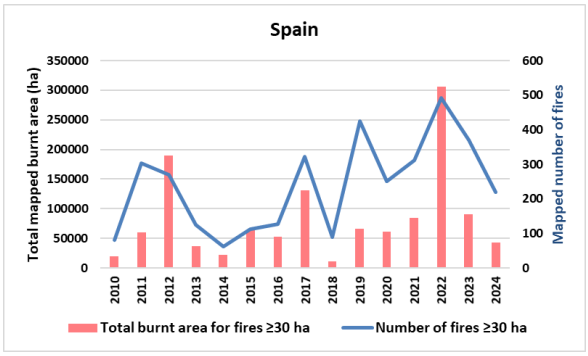
Source: EFFIS.

Figure 323. FWI information for Spain.



Source: EFFIS.

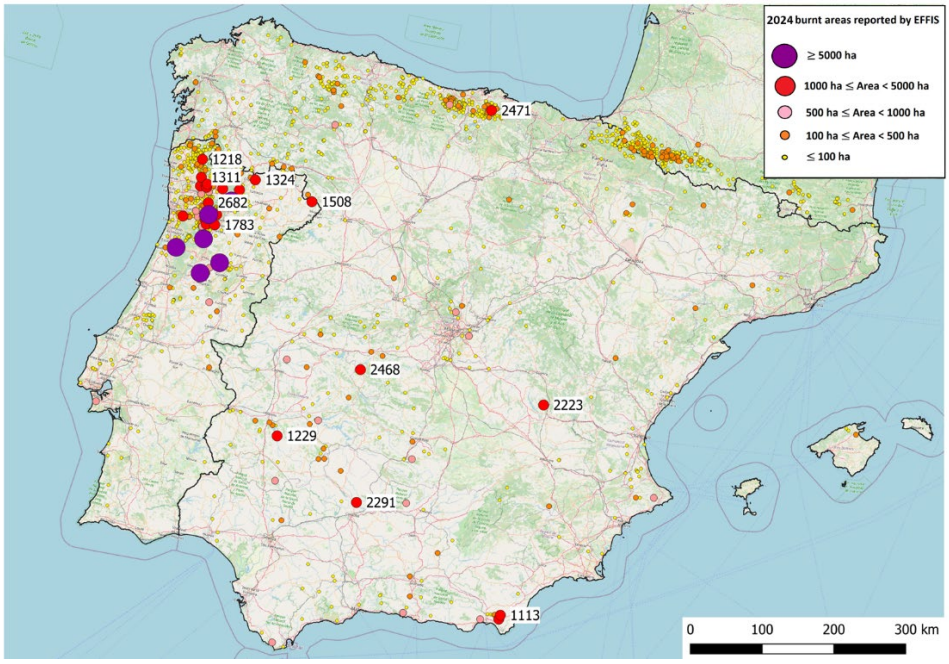
Figure 324. Annual BA of fires ≥ 30 ha in Spain.



Source: EFFIS.

Of the total, 17 982 ha occurred on Natura2000 sites, the third highest amount in EU countries. This corresponds to 38 % of the total area burned and 0.11 % of the Natura2000 areas in Spain.

Figure 325. Locations of fires in Spain in 2024.



Source: EFFIS.

3.2.32. Sweden

In a light season similar to 2023, 49 fires were mapped in 2024, resulting in a total mapped burnt area of 589 ha, slightly lower than the total recorded in 2023. May was by far the most affected month.

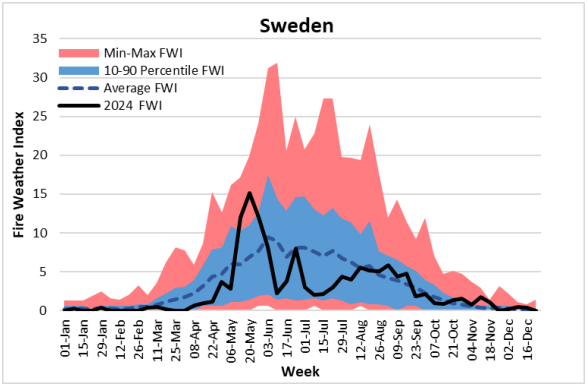
Of the total, 78 ha (13%) occurred in Natura2000 sites.

Table 86. BA (ha) in Sweden by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Coniferous forest	488	82.91
Mixed forest	20	3.42
Other Natural Land	51	8.72
Transitional	7	1.20
Other Land Cover	22	3.76
TOTAL	**589**	**100**

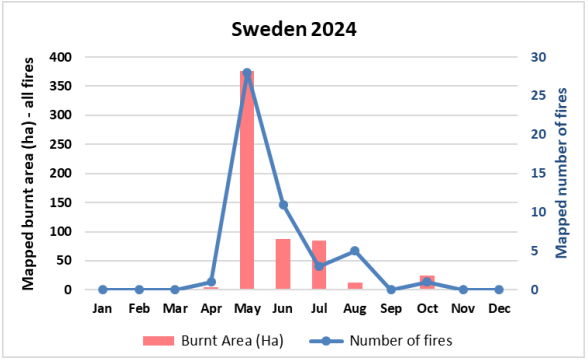
Source: EFFIS.

Figure 326. FWI information for Sweden.



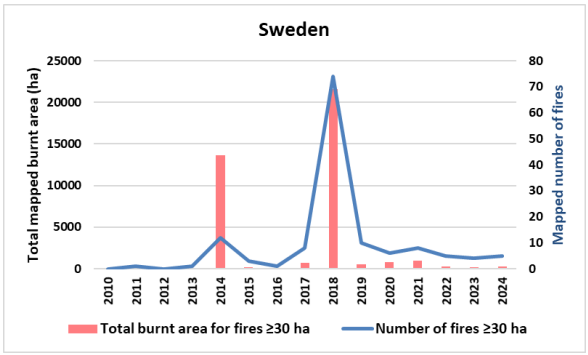
Source: EFFIS.

Figure 327. Monthly figures in Sweden in 2024.



Source: EFFIS.

Figure 328. Annual BA of fires ≥ 30 ha in Sweden.

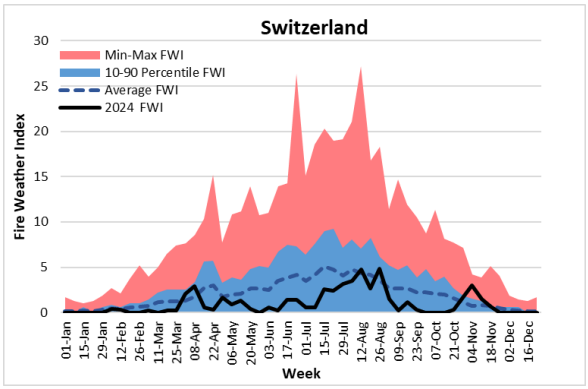


Source: EFFIS.

3.2.33. Switzerland

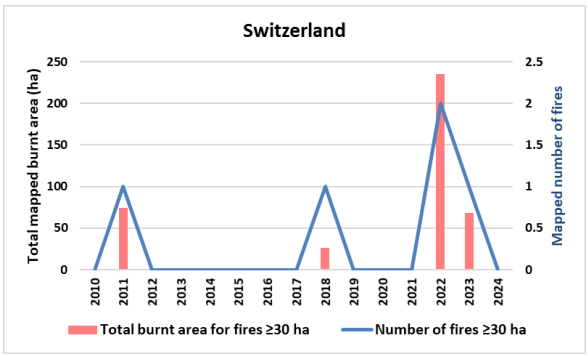
Only one fire of 3 ha was mapped in Switzerland in 2024. The Fire Weather Index was mainly below the long-term average.

Figure 329. FWI information for Switzerland.



Source: EFFIS.

Figure 330. Annual BA of fires ≥ 30 ha in Switzerland.



Source: EFFIS.

3.2.34. Türkiye

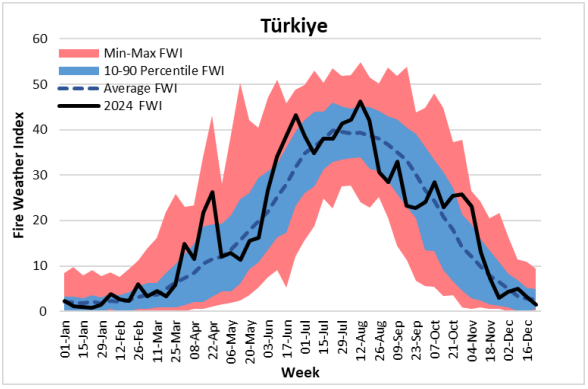
The 2024 fire season in Türkiye was the third worst in EFFIS monitoring: 1 663 fires burned 131 223 ha, more than double the long-term average of around 46 000 ha. The ten largest fires each exceeded 1 000 ha, with the biggest burning over 7 000 ha; four of these occurred in the Mardin region.

Table 87. BA (ha) in Türkiye by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	629	0.48
Coniferous forest	12978	9.89
Mixed forest	1613	1.23
Other Natural Land	56080	42.74
Sclerophyllous vegetation	1948	1.48
Transitional	14077	10.73
Agriculture	41757	31.82
Artificial Surfaces	316	0.24
Other Land Cover	1824	1.39
TOTAL	**131223**	**100**

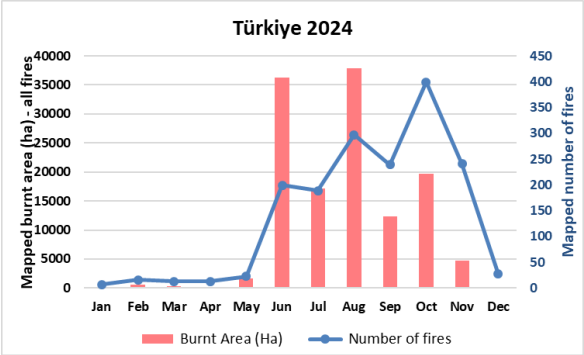
Source: EFFIS.

Figure 331. FWI information for Türkiye.



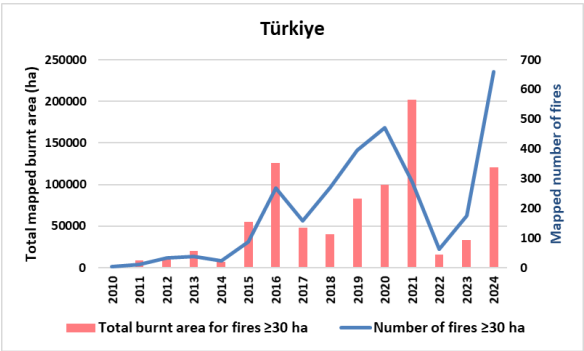
Source: EFFIS.

Figure 332. Monthly figurs in Türkiye in 2024.



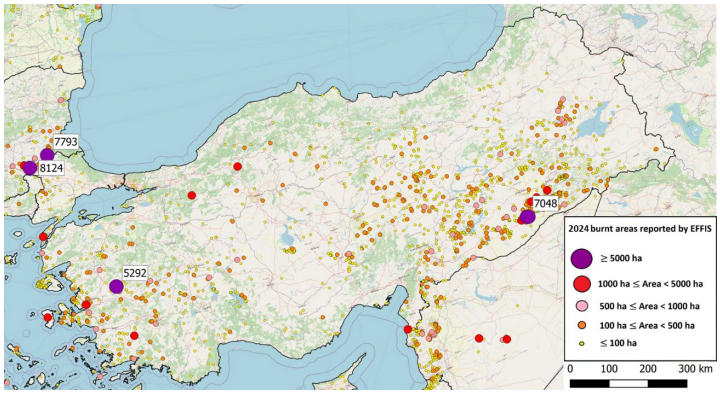
Source: EFFIS.

Figure 333. Annual BA of fires ≥ 30 ha in Türkiye.



Source: EFFIS.

Figure 334. Locations of fires in Türkiye in 2024.



Source: EFFIS.

3.2.35. Ukraine

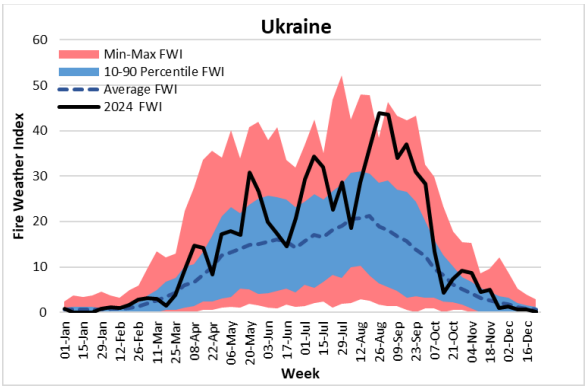
In 2024, Ukraine had 8 753 fires burning 965 360 ha, half of all land mapped by EFFIS in its whole extent, equivalent to Europe, the Middle East, and North Africa's total burnt area in 2023.

Table 88. BA (ha) in Ukraine by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	8346	0.86
Coniferous forest	66545	6.89
Mixed forest	182016	18.85
Other Natural Land	374961	38.84
Agriculture	322530	33.41
Artificial Surfaces	8476	0.88
Other Land Cover	2485	0.26
TOTAL	**965360**	**100**

Source: EFFIS.

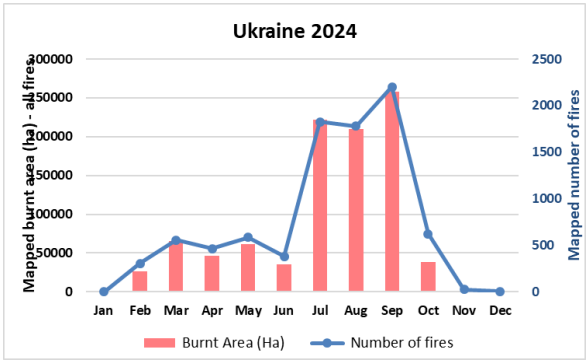
Figure 335. FWI information for Ukraine.



Source: EFFIS.

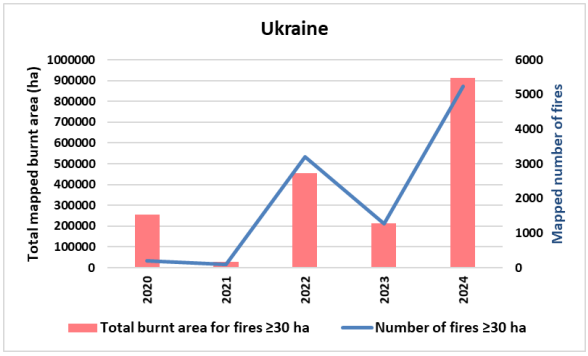
Most damage occurred in eastern Ukraine near the front lines. Two fires exceeded 8 000 ha, 317 fires surpassed 500 ha, with 110 over 1000 ha. "Other Natural Land" and "Agriculture" were most impacted.

Figure 336. Monthly figures in Ukraine in 2024.



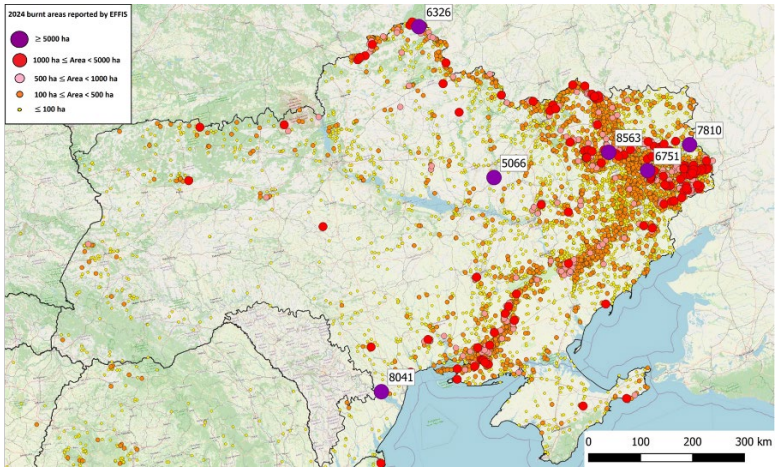
Source: EFFIS.

Figure 337. Annual BA of fires ≥ 30 ha in Ukraine.



Source: EFFIS.

Figure 338. Locations of fires in Ukraine in 2024.



Source: EFFIS.

3.2.36. United Kingdom

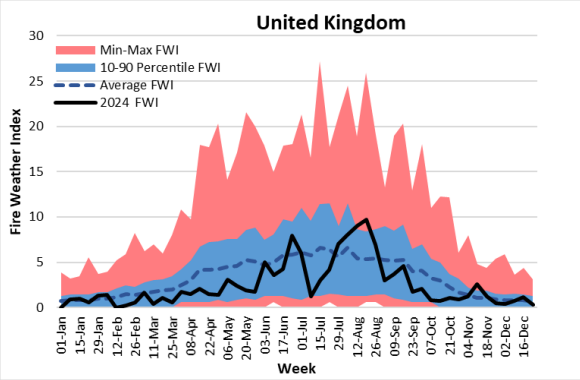
The total burnt area in mapped in the United Kingdom was 2 497 ha from 39 fires, around one quarter of what was recorded in 2023 and the lowest for seven years. The Fire Weather Index rarely exceeded the average and was well below it for much of the year.

Table 89. BA (ha) in the UK by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	31	1.24
Mixed forest	17	0.68
Other Natural Land	2414	96.68
Agriculture	8	0.32
Other Land Cover	27	1.08
TOTAL	**2497**	**100**

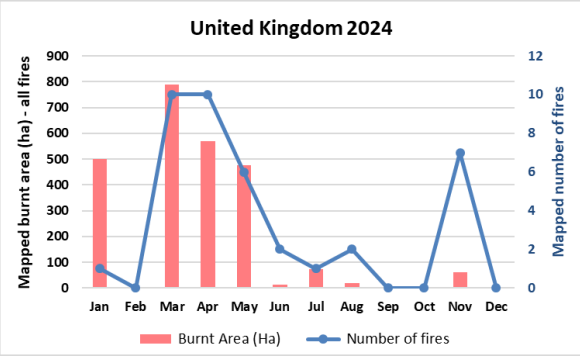
Source: EFFIS.

Figure 339. FWI information for the United Kingdom.



Source: EFFIS.

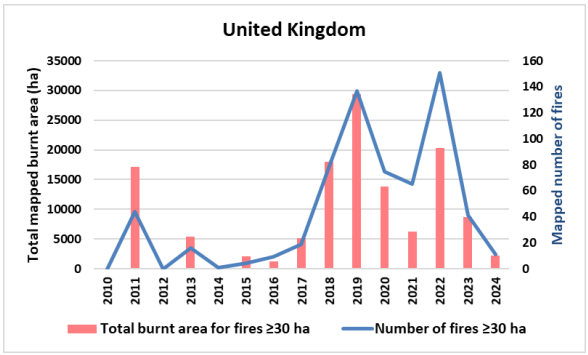
Figure 340. Monthly figures in the United Kingdom in 2024.



Source: EFFIS.

As usual, most of the damage occurred in the spring, including the largest fire of the year which covered nearly 500 ha in Scotland.

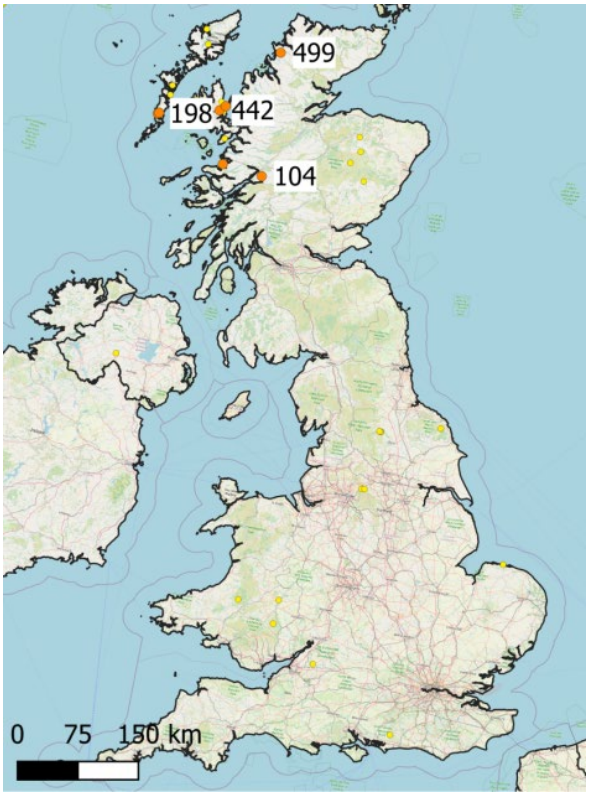
Figure 341. Annual BA of fires ≥ 30 ha in the United Kingdom.



Source: EFFIS.

Around 10% (238 ha) of the total burnt area occurred in protected sites, amounting to 0.01 % of the total protected area of the country.

Figure 342. Locations of fires in the United Kingdom in 2024.



Source: EFFIS.

3.3. Middle East and North Africa

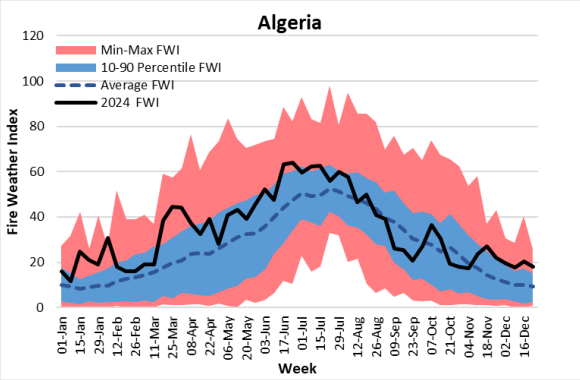
Despite ongoing conflicts, North Africa and the Middle East recorded one of their lowest burnt areas ever: around 72 500 ha, significantly below the 115 000 ha average.

Burnt areas in these countries were classified by land type using ESA's Globcover map, harmonized with CLC terminology.

3.3.1. Algeria

Algeria recorded its lowest-ever burnt area in 2024, with 10 354 ha from 369 fires. Most activity (around 70% of the total burnt area) occurred in summer, with five large fires (over 500 ha) in late July and August. Only 15 ha affected protected areas.

Figure 343. FWI information for Algeria.



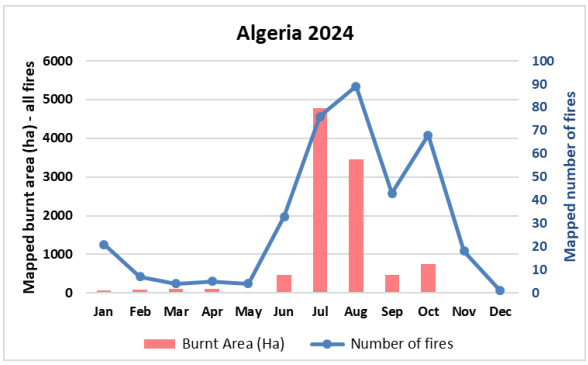
Source: EFFIS.

Table 90. BA (ha) in Algeria by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	58	0.56
Coniferous forest	2	0.02
Mixed forest	4905	47.38
Other Natural Land	4171	40.29
Agriculture	1182	11.42
Artificial Surfaces	10	0.10
Other Land Cover	25	0.24
TOTAL	**10354**	**100**

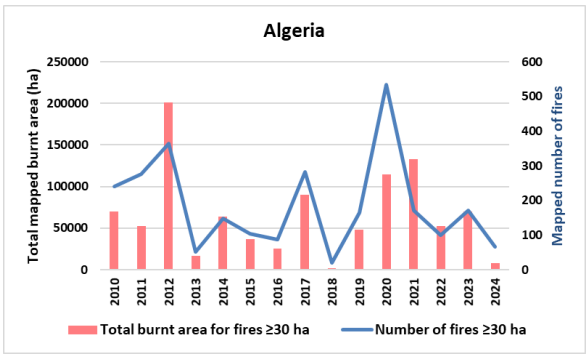
Source: EFFIS.

Figure 344. Monthly figures in Algeria in 2024.



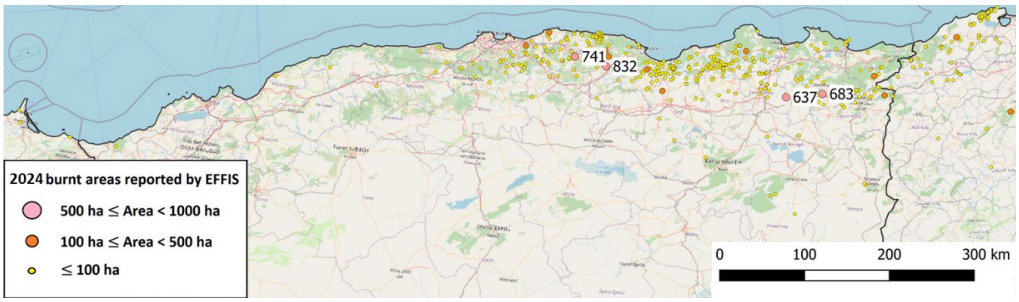
Source: EFFIS.

Figure 345. Annual BA of fires ≥ 30 ha in Algeria.



Source: EFFIS.

Figure 346. Locations of fires in northern Algeria in 2024.



Source: EFFIS.

3.3.2. Israel

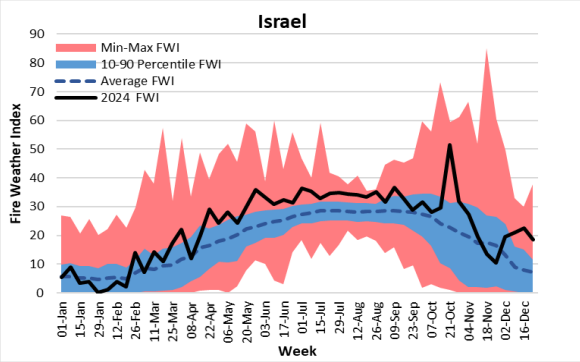
2024 was by far the most impactful season ever recorded In Israel, with a total of 17 274 ha burnt in 205 fire events. Almost all of the damage occurred in June and July, including two fires of over 1 000 ha mapped in June and three others over 500 ha in July.

Table 91. BA (ha) in Israel by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Coniferous forest	27	0.16
Mixed forest	348	2.01
Other Natural Land	9671	55.99
Agriculture	7136	41.31
Artificial Surfaces	90	0.52
Other Land Cover	2	0.01
TOTAL	**17274**	**100**

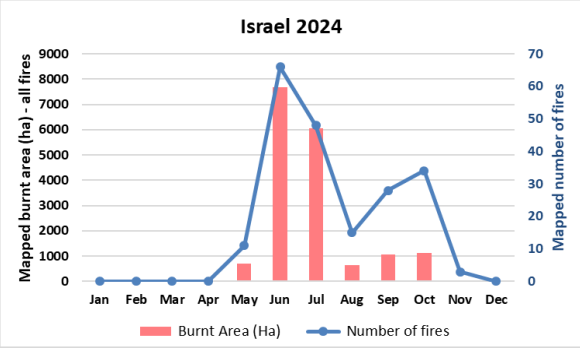
Source: EFFIS.

Figure 347. FWI information for Israel.



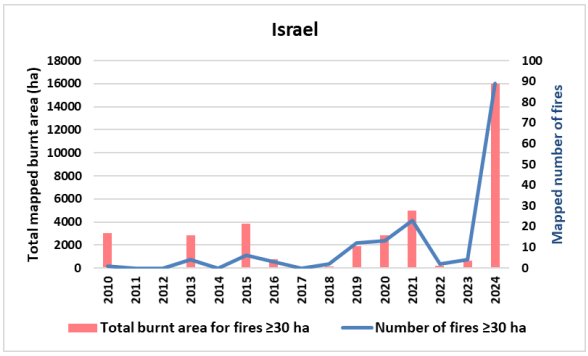
Source: EFFIS.

Figure 348. Monthly figures in Israel in 2024.



Source: EFFIS.

Figure 349. Annual BA of fires ≥ 30 ha in Israel.



Source: EFFIS.

3.3.3. Jordan

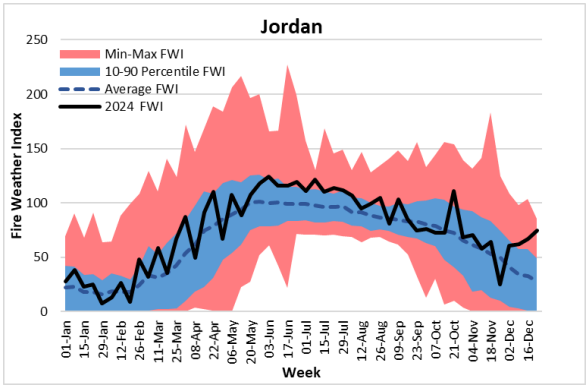
In Jordan 49 fires were mapped, with 1 860 ha of burnt area between May and August.

Table 92. BA (ha) in Jordan by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Coniferous forest	5	0.27
Mixed forest	29	1.56
Other Natural Land	1638	88.06
Agriculture	183	9.84
Artificial Surfaces	5	0.27
TOTAL	**1860**	**100**

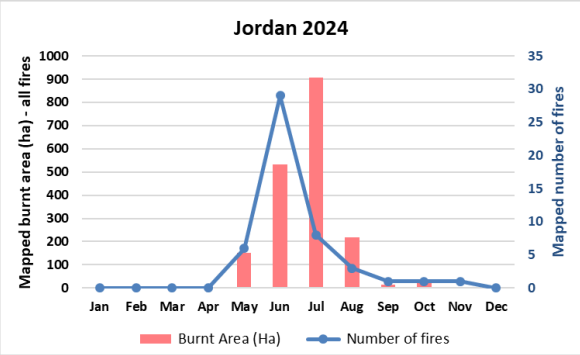
Source: EFFIS.

Figure 350. FWI information for Jordan.



Source: EFFIS.

Figure 351. Monthly figures in Jordan in 2024.



Source: EFFIS.

3.3.4. Lebanon

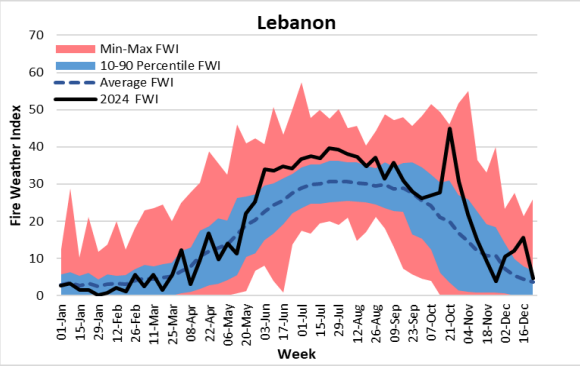
Lebanon had its worst fire season on EFFIS record in 2024: 717 fires burned 16 437 ha, mainly in the south, surpassing all previous years' totals combined. The biggest fires are more than 300 ha.

Table 93. BA (ha) in Lebanon by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Coniferous forest	519	3.16
Mixed forest	1038	6.32
Other Natural Land	12773	77.71
Agriculture	1758	10.70
Artificial Surfaces	348	2.12
TOTAL	**16437**	**100**

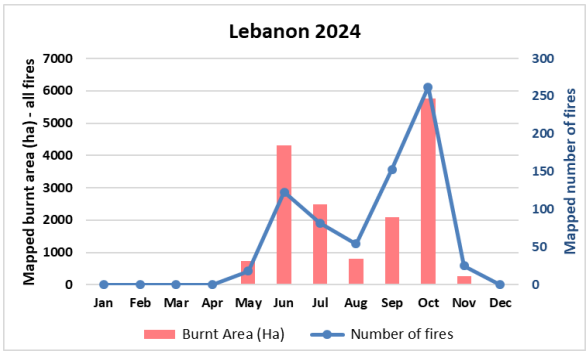
Source: EFFIS.

Figure 352. FWI information for Lebanon.



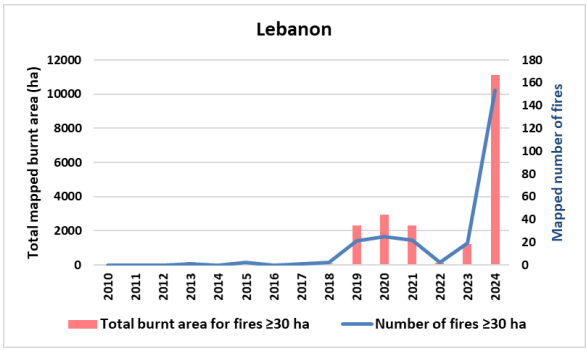
Source: EFFIS.

Figure 353. Monthly figures in Lebanon in 2024.



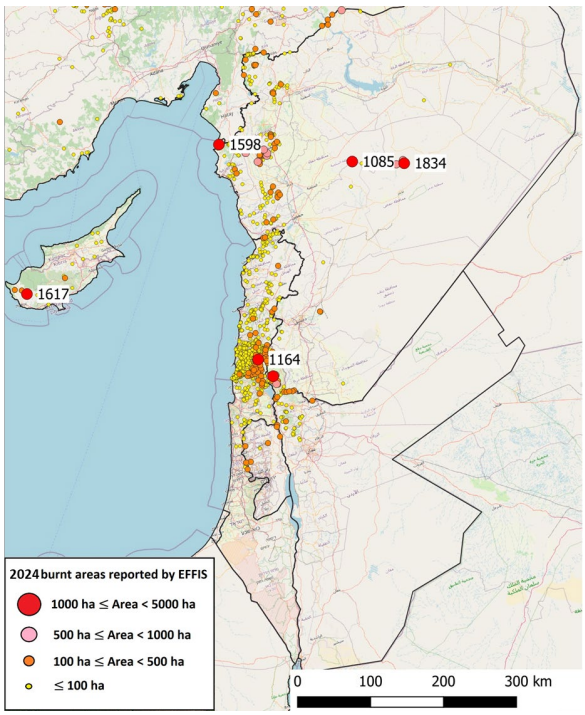
Source: EFFIS.

Figure 354. Annual BA of fires ≥ 30 ha in Lebanon.



Source: EFFIS.

Figure 355. Locations of fires in the Middle East in 2024.



Source: EFFIS.

3.3.5. Libya

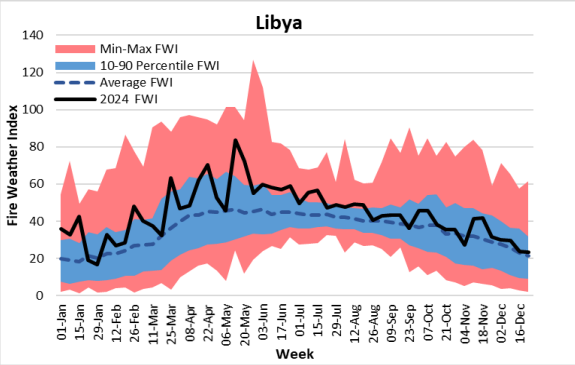
The 2024 fire season in Libya was quiet and similar to that of 2023. 12 fires were mapped, resulting in a total burnt area of 285 ha. Almost all of the annual total came from a single fire of 200 ha in May.

Table 94. BA (ha) in Libya by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	6	2.11
Mixed forest	27	9.47
Other Natural Land	52	18.25
Agriculture	200	70.18
TOTAL	**285**	**100**

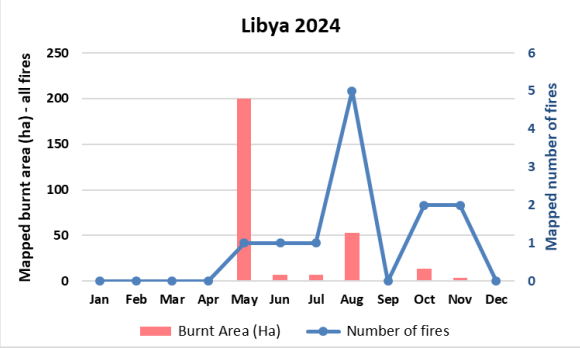
Source: EFFIS.

Figure 356. FWI Index information for Libya.



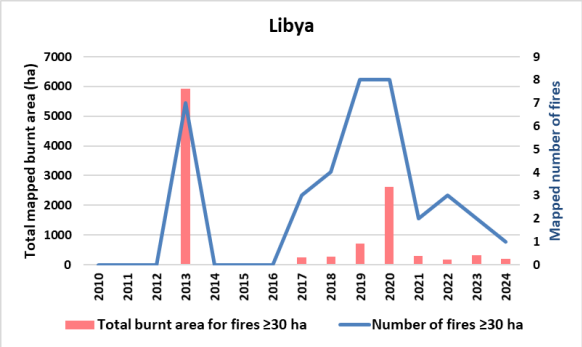
Source: EFFIS.

Figure 357. Monthly figures in Libya in 2024.



Source: EFFIS.

Figure 358. Annual BA of fires ≥ 30 ha in Libya.



Source: EFFIS.

3.3.6. Morocco

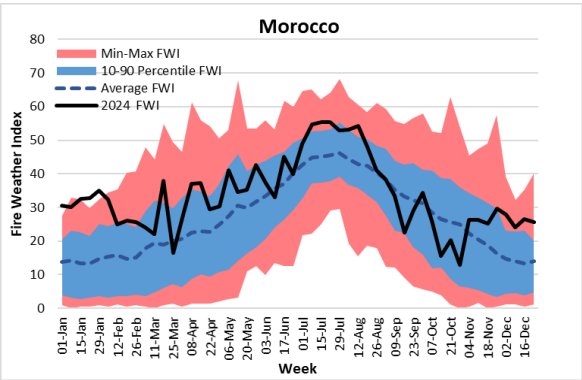
The 2024 season was one of the lowest ever, with 73 fires and 1 074 ha of burnt area. None of the fires was bigger than 200 ha. Less than 96 ha affected protected areas.

Table 95. BA (ha) in Morocco by LC types in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	395	36.82
Coniferous forest	107	10.00
Mixed forest	100	9.35
Other Natural Land	107	10.00
Transitional	224	20.84
Agriculture	140	12.99
TOTAL	**1074**	**100**

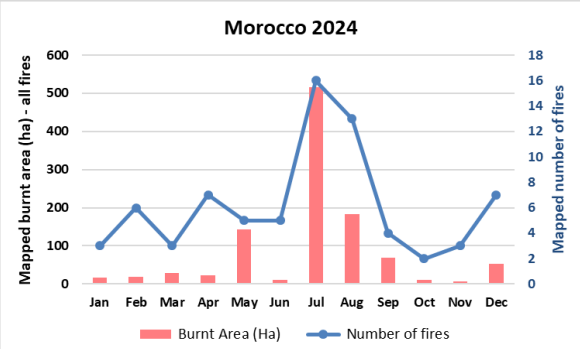
Source: EFFIS.

Figure 359. FWI information for Morocco.



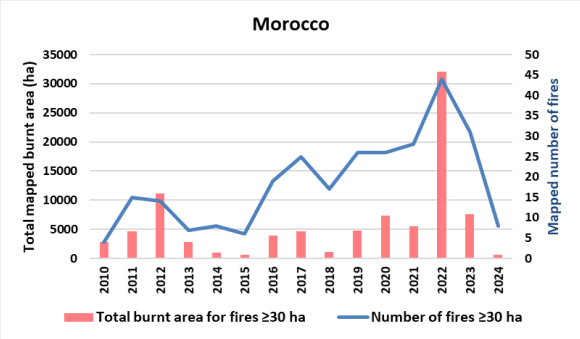
Source: EFFIS.

Figure 360. Monthly figures in Morocco in 2024.



Source: EFFIS.

Figure 361. Annual BA of fires ≥ 30 ha in Morocco.

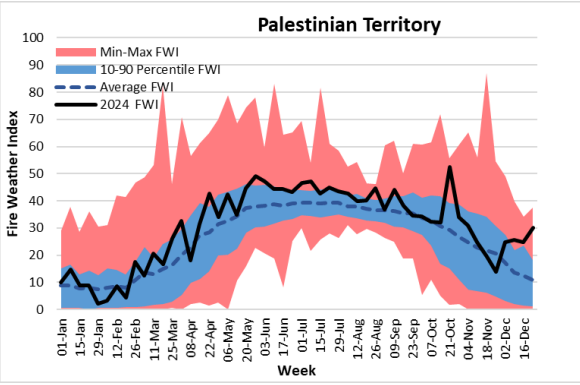


Source: EFFIS.

3.3.7. Palestinian Territory

Twelve fires were mapped in Palestinian Territory (PT) in 2024, burning 1 198 ha in total, somewhat more than in the last 4 years.

Figure 362. FWI information for Palestinian Territory.



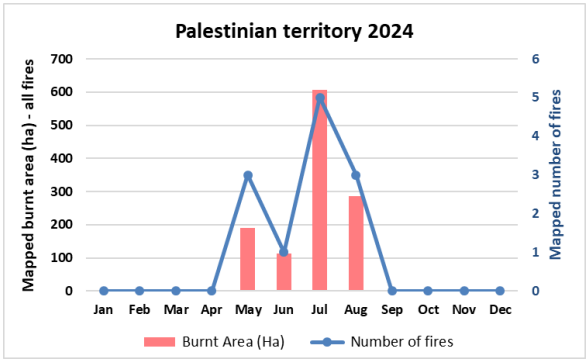
Source: EFFIS.

Table 96. BA (ha) in Palestinian Territory by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Mixed forest	5	0.42
Other Natural Land	935	78.05
Agriculture	256	21.37
Artificial Surfaces	2	0.17
TOTAL	**1198**	**100**

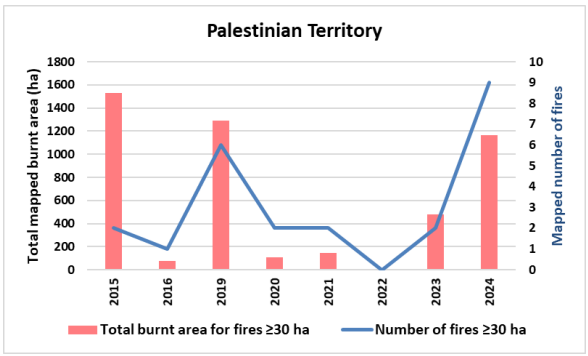
Source: EFFIS.

Figure 363. Monthly figures in Palestinian Territory in 2024.



Source: EFFIS.

Figure 364. Annual BA of fires ≥ 30 ha in Palestinian Territory.



Source: EFFIS.

3.3.8. Syria

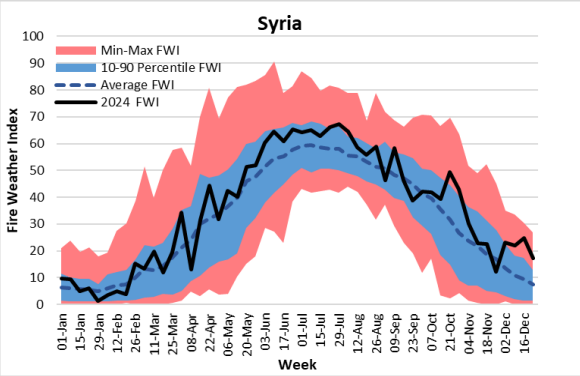
There were 254 fires mapped, with three over 1 000 ha, in the regions of Hamah, Hims and Lattakia. The total burnt area was 22 683 ha.

Table 97. BA (ha) in Syria by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	58	0.26
Coniferous forest	2014	8.88
Mixed forest	1516	6.68
Other Natural Land	11856	52.27
Transitional	83	0.37
Agriculture	6477	28.56
Artificial Surfaces	672	2.96
Other Land Cover	7	0.03
TOTAL	**22683**	**100**

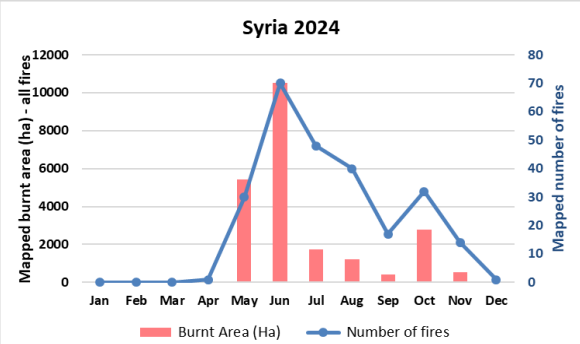
Source: EFFIS.

Figure 365. FWI information for Syria.



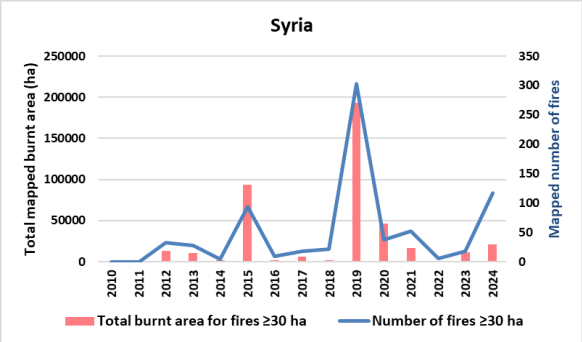
Source: EFFIS.

Figure 366. Monthly figures in Syria in 2024.



Source: EFFIS.

Figure 367. Annual BA of fires ≥ 30 ha in Syria.



Source: EFFIS.

3.3.9. Tunisia

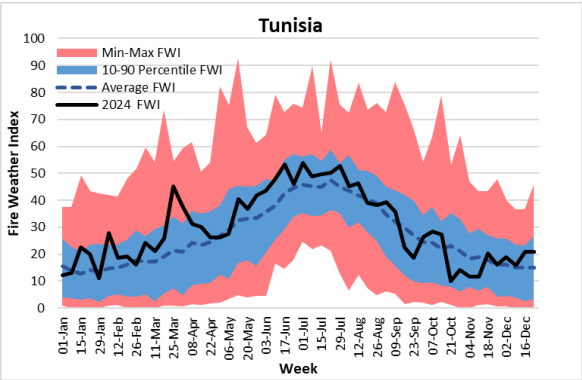
The 2024 season was the second lowest since 2010. 1 469 ha of burnt area mapped from 78 fires. No fires more than 300 ha.

Table 98. BA (ha) in Tunisia by LC in 2024.

Land Cover	*Burnt Area*	*% of total*
Broadleaf forest	277	18.88
Coniferous forest	226	15.41
Mixed forest	14	0.95
Other Natural Land	24	1.64
Sclerophyllous vegetation	455	30.95
Transitional	271	18.47
Agriculture	164	11.18
Other Land Cover	37	2.52
TOTAL	**1469**	**100**

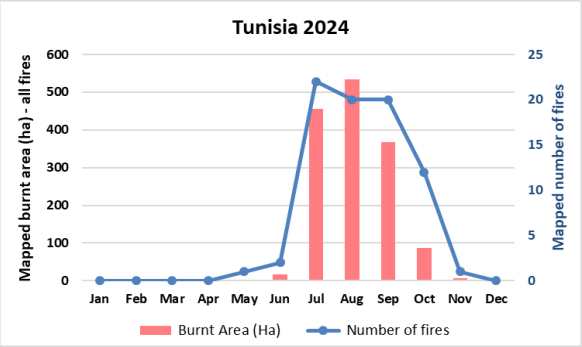
Source: EFFIS.

Figure 368. FWI information for Tunisia.



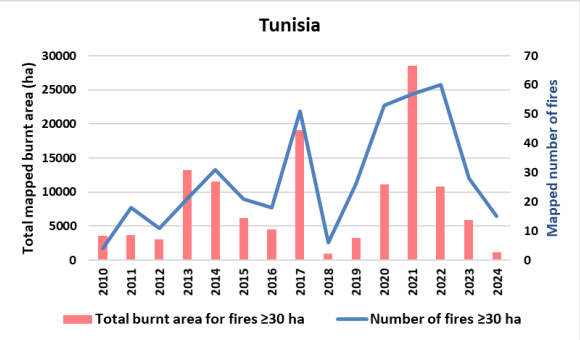
Source: EFFIS.

Figure 369. Monthly figures in Tunisia in 2024.



Source: EFFIS.

Figure 370. Annual BA of fires ≥ 30 ha in Tunisia.



Source: EFFIS.

3.4. Conclusions

2024 was a transition year, after critical wildfire seasons in the European Union in the previous three years. The 2024 wildfire season in the European Union finished with a total burnt area of 419 298 ha, which is slightly above the average of the period 2006-2023. About 35% of this, i.e. 147 017 ha, occurred on Natura200 sites. However, it is relevant to mention that many wildfires, which caused extensive burnt areas, occurred in the Balkan region, inside and outside the EU territory. It is worth mentioning that a record number of wildfires were mapped in EFFIS in the Ukrainian territory. The distribution of these fires depicts the area of the combat frontline in the war between Ukraine and Russia.

Although based purely on statistics, 2024 may appear overall as an average wildfire year, it included the occurrence of serious wildfire episodes early in the core of the wildfire season, in July, with critical wildfires in some of the Greek islands and in Madeira, in Portugal. The overall trends of wildfires in spring and summer 2024 were on or below average, due to intermittent rainfalls across the Mediterranean region. However, a series of multiple wildfires were ignited in Portugal in September, which resulted in a total burnt area over 100 000 ha in the European Union in just a week.

4. EFFIS Applications

4.1. The Current Situation Viewer Application

The current situation viewer application allows the user to view and query map layers, with the most up to date information on the current fire season in Europe and in the Mediterranean area. This includes current date meteorological fire danger maps and forecast up to 9 days, daily updated maps of hot spots and fire perimeters. The application can also be used to view past years situation.

In the Fire Danger Forecast section ❍ two different sources and 8 different indices can be displayed, for the current day plus up to 8 days in the future.

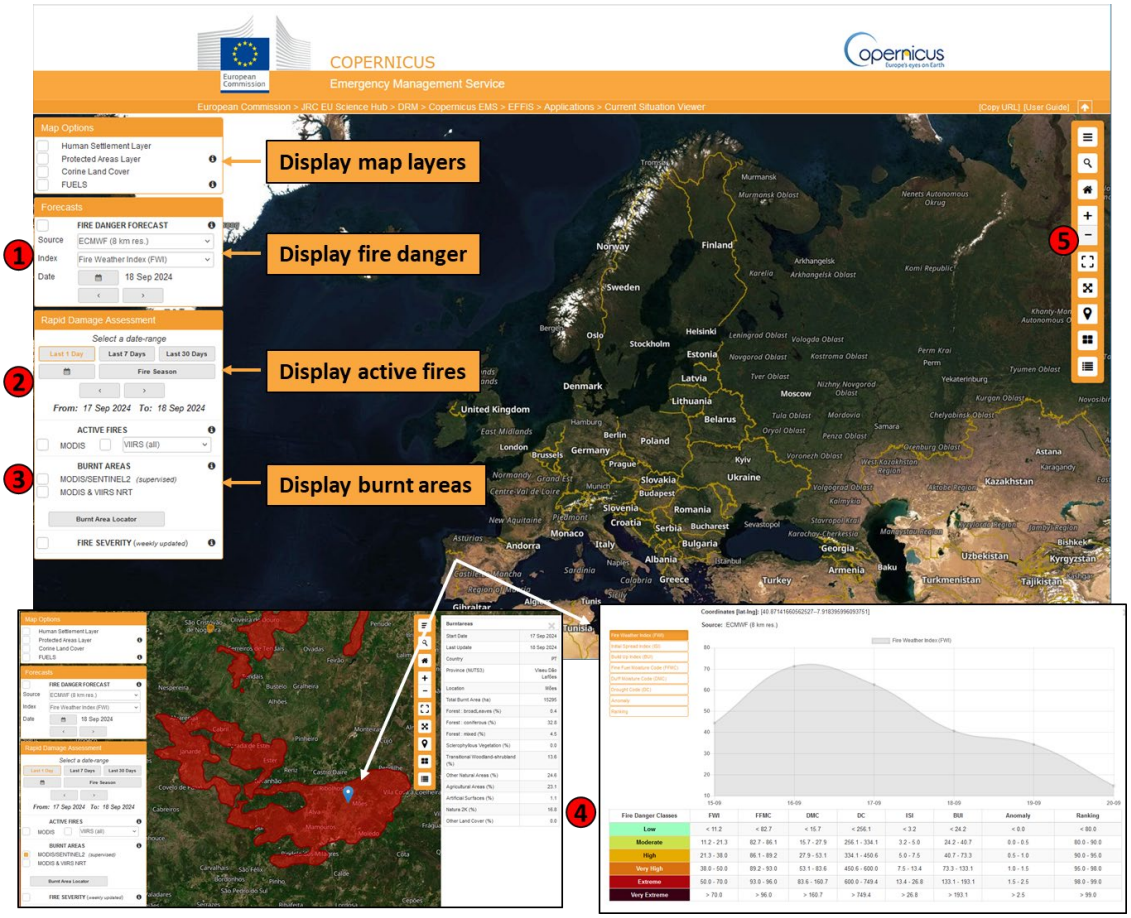
The Rapid Damage Assessment ❍ allows the user to display active fire information and burnt area information for various time periods from two sources (Modis and VIIRS).

The Burnt area locator ❍ shows the burnt area for the whole area or for a given country/region. A close-up view of the individual fire perimeter is shown if the user clicks on a specific fire ❍.

A tool bar ⑤ has a number of controls for changing the view and displaying the legend.

This application can be accessed at https://effis.jrc.ec.europa.eu/apps/effis_current_situation/

Figure 371. The Current Situation Viewer application.



Source: EFFIS.

4.2. The Fire News Application

The purpose of this application is to display geo-located news items about forest fires from a number of sources. News items are added to the map daily by team members during the fire season.

[N.B. It is important to note that not all fires are displayed here: only those reported in the media with an identifiable location. Fires are not always reported individually (or at all) in the press, and the space devoted to them depends on other current world events].

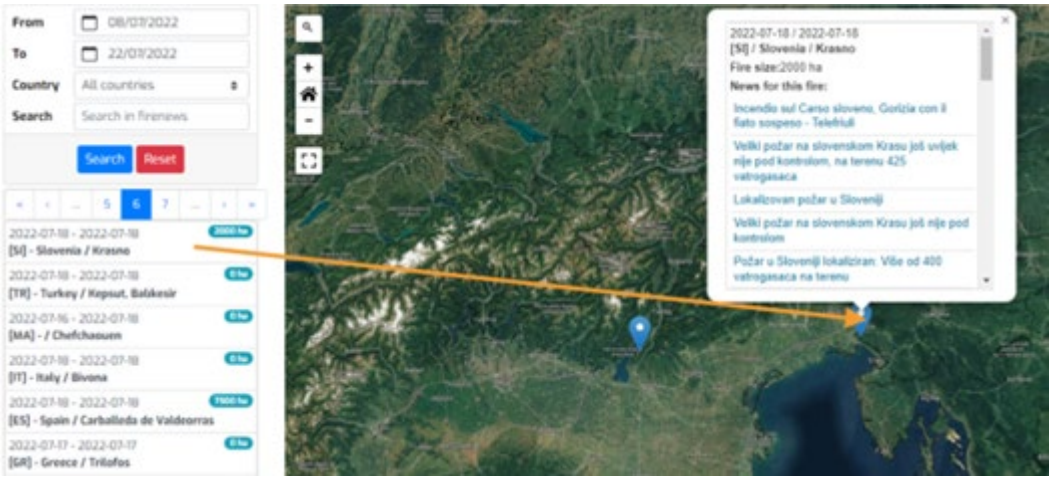
Clicking on a point on the map gives a link to the original news item associated with that point. Clicking on the name in the list gives a table with details of the fire and a close-up of the map. By default, the display shows fires occurring in the last week, but the "From" and "To" boxes can be used to select other times. The results can be filtered by country, and the Search box allows the user to narrow down the display to a specific location of interest.

This application can be accessed at https://effis.jrc.ec.europa.eu/apps/firenews.viewer/.

Figure 372. The Fire News application. Clicking on a specific fire will zoom in to that spot.

Source: EFFIS.

Figure 373. Clicking on the spot will bring up all the news items linked to the fire.



Source: EFFIS.

4.3. The EFFIS Statistics Portal

Statistics are provided at national level and for 3 groups: EU, European non-EU countries, and Middle East and North Africa countries. The portal provides information on the current fire season through the provision of the following information:

- Current statistics of burnt areas and number of fires, as compared to the average of the last years since 2006. Statistics of one year can be compared to a single year or a period in the past;
- Seasonal cumulative trend in burnt areas and number of fires as compared to the average of the last years since 2006;
- Number of thermal anomalies detected by the VIIRS sensor as compared to the average of thermal anomalies for the last years since 2012;
- Number of thermal anomalies detected by the MODIS sensor as compared to the average of the thermal anomalies for the last years since 2012.

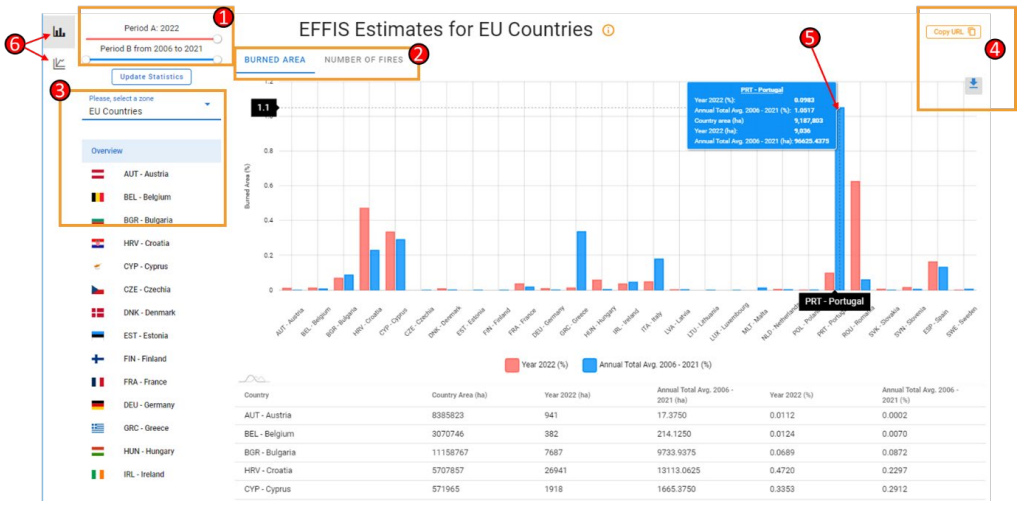
There are two parts to the Portal: EFFIS estimates and the Seasonal trend.

EFFIS Estimates

In this section the user can display the burnt area or numbers of mapped fires for two periods. The first is a single year (default is the current fire season), and the second can be defined by the user to be any range between 2006 and the year before the current season. The countries are grouped by region and displayed in alphabetical order in the graph.

1. Use the sliders to select year of interest and period for comparison;
2. Choose Burned Area or Number of Fires;
3. Choose region of interest (EU countries, European Non-EU countries, Mena countries) and either the overview or an individual country;
4. Download the results or copy the url;
5. Hover the mouse over individual points to get their statistics;
6. Switch between the EFFIS Estimates and Seasonal Trends.

Figure 374. EFFIS estimates.



Source: EFFIS.

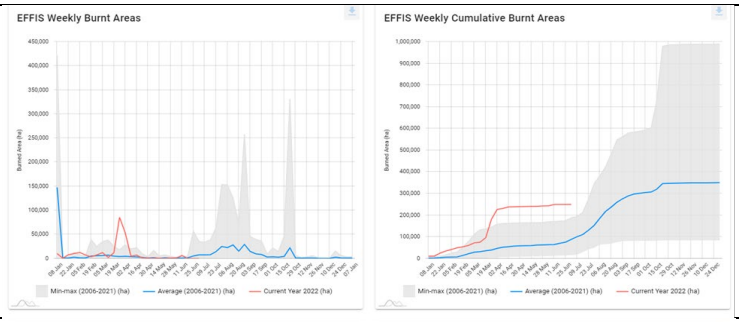
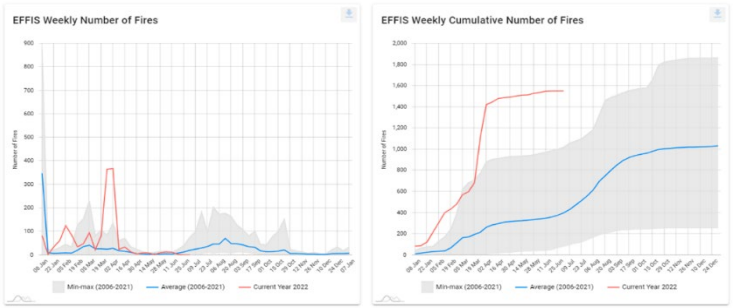
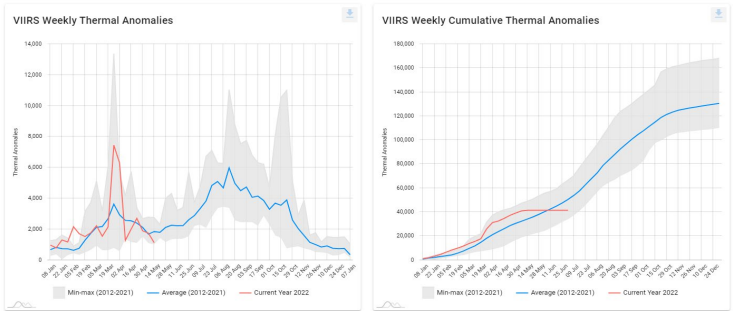
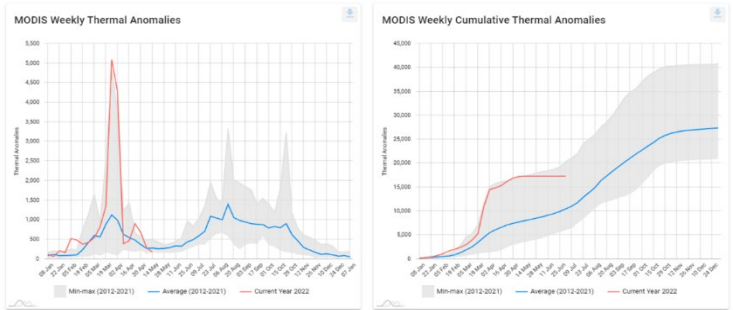
The values displayed on the graph are provided in table format below the graph. Extra information is also provided when the "overview" option is selected, including the country size and the percentage of the total country area that has been burned.

In each case the statistics can be displayed for the entire region of interest, or for any of the individual countries in the group.

Seasonal Trends

This section contains eight charts (four pairs) for the country groups: EU, Non-EU, MENA. Data is shown for groups or individual countries, mirroring the Estimates format. The first chart of the pair compares current year's progress to the long-term average (since 2006) and min/max values. The second shows the same data cumulatively.

Figure 375. Seasonal trends.

Burnt areas EFFIS weekly burnt areas comparing the current year's progress against the long term average (2006-2021) and the minimum/maximum values.	
Numbers of fires EFFIS weekly burnt areas comparing the current year's progress against the long term average (2006-2021) and the minimum/maximum values.	
VIIRS Weekly Thermal Anomalies VIIRS weekly thermal anomalies comparing the current year's progress against the long term average (2006-2021) and the minimum/maximum values.	
MODIS Weekly Thermal Anomalies MODIS weekly thermal anomalies comparing the current year's progress against the long term average (2006-2021) and the minimum/maximum values.	

Source: EFFIS.

4.4. The EFFIS Fire Database

The Fire Database contains the forest fire information compiled by countries in Europe, Middle East and North Africa.

Regulation EEC No 804/94 [11] (now expired) established a Community system for forest fire information; participating Member States had to collect a minimum "Common Core" of data on each fire. The subsequent Forest Focus regulation EC No 2152/2003 [7] continued the collection of this "common core" data to ensure comparable information on forest fires across the Community. Since 2000 the forest fire data provided each year by individual EU Member States and other countries in Europe, Middle East and North Africa has been checked, stored and managed by JRC within EFFIS.

The number of countries now contributing at least once to the database is 27: Algeria, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Lebanon, Morocco, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tunisia and Türkiye. The database currently contains over 3.1 million individual fire event records (over 2.2 million forest fires).

Access to the information

Individual records are not made available as they're owned by the supplying country authorities. However, users can request annual or monthly summaries of burnt area or number of fires by country, NUTS2, or NUTS3 region, from the point of contact.

More information can be found in the report "The European Fire Database: Technical specifications and data submission" EUR26546 EN [12]:

https://effis.jrc.ec.europa.eu/reports-and-publications/effis-related-publications

Table 99. Information requested for each fire event.

ID	Unique Fire identifier	FIREID
TIME OF FIRE	Date of first alert [YYYYMMDD]	DATEAL
	Time of first alert [HHMM]	TIMEAL
	Date of first intervention [YYYYMMDD]	DATEIN
	Time of first intervention [HHMM]	TIMEIN
	Date of fire extinction [YYYYMMDD]	DATEEX
	Time of fire extinction [HHMM]	TIMEEX
LOCATION OF FIRE	Province Code (national nomenclature)	PROVCODE
	NUTS3 code	NUTS3
	Commune Code (national nomenclature)	CODECOM
	Commune Name (national nomenclature)	NAMECOM
	Latitude [decimal degrees]	NORTH
	Longitude [decimal degrees]	EAST
SIZE OF FIRE (Ha)	Burnt Area FOREST	BAFOR
	Burnt Area OTHER WOODED LAND	BAOW
	Burnt Area OTHER NON WOODED NATURAL LAND	BAONW
	Burnt Area AGRICULTURE AND OTHER ARTIFICIAL LAND	BAAGR
CAUSE OF FIRE	Certainty of knowledge of Presumed Cause (New EU code)	CAUSE_KNOWN
	Presumed Cause (New EU categories code)	CAUSE_EU
	Presumed Cause (Country detailed categories code)	CAUSE_CO

Source: EFFIS.

General notes on **Table 100**: 2024 data are still undergoing checks and are not presented. The table's totals may not match the published fire numbers as: (i) purely agricultural fires submitted by the country are in the database but are not counted as forest fires; (ii) some countries submit only summary data and not detailed data for their entire territory.

Table 100. Summary of data records stored in the Fire Database.

	BG	CH	CY	CZ	DE	EE	ES	FI	FR	GR	HR	HU	IT	LT	LV	NL	PL	PT	RO	SE	SI	SK	TR	DZ	LB	MA	TN
1980		87																2349									
1981		153																6730									
1982		86																3626									
1983		120								945								4542									
1984		183								1184								7356									
1985		114					12235		3732	1417			12931					8441									75
1986		87					7514		2657	1088			6115					5036									89
1987		121					8816		2116	1234			8506					7705									207
1988		79					9440		2240	1798			9785					6131									158
1989		189					20250		3321	1203			8328					21896									70
1990		257					12914		3297	1283			11560					10745									118
1991		152					13529		2372	1036			7580					14327									97
1992		86					15956		2708	2008			10044					14954									182
1993		83					14253		4766	2707			14317					16101									183
1994		86			706		19249		4728	1955			7153				24361	19983									131
1995		96			525		25557		6539	1494			5505				23816	34116			44						13
1996		130			822		16586		6401	1527	2363		6064				23582	28626		4854	47						13
1997		179			276		22320		8001	2271	2648		11608				25068	23497		7057	55						98
1998		121			592		22003		6289	605	4096		9565				21342	34676		2503	143						-
1999		50			794		17943		4881	513	2592		6956				32646	25477		4707	55						-
2000		70	285		930		23574		4343	1469	5477		8609				31809	34109		4708	100						-
2001		67	299		373		19099		4259	1313	2505		7227				24511	28915		4831	60						-
2002		117	243		278		19929		4097	572	3428	429	4607				38154	28993		6490	64						-
2003		304	427		1238		18616		7023	622	4904	373	9716				79013	28087		8282	227						-
2004		94	221	957	300		21396		3767	739	1704	104	6341	430	647		36315	27829	34	4955	50	153					-
2005	251	110	185	653	299	65	25492	2631	4698	718	2180	150	7918	267	365		46542	41689	64	4573	74	287	1530				-
2006	393	110	172	697	717	248	16334	6314	4608	764	2210	97	5651	1444	1929		35630	24243	105	4618	106	238	2227			347	216
2007	1479	120	111	809	435	64	10932	2813	3382	1226	3759	603	10736	245	426		31303	25133	478	3787	129	463	2706			304	292
2008	582	63	114	470	560	71	11656	3161	2781	1071	228	502	6648	272	716		35786	18958	91	5420	68	182	2135			267	259
2009	314	103	91	520	575	47	15642	2746	4808	354	181	608	5423	471	890		30912	29783	190	4180	122	347	-			487	199
2010	222	88	133	731	525	30	11722	3100	3828	540	131	109	4884	106	319		24443	26113	70	3120	33	123	1861			597	264
2011	635	114	85	1341	515	24	16417	2871	4283	953	279	2021	8181	137	373		39011	29782	340	3534	114	303	-			568	262
2012	876	75	78	1555	451	5	15978	1050	3713	-	570	2657	10345	81	162		53907	25352	911	2213	168	517	2449	5036	99	484	493
2013	408	58	135	671	355	15	10797	2864	2061	-	137	761	2077	119	420		25652	23129	118	4907	75	233	3755	-	-	411	-
2014	151	60	68	870	251	91	9806	3637	1729	-	43	1042	1821	155	695		38115	9388	83	4374	35	153	-	-	-	460	-
2015	439	166	87	1738	594	67	11810	1644	2891	-	176	1069	5424	247	704		60176	19643	250	2700	93	242	-	-	-	425	-
2016	584	82	119	899	407	84	-	2101	2761	-	176	452	-	98	641		25791	16104	174	5454	90	136	-	-	-	422	-
2017	513	110	92	988	176	61	-	2263	3201	-	328	1454	-	80	423	321	25193	21006	447	5276	108	162	-	-	-	437	-
2018	222	153	131	2033	1216	230	-	4401	1616	-	57	530	-	211	972	949	33227	12273	158	8181	32	262	-	-	-	343	-
2019	668	-	99	1964	845	143	-	3046	2886	-	123	2088	-	280	1107	547	41488	10832	425	5483	84	-	-	-	-	529	-
2020	499	-	-	2079	684	24	-	2780	2658	-	-	1239	-	157	581	724	31061	9619	627	5305	120	-	-	-	-	514	-
2021	349	-	-	1515	293	32	-	2457	2295	-	-	1154	-	46	448	212	15605	8186	278	4086	73	-	-	-	-	434	-
2022	516	-	-	2469	1228	26	-	2370	4349	-	-	2733	-	81	369	-	33549	10380	1021	5189	217	-	-	-	-	499	-
2023	448	-	-	-	584	33	-	2698	2663	-	-	674	-	167	571	-	16496	-	170	4744	40	-	-	-	-	466	-

Source: EFFIS Fire Database.

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http://effis.jrc.ec.europa.eu/reports-and-publications/annual-fire-reports/

List of abbreviations and definitions

Abbreviations	Definitions
AEMET	(Spain) State Meteorological Agency
AGIF	Agency for Integrated Rural Fire Management
ANEPC	(Portugal) Ministry of Internal Administration, National Authority for Emergency and Civil Protection
BA	Burnt Area
LC, CLC	Land Cover, CORINE Land Cover
CFVA	Corpo Forestale e di Vigilanza Ambientale della Sardegna
CNVVF	Corpo Nazionale dei Vigili del Fuoco
DEFRA	(United Kingdom) Department for Environment, Food and Rural Affairs
ECHO	European Civil Protection and Humanitarian Aid Operations
ECMWF	European Centre for Medium Range Forecast
EFFIS	European Forest Fire Information System
EGFF	Expert Group on Forest Fires
EPADAP	(Greece) National Forest Fire Observatory (*ΕπαΔαΠ - Εθνικό Παρατηρητήριο Δασικών Πυρκαγιών*)
ERCC	Emergency Response Coordination Centre
EWWF	England and Wales Wildfire Forum
FOEN	(Switzerland) Federal Office for the Environment
FWI	Fire Weather Index
GWIS	Global Wildfire Information System
ICNF	(Portugal) Institute for Nature Conservation and Forests (*Instituto da Conservação da Natureza e das Florestas*)

Abbreviations	Definitions
IFCN	(Portugal) Institute for Forests and Nature Conservation – Madeira
LFMWB	Landscape Fire Management in Western Balkans
MENA	Middle East and North Africa
MITECO	(Spain) Ministry for Ecological Transition and Demographic Challenge (*Ministerio para la Transición Ecológica y el Reto Demográfico)*
MODIS	Moderate Resolution Imaging Spectroradiometer
MSB	Swedish Civil Contingencies Agency
NRT	Near Real Time
RDA	Rapid Damage Assessment
RFDMS	Remote Fire Detection and Monitoring System
UXO	Unexploded ordnance
WSL	(Switzerland) Federal Institute for Forest, Snow and Landscape Research

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Table 103. Number of forest fires in other countries (1990-2024).

Table 104. Burnt area (hectares) in other countries (1990–2024).

Statistics on burnt area divided into forest and non-forest area are supplied in the individual country reports, where available.

NOTE

Every effort is made to ensure that the published figures are correct. However, at the time of printing some data are provisional and may be changed in the future. Where there is a discrepancy between figures published in different reports, the later report should be taken as the definitive version.

Table 101. Number of forest fires in five Southern Member States (1980-2024).

Year	*PORTUGAL*	*SPAIN*	*FRANCE*	*ITALY*	*GREECE*	*TOTAL*
1980	2 349	7 190	5 040	11 963	1 207	27 749
1981	6 730	10 878	5 173	14 503	1 159	38 443
1982	3 626	6 545	5 308	9 557	1 045	26 081
1983	4 539	4 791	4 659	7 956	968	22 913
1984	7 356	7 203	5 672	8 482	1 284	29 997
1985	8 441	12 238	6 249	18 664	1 442	47 034
1986	5 036	7 570	4 353	9 398	1 082	27 439
1987	7 705	8 679	3 043	11 972	1 266	32 665
1988	6 131	9 247	2 837	13 588	1 898	33 701
1989	21 896	20 811	6 763	9 669	1 284	60 423
1990	10 745	12 913	5 881	14 477	1 322	45 338
1991	14 327	13 531	3 888	11 965	858	44 569
1992	14 954	15 955	4 002	14 641	2 582	52 134
1993	16 101	14 254	4 769	14 412	2 406	51 942
1994	19 983	19 263	4 618	11 588	1 763	57 215
1995	34 116	25 827	6 563	7 378	1 438	75 322
1996	28 626	16 771	6 401	9 093	1 508	62 399
1997	23 497	22 320	8 005	11 612	2 273	67 707
1998	34 676	22 446	6 289	9 540	1 842	74 793
1999	25 477	18 237	4 960	6 932	1 486	57 092
2000	34 109	24 118	4 603	8 595	2 581	74 006
2001	28 915	19 547	4 309	7 134	2 535	62 440
2002	28 993	19 929	4 097	4 601	1 141	58 761
2003	28 087	18 616	7 023	9 697	1 452	64 875
2004	27 829	21 396	3 775	6 428	1 748	61 176
2005	41 689	25 492	4 698	7 951	1 544	81 374
2006	24 243	16 354	3 231	5 634	1 417	50 879
2007	25 133	10 936	2 690	10 639	1 983	51 381
2008	18 958	11 655	1 801	6 486	1 481	40 381
2009	29 783	15 643	3 012	5 422	1 063	54 923
2010	26 113	11 721	2 443	4 884	1 052	46 213
2011	29 782	16 414	2 774	8 181	1 613	58 764
2012	25 352	17 503	2 763	8 252	1 559	55 429
2013	23 129	10 626	1 510	2 936	862	39 063
2014	9 388	9 771	1 730	3 257	552	24 698
2015	19 643	11 928	2 898	5 442	510	40 421
2016	16 104	8 817	2 775	5 818	777	34 291
2017	21 006	13 793	3 220	7 855	1 083	46 957
2018	12 274	7 143	1 634	3 220	793	25 064
2019	10 832	10 883	2 949	4 351	657	29 672
2020	9 619	7 745	2 760	4 865	1 060	26 049
2021	8 186	8 780	2 332	5 989	1 250	26 537
2022	10 390	10 507	4 215	6 529	962	32 603
2023	7523	7 748	2 666	4 265	941	23 143
2024	6 255	6 134	1 452	3 784	981	18 606
% of total in 2024	34%	33%	8%	20%	5%	100%
Average 1980-1989	7 381	9 515	4 910	11 575	1 264	34 645
Average 1990-1999	22 250	18 152	5 538	11 164	1 748	58 851
Average 2000-2009	28 774	18 369	3 924	7 259	1 695	60 020
Average 2010-2019	19 362	11 860	2 470	5 420	946	40 057
Average 2020-2024	8 395	8 183	2 685	5 086	1 039	25 388
Average 1980-2024	18 214	13 775	4 041	8 436	1 371	45 837
TOTAL (1980-2024)	819 646	619 868	181 833	379 605	61 710	2 062 662

Source: JRC's elaboration of the country reports.

Table 102. Burnt area (hectares) in five Southern Member States (1980–2024).

Year	*PORTUGAL*	*SPAIN*	*FRANCE*	*ITALY*	*GREECE*	*TOTAL*
1980	44 251	263 017	22 176	143 919	32 965	506 328
1981	89 798	298 288	27 711	229 850	81 417	727 064
1982	39 556	152 903	55 145	130 456	27 372	405 432
1983	47 811	108 100	53 729	212 678	19 613	441 931
1984	52 710	165 119	27 202	75 272	33 655	353 958
1985	146 254	484 476	57 368	190 640	105 450	984 188
1986	89 522	264 887	51 860	86 420	24 514	517 203
1987	76 269	146 662	14 108	120 697	46 315	404 051
1988	22 434	137 734	6 701	186 405	110 501	463 775
1989	126 237	426 693	75 566	95 161	42 363	766 020
1990	137 252	203 032	72 625	195 319	38 594	646 822
1991	182 486	260 318	10 130	99 860	13 046	565 840
1992	57 011	105 277	16 593	105 692	71 410	355 983
1993	49 963	89 267	16 698	203 749	54 049	413 726
1994	77 323	437 635	24 995	136 334	57 908	734 195
1995	169 612	143 484	18 137	48 884	27 202	407 319
1996	88 867	59 814	11 400	57 988	25 310	243 379
1997	30 535	98 503	21 581	111 230	52 373	314 222
1998	158 369	133 643	19 282	155 553	92 901	559 748
1999	70 613	82 217	15 906	71 117	8 289	248 142
2000	159 605	188 586	24 078	114 648	145 033	631 950
2001	117 420	93 297	20 642	76 427	18 221	326 007
2002	130 849	107 464	30 160	40 791	6 013	315 277
2003	471 750	148 172	73 278	91 805	3 517	788 522
2004	151 370	134 193	13 711	60 176	10 267	369 717
2005	346 718	188 697	22 135	47 575	6 437	611 562
2006	83 706	155 345	7 026	39 946	12 661	298 684
2007	36 413	86 122	7 057	227 729	225 734	583 055
2008	19 897	50 322	4 710	66 329	29 152	170 410
2009	92 126	120 094	14 612	73 355	35 342	335 529
2010	140 953	54 770	8 524	46 537	8 967	259 751
2011	77 104	102 161	6 800	72 004	29 144	287 213
2012	117 985	226 125	7 584	130 814	59 924	542 432
2013	160 388	58 985	2 735	29 076	46 676	297 860
2014	22 820	46 721	4 735	36 125	25 846	136 247
2015	67 200	103 200	8 169	41 511	7 096	227 176
2016	167 808	65 817	14 101	65 503	26 540	339 769
2017	539 921	178 234	23 093	161 987	13 393	916 628
2018	44 578	25 162	3 940	19 481	15 464	108 624
2019	42 085	83 963	13 394	36 034	9 153	184 628
2020	67 170	65 923	10 722	55 656	9 300	208 771
2021	28 360	87 880	12 779	151 964	108 418	389 401
2022	110 097	267 947	58 123	71 694	18 807	526 668
2023	34 510	89 068	5 361	88 806	136 499	354 244
2024	137 651	47 711	2 949	5 2623	28 288	269 223
% of total in 2024	51%	18%	1%	20%	11%	100%
Average 1980-1989	73 484	244 788	39 157	147 150	52 417	556 995
Average 1990-1999	102 203	161 319	22 735	118 573	44 108	448 938
Average 2000-2009	160 985	127 229	21 741	83 878	49 238	443 071
Average 2010-2019	138 084	94 514	9 308	63 907	24 220	330 033
Average 2020-2024	75 558	111 706	17 987	84 149	60 262	349 661
Average 1980-2024	113 897	151 934	22 652	101 240	44 470	434 193
TOTAL (1980-2024)	5 125 356	6 837 028	1 019 331	4 555 820	2 001 138	19 538 672

Source: JRC's elaboration of the country reports.

Table 103. Number of forest fires in other countries (1990-2024).

Country / Year	Algeria	Austria	Bulgaria	Croatia	Cyprus	Czech Republic	Estonia	Finland	Germany	Hungary	Latvia	Lebanon	Lithuania	Morocco	Netherlands	North Macedonia	Norway	Poland	Romania	Serbia	Slovakia	Slovenia	Sweden	Switzerland	Türkiye	Ukraine
1990	-	-	-	-	-	-	-	-	-	-	604	-	-	179	-	-	-	5756	131	-	-	-	-	257	1750	-
1991	-	-	73	-	-	-	-	-	1846	-	225	-	-	247	-	-	-	3528	42	-	-	-	-	152	1481	-
1992	-	-	602	325	-	-	-	-	3012	-	1510	-	1180	182	-	-	-	11858	187	-	-	-	-	86	2117	-
1993	-	112	1196	372	-	-	-	-	1694	-	965	-	634	187	-	-	-	8821	159	-	-	-	-	83	2545	-
1994	-	105	667	181	-	-	-	-	1696	-	763	-	715	417	-	-	-	10705	121	-	366	-	-	86	3239	-
1995	-	54	114	109	-	1331	-	-	1237	-	582	-	472	528	-	-	-	7678	62	-	254	-	-	96	1770	-
1996	-	26	246	305	-	1421	-	1475	1748	-	1095	-	894	220	-	-	-	7923	72	-	662	-	-	130	1645	-
1997	-	42	200	305	-	1398	-	1585	1467	-	768	-	565	391	-	-	-	6817	37	-	535	-	-	179	1569	-
1998	-	71	578	441	-	2563	-	370	1032	-	357	-	258	416	-	-	-	6165	59	-	1056	-	2503	121	1932	-
1999	-	16	320	223	-	1402	-	1528	1178	229	1196	-	1022	385	-	-	-	9820	138	-	426	-	4707	50	2075	-
2000	-	42	1710	706	285	1499	158	826	1210	811	915	-	654	321	-	-	-	12426	688	-	824	-	4708	70	2555	-
2001	-	54	825	299	299	483	91	822	587	419	272	-	287	327	-	-	117	4480	268	-	311	-	4831	67	2631	-
2002	-	108	402	176	243	604	356	2546	513	382	1720	-	1596	202	-	-	213	10101	516	-	570	60	6490	117	1471	-
2003	-	238	452	532	427	1754	111	1734	2524	375	900	-	885	392	-	-	198	17087	203	-	872	224	8282	304	2177	-
2004	-	72	294	204	221	873	89	816	626	104	647	-	468	714	-	-	119	7006	34	-	153	51	4955	94	1762	-
2005	-	85	241	147	185	626	65	1069	496	150	365	-	301	662	-	-	122	12049	64	-	287	73	4573	110	1530	-
2006	-	133	393	181	172	693	248	3046	930	97	1929	-	1545	381	-	-	205	11541	105	-	237	112	4618	110	2227	-
2007	-	256	1479	345	111	805	64	1204	779	603	425	-	251	340	-	652	65	8302	478	-	463	140	3737	120	2829	5024
2008	-	185	582	275	114	470	71	1456	818	502	700	-	301	273	-	573	171	9090	91	-	182	74	5420	63	2135	3231
2009	-	138	314	181	91	514	47	1242	763	608	823	-	471	501	-	80	109	9162	190	67	347	120	4180	103	1793	4922
2010	-	144	222	131	133	732	30	1412	780	109	316	-	104	629	-	99	62	4680	70	3	127	32	3120	88	1861	2368
2011	2487	267	635	280	85	1337	24	1215	888	2021	360	-	142	606	-	523	49	8172	340	211	303	114	3534	114	1954	1761
2012	5110	259	876	569	78	1549	5	417	701	2657	162	-	81	484	-	483	24	9265	911	318	513	168	2213	75	2450	1743
2013	2443	199	408	137	135	666	15	1452	515	761	422	-	123	411	-	186	42	4883	116	46	233	75	4878	58	3755	806
2014	4629	146	151	43	68	865	91	1660	429	1042	698	-	155	460	-	62	133	5245	83	23	153	35	4374	60	2149	1486
2015	2383	280	429	177	87	1748	67	745	1071	1069	704	107	247	425	-	106	29	12257	250	68	242	93	2700	166	2150	2225
2016	3150	141	584	151	119	892	84	933	608	452	641	260	98	422	-	60	345	5286	174	45	136	90	5454	82	3188	945
2017	2992	278	513	329	92	966	61	881	424	1454	423	92	80	433	321	301	264	3592	447	222	162	108	5276	110	2411	2371
2018	797	174	222	54	131	2033	230	2427	1708	530	972	41	211	343	949	19	887	8867	158	62	262	32	8181	153	2167	1297
2019	2278	244	668	123	99	1963	143	1458	1523	2088	1107	194	279	529	548	251	261	9635	425	189	210	84	5483	79	2688	1261
2020	3493	234	499	142	108	2081	24	1260	1360	1239	581	251	157	514	724	48	609	6627	627	81	221	120	5305	78	3399	2598
2021	1631	164	349	116	111	1517	32	1231	548	1154	448	131	46	435	212	113	653	3295	278	75	101	73	4087	85	2793	659
2022	1607	217	516	245	89	2473	26	1129	2397	2731	369	22	81	499	916	50	1275	6999	1021	66	297	217	5189	115	2160	1098
2023	-	119	448	48	131	1512	33	1346	1059	675	571	23	167	466		104	1251	4908	170	33	55	40	4744	144	2579	593
2024	-	130	595	106	121	1284	25	1260	563	582	222	-	110	382	222	250	776	5857	728	186	102	49	2867	46	3797	1993

Source: JRC's elaboration of the country reports.

Table 104. Burnt area (hectares) in other countries (1990–2024).

Country / Year	Algeria	Austria	Bulgaria	Croatia	Cyprus	Czech Republic	Estonia	Finland	Germany	Hungary	Latvia	Lebanon	Lithuania	Morocco	Netherlands	North Macedonia	Norway	Poland	Romania	Serbia	Slovakia	Slovenia	Sweden	Switzerland	Türkiye	Ukraine
1990	-	-	-	-	-	-	-	-	-	-	258	-	-	2118	-	-	-	7341	444	-	-	-	-	1723	13742	-
1991	-	-	511	-	-	-	-	-	920	-	69	-	-	3965	-	-	-	2567	277	-	-	-	-	96	8081	-
1992	-	-	5243	11131	-	-	-	-	4908	-	8412	-	769	2579	-	-	-	43755	729	-	-	-	-	65	12232	-
1993	-	85	18164	20157	-	-	-	-	1493	-	570	-	274	3078	-	-	-	8290	518	-	-	-	-	37	15393	-
1994	-	80	18100	7936	-	-	-	-	1114	-	326	-	279	6072	-	-	-	9325	312	-	-	-	-	408	30828	-
1995	-	43	550	4651	-	403	-	-	592	-	535	-	321	7018	-	-	-	5403	208	-	-	-	-	446	7676	-
1996	-	8	906	11214	-	2043	-	433	1381	-	927	-	478	1185	-	-	-	14537	227	-	-	-	-	293	14922	-
1997	-	28	595	11122	-	359	-	1146	599	-	448	-	226	3845	-	-	-	6766	68	-	-	-	-	1785	6517	-
1998	-	101	6967	32056	-	1132	-	131	397	-	211	-	93	1855	-	-	-	4222	137	-	-	-	422	274	6764	-
1999	-	6	8291	6053	-	336	-	609	415	756	1544	-	494	1688	-	-	-	8629	379	-	557	-	1771	30	5804	-
2000	-	32	57406	68171	8034	375	684	266	581	1595	1341	-	352	4064	-	-	-	7089	3607	-	904	-	1552	70	26653	-
2001	-	20	20152	16169	4830	87	62	187	122	-	311	-	113	1806	-	-	895	3466	1001	-	305	-	1254	21	7394	-
2002	-	112	6513	4853	2196	178	2082	590	122	1227	2222	-	746	593	-	-	221	5210	3536	-	595	161	2626	681	8514	-
2003	-	122	5000	27091	2349	1236	207	666	1315	845	559	-	436	2858	-	-	942	21551	762	-	1567	2100	4002	673	6644	-
2004	-	19	1137	3378	1218	335	379	358	274	247	486	-	253	8660	-	-	117	3782	124	-	157	138	1883	31	4876	-
2005	-	13	1456	3135	1838	227	85	495	183	3531	120	-	51	6198	-	-	346	5713	162	-	524	280	1562	67	2821	-
2006	-	54	3540	4575	1160	405	2638	1617	482	625	3387	-	1199	5360	-	-	3829	5657	946	-	280	1420	5710	127	7762	-
2007	-	54	42999	20209	4483	316	292	576	256	4636	272	-	38	1367	-	32665	128	2841	2529	-	679	128	1090	337	11664	12731
2008	-	20	5289	7343	2392	86	1279	830	539	2404	364	-	112	1127	-	5915	3174	3027	373	-	118	75	6113	68	29749	4521
2009	-	58	2271	2900	885	178	59	576	262	6463	646	-	287	3108	-	1307	1329	4400	974	712	510	177	1537	60	4679	4575
2010	-	36	6526	1121	2000	205	25	520	522	878	92	-	22	5511	-	737	769	2126	206	4	192	121	540	27	3517	1239
2011	13593	67	6883	15555	1599	337	19	580	214	8055	115	-	293	3460	-	17308	121	2678	2195	5003	403	288	945	225	3612	612
2012	99061	48	12730	24804	2531	634	3	86.5	269	14115	90	-	20	6695	-	10021	60	7235	6624	13226	1683	1006	483	30	10455	3311
2013	13396	102	3314	1999	2835	92	79	461.4	199	1955	217	-	25	2207	-	3027	47	1289	421	1132	270	66	1508	29	11456	220
2014	43125	92	916	188	669	536	77	881	120	4454	591	-	162	1540	-	846	770	2690	217	599	192	18	14666	46	3117	16677
2015	13010	114	4313	9416	652	344	83	143	526	4730	615	753	71	992	-	1798	143	5510	1671	1474	353	65	594	47	3219	2625
2016	18370	23	6340	7100	3205	141	123	310	283	974	467	1871	26	2585	-	450	1884	1451	675	843	175	526	1288	454	9156	1101
2017	53975	25	4569	48543	428	170	33	460	395	4933	265	264	53	2414	232	5619	525	1023	2459	4757	295	441	1433	118	11992	5474
2018	2312	19	1453	1506	1136	492	430	1228	2349	906	2864	643	110	841	639	95	3279	2696	1341	1502	248	20	24310	69	5644	1367
2019	21048	20	5620	2180	733	520	69	565	2711	6541	805	3155	200	3232	250	4834	3077	3572	2496	9872	462	154	1233	31	11332	1065
2020	43918	60	5258	23994	1305	484	191	719	368	2895	309	1851	64	5569	1072	68	363	8417	5152	1417	477	118	821	26	20971	74623
2021	100101	117	3143	6660	6612	411	33	785	148	2413	504	1508	11	3064	18	6796	653	894	2101	1630	159	124	731	35	139503	289
2022	27685	550	8126	24226	685	1715	20	267	3058	20947	217	79	53	22762	220	199	2455	2853	13153	1053	1210	4059	912	322	12799	18100
2023	-	21	6388	1837	2216	217	75	383	1240	911	622	132	60	6246	116	529	3059	1129	554	358	30	118	894	120	15520	907
2024	-	142	17116	14607	3425	140	17	390	334	2799	63	-	49	874	17	61061	887	1358	10360	6870	82	134	310	42	27485	23963

Source: JRC's elaboration of the country reports.

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