

Forests Fire Management in Cyprus



Enhancing disaster risk management and climate change adaptation in Cyprus

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Cyprus

Cyprus is the third largest island in Mediterranean with an area of 9251 km² (925,148 ha) and it is situated at the north-eastern part of the Mediterranean basin.

42 % of the total area of the island is covered with natural vegetation of which:

19 % is covered by high coniferous forests,

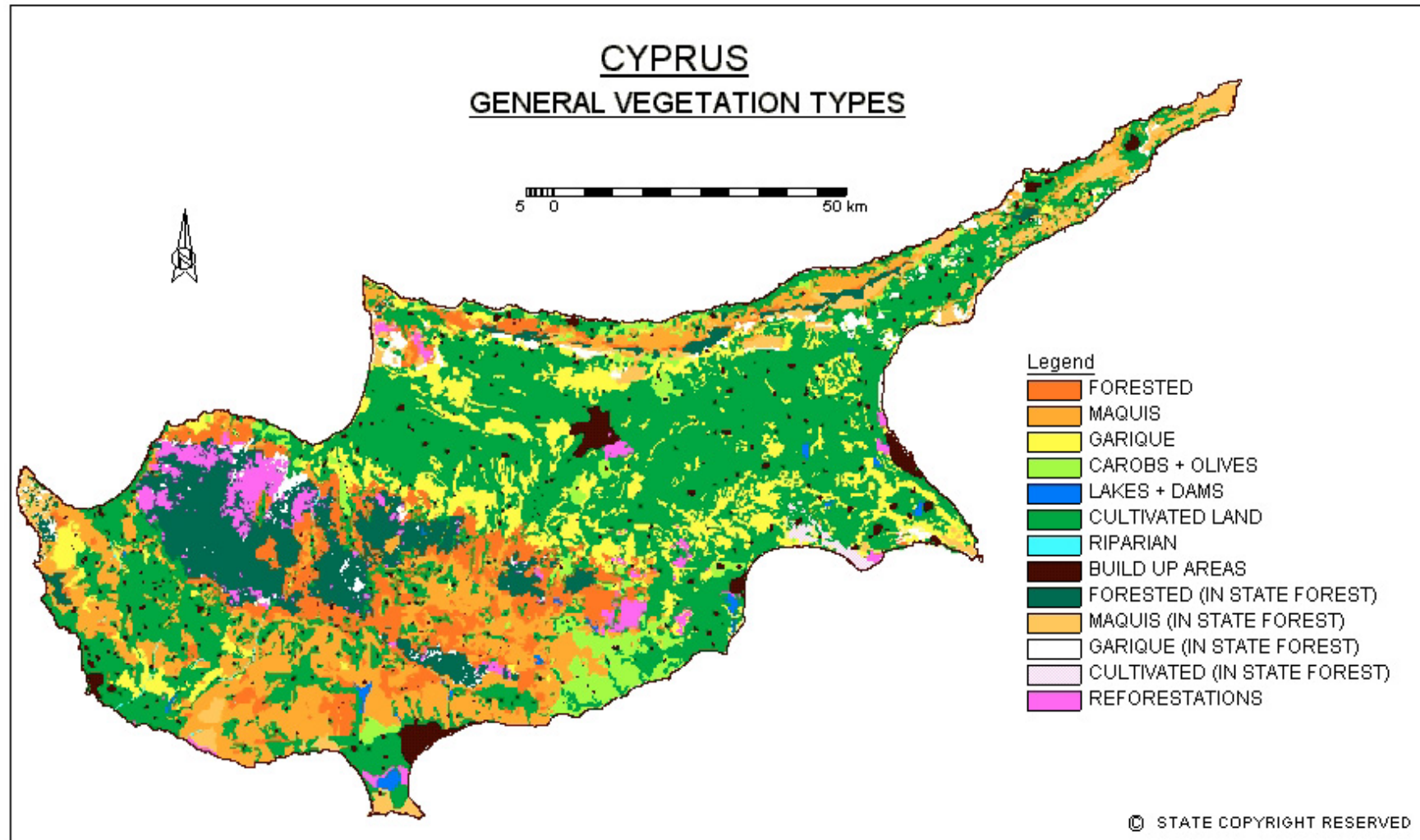
14 % is covered by Maquis vegetation (shrubs),

9 % by Garigue vegetation (dwarf shrubs)

The Cyprus Department of Forests, which manages state forests has the responsibility for fire prevention, suppression and restoration of burnt areas.



Vegetation types map



Climatic Conditions

Temperature: During the fire season the maximum temperature fluctuates from 30°C - 39°C. As regards the extreme maximum temperature, in areas with an altitude of 0 - 1.000 m it fluctuates from 30°C - 44°C whilst in areas with altitude above 1.000 m it fluctuates from 23°C - 37°C.

Precipitation: Rainfall during the fire season is very low and in most cases there is a complete absence of rain.

Relative humidity: During the fire season at 8:00 am relative humidity ranges between 30-65%.

Wind: Winds during the fire season are mostly northwesterly or northerly. Their direction and speed varies with topography and location. Frequently during the fire season, small tornados are occurred, especially during the afternoon.

Topography

Olymbos is the highest peak of Cyprus and is located at Troodos mountain at an elevation of 1952 meters.

- ❖ Very steep slopes, vertical cliffs, deep gorges, narrow streams and long mountain ridges characterize the central core.
- ❖ The foothills are characterized by rounded or conical hills, usually with steep lateral slopes.
- ❖ These geomorphological features contribute to rapid fire spread and to difficulties during fire suppression efforts.
- ❖ Moreover, ground fires turn easily to crown fires. Also, the steep terrain reduces the effectiveness of forest roads and fire traces to stop fires.

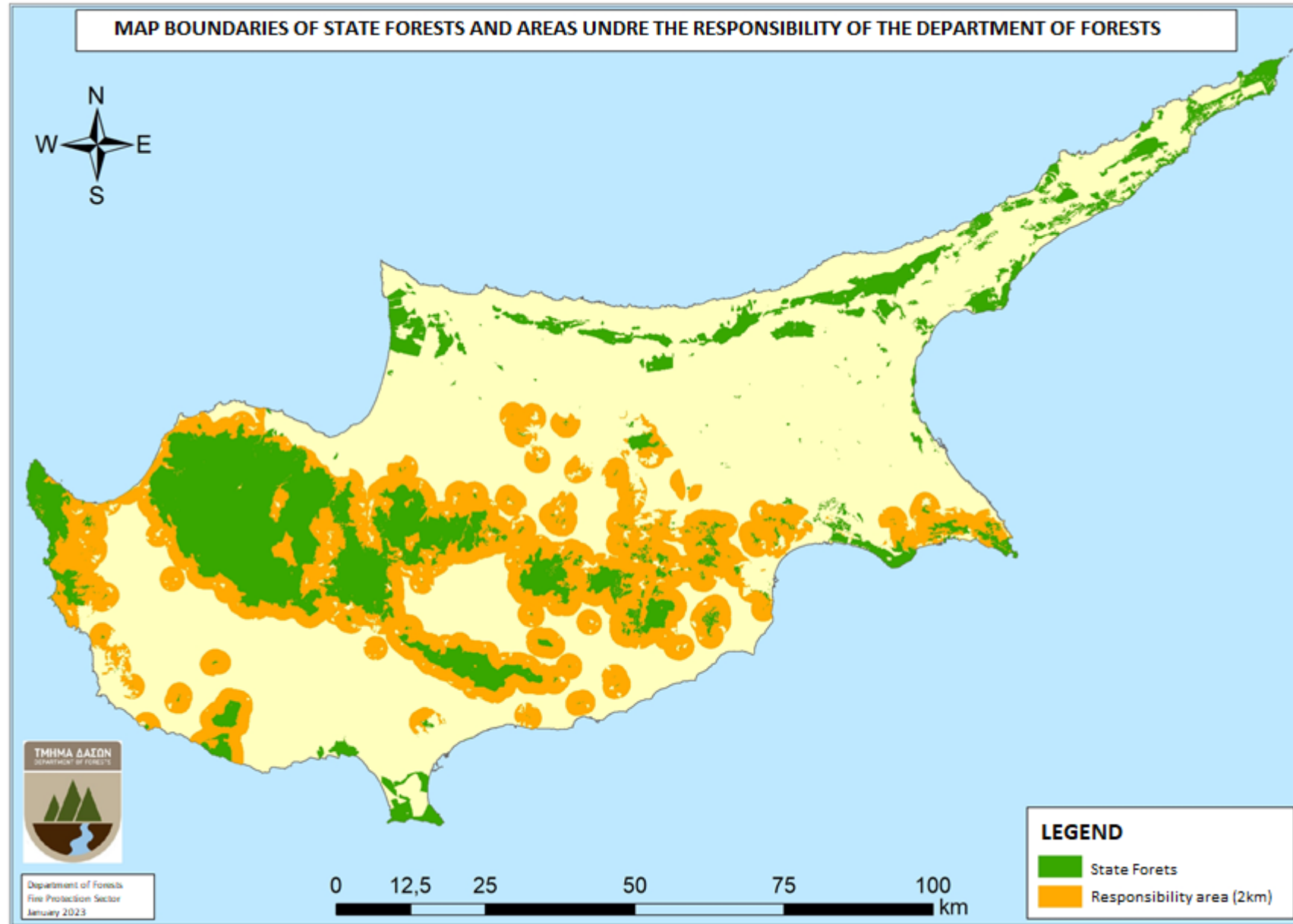


Photo by: kilhan/Adobe Stock

Fire Hazard

- In Cyprus, forest fires are the main threat to forest ecosystems.
- According to the 2018 National Risk Assessment of the Republic of Cyprus, forest fires present the highest risk, compared to other natural disasters such as earthquakes, coastal erosion, floods, etc.
- The problem of the occurrence and spread of forest fires in southern European countries is expected to continue to worsen for two main reasons, **rural abandonment** and **climate change**.





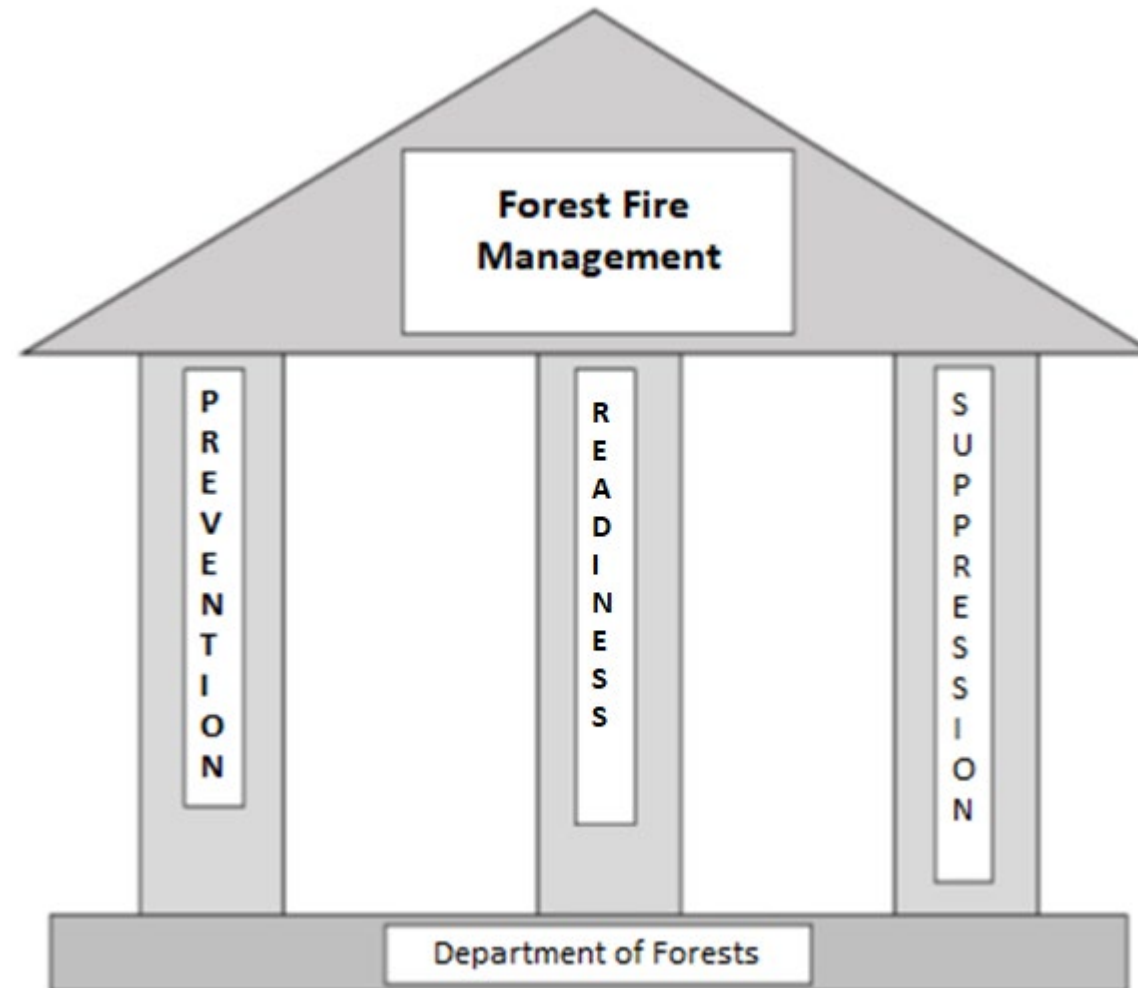
The Department of forests is responsible for extinguishing fires that break out or spread

- ❖ within a state forest, or
- ❖ within two (2) kilometers of the boundary line of the state forest, or
- ❖ fires which are in the judgment of the Director and may endanger any State Forest.

Incident Command System

The Department of Forests in its area of responsibility implements an **integrated forest fire management system** which includes three main pillars:

- ❖ Prevention
- ❖ Readiness
- ❖ Suppression



Forest Fire Management System in Cyprus

Prevention – Readiness - Suppression

PREVENTION

In the context of forest fire prevention, the main actions implemented are the following:

Implementation of the provisions of the Forests Law:

- ❖ The implementation of the Forests Law acts as a deterrent to fires.
- ❖ In the context of the implementation of the Forests Law, permits are granted for lighting fires for the purpose of burning branches. The lighting of fire for burning branches or/any other causes without permission in the area of responsibility of the Department of Forests is not allowed.
- ❖ Penalties: Lighting a fire without permission within the state forests or within two kilometres of the edges of it constitutes an offence which, according to the "Forests Law of 2012 and 2025 amendment", is punishable by imprisonment for up to 12 years or a fine of up to €100.000 or both penalties together.

Information campaign: Every year an information and public awareness campaign is organized and carried out to protect forests from fires with:

- ❖ lectures in schools, camps and other organized groups,
- ❖ meetings with Local Authorities of the communities,
- ❖ visits and distribution of educational material (farmers, ranchers, cottage owners, etc.),
- ❖ broadcast/publication of announcements and advertising spots in the media,
- ❖ organizing events (e.g. Forest Protection Week).



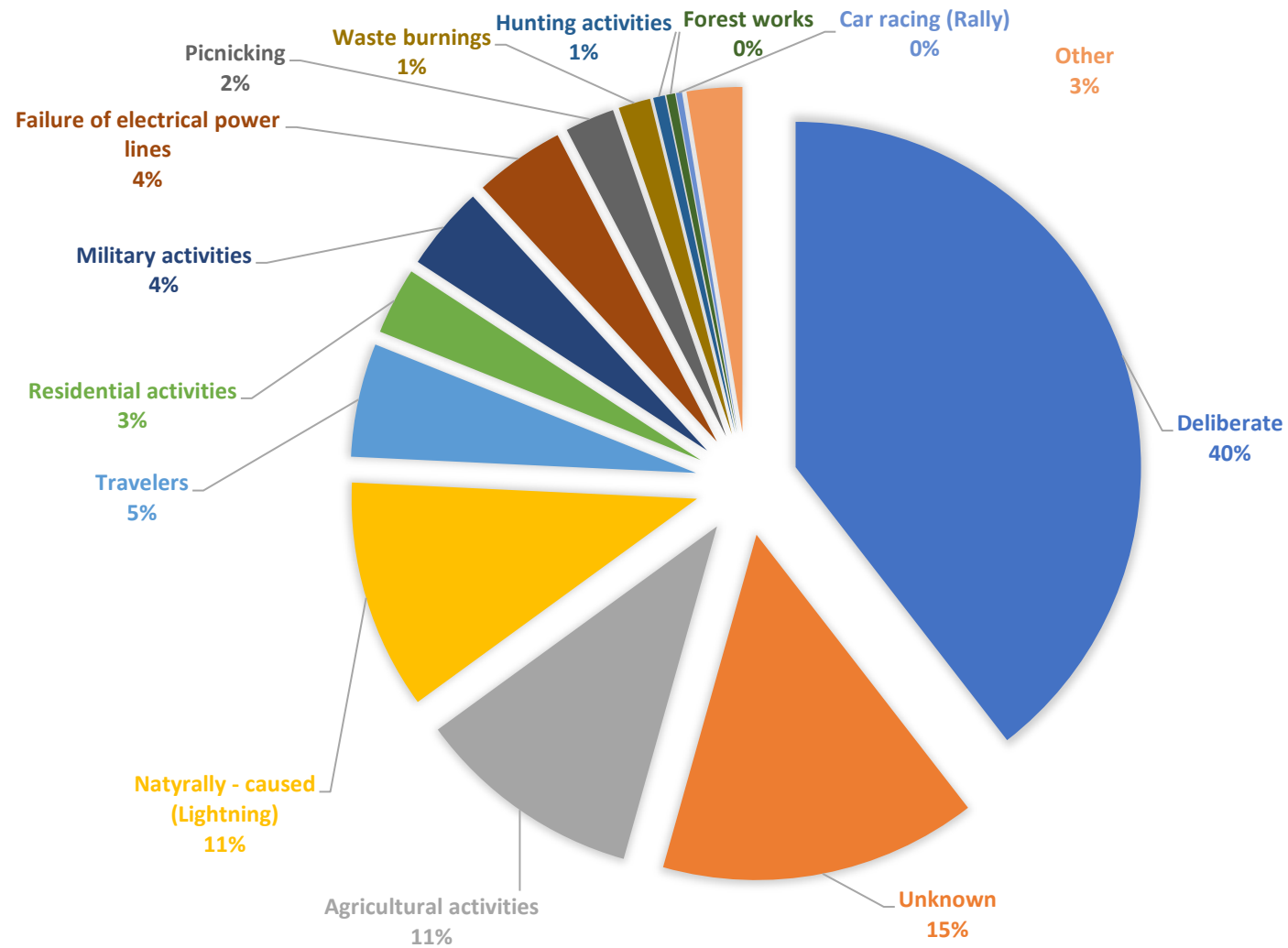
Excursion and camping sites: In various forest areas throughout Cyprus, there are excursion and camping areas, which are managed by the Department of Forests

The purpose of these infrastructures is:

- ❖ the provision of organised recreational and leisure facilities for the public
- ❖ to reducing the risk of forest fires.



Causes of Forest fires in Department of Forests responsibility zone (2015 – 2024)



1. Deliberate: 40%
2. Unknown: 15%
3. Agricultural activities: 11%
4. Various Human activities: 23%
5. Lightning: 11%

Construction and maintenance of fire infrastructure: The Department of Forests constructs and maintains various fire protection structures designed to reduce the likelihood of any fire spreading and to facilitate firefighting forces in suppression operations.

The most important of these are:

- ❖ Fire brakes,
- ❖ Forest roads,



❖ Water tanks



❖ Hydrostomes



❖ Heliports



❖ Fire safety systems



Vegetation management: Every year, before the beginning of the fire season, silviculture measures are implemented in order to enhance the fire protection of the forests through the interruption of the continuity and/or reduction of fuel, in order to reduce the risk of outbreak and expansion of fires.



Vegetation management measures:

- ❖ Thinning and pruning of vegetation on both sides of the fire brake/road.
- ❖ Cultivation of riparian vegetation.
- ❖ Cultivation of forest stands.
- ❖ Opening/widening of fire brake/road.



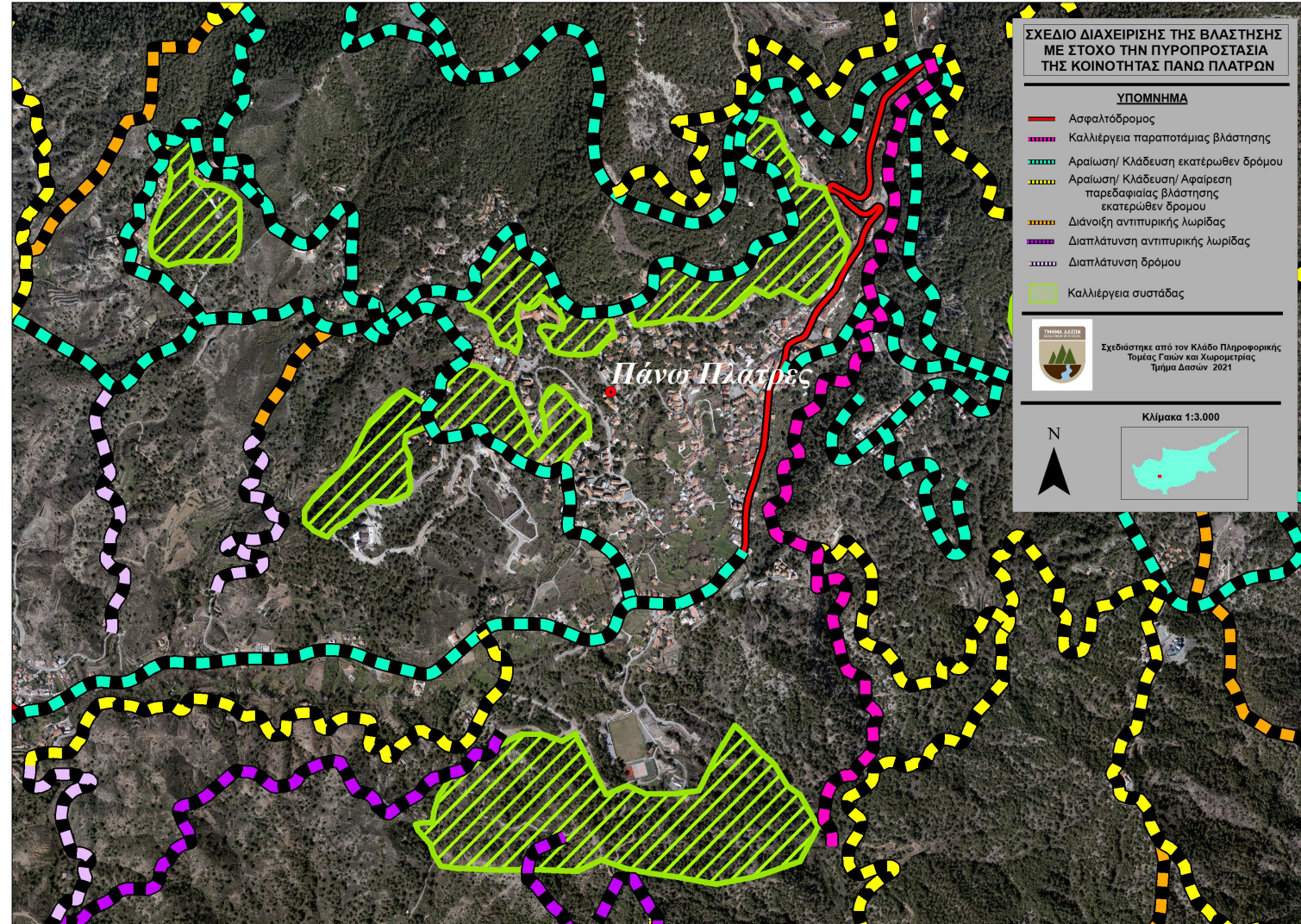
- ❖ Controlled grazing.
- ❖ Controlled burning.
- ❖ Cultivation of agricultural land.





Vegetation Management Study

In addition, as part of the vegetation management measures to be taken by forest communities, the Forest Department has prepared a "Vegetation Management Study for the Fire Protection of Forests and near by Forest Communities," which covers 245 communities and could be utilized by these communities.



READINESS

The Department of Forests implements an **integrated alert system** to respond to forest fires.

The main purpose is to be achieved, **through organisation and a high degree of readiness,**

- ❖ *the **early detection** of any fire, as well as,*
- ❖ *the **rapid and coordinated intervention** of the Department's staff*
- ❖ *with the aim **of extinguishing fires** occurring in the Forest Department's area of responsibility, **in their initial stages, before they become widespread.***

The Department of Forests **integrated alert system** includes:

- ❖ All levels of forest officers (scientific and technical)
- ❖ Forest firefighters,
- ❖ Fire guards,
- ❖ Workers.



For the detection of fires the Department of Forests:

- ❖ Deploys fire guards, to operate the 15 firelookouts of which 5 are operated on a 24-hour basis.
- ❖ In addition, on a daily basis, 30 observation spots are staffed with forest firefighters, where in case of smoke or fire detection they depart immediately with a fire truck to suppress the incident.





ΤΜΗΜΑ ΔΑΣΩΝ
Κλάδος Πυροπροστασίας
Ιανουάριος, 2023

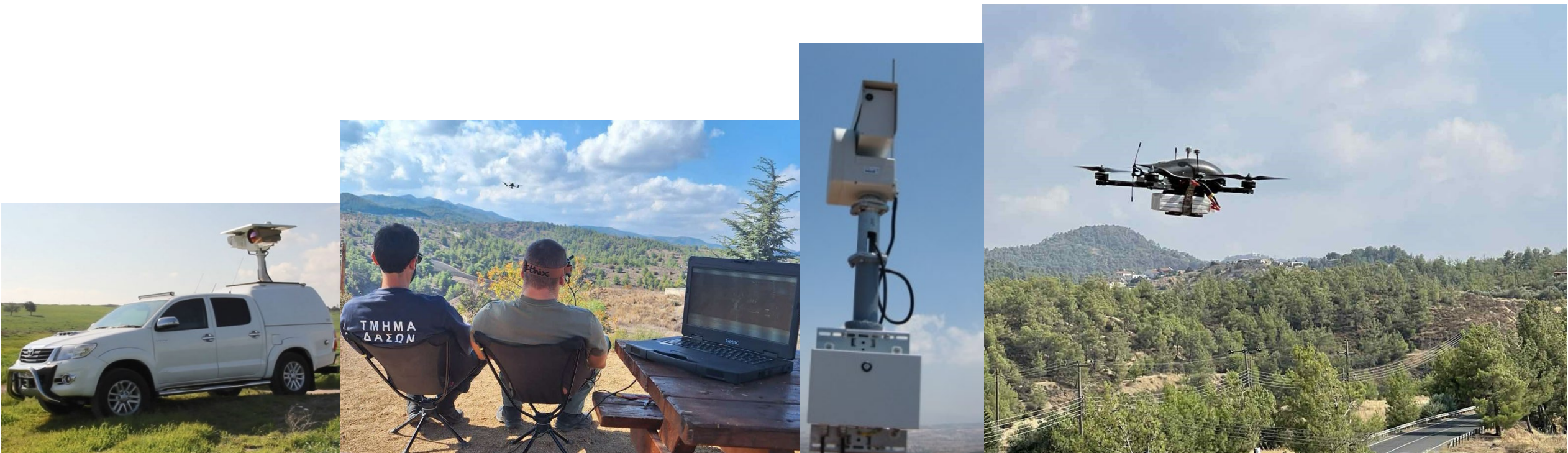
LEGEND

-  Firelookouts
-  Observation Spots
-  State Forests
-  Responsibility area

- ❖ The areas between the observation spots and the fire stations are covered by **mobile seasonal patrols** by forest firefighters or forest officers.
- ❖ One of the most important and effective measures implemented by the DF in recent years is **aerial patrols with loaded firefighting planes**.



- ❖ In addition, technology is used to monitor forest areas, such as the operation of the mobile camera of JRCC (Joint Rescue Coordination Center), the use of unmanned aerial vehicles (Drones) of Cyprus Institute, the Civil Defence, National Guard and the Department of Forest Drone team. As well as since 2023 with electroptics sensors.
- ❖ Another important measure is to notify the Department of the existence of smoke or fire through the **forest fire reporting national phone number 1407**. 📞



ΑΝ ΔΕΙΣ ΚΑΠΝΟ Ή ΦΩΤΙΑ



1407 ή **112**



Trainings

Trainings programmes

- Forest firefighting
 - ❖ *Fire Officers Training (Incident Commander)*
 - ❖ *Training of Forest Firefighting Team Leaders*
 - ❖ *Training of Trainers*
 - ❖ *Training of Forest Firefighters (annual one-day, weekly)*
 - ❖ *Training of Volunteer Groups*
- Fire-fighting vehicle drivers
- Aircraft Control Officers
- Aircraft Operators
- Drones operators
- Operation of General Operation Center, Mobilized Operation Center, Air means Operation Officers (ground personnel)
- Electoptics Operators



Exercises

- ❖ Monitoring the effectiveness of the Special National Plans.
- ❖ Upgrading the operational readiness of the involved staff.
- ❖ Optimising the cooperation of all actors involved in forest firefighting.
- ❖ Checking the operation and adequacy of available means and equipment.
- ❖ Identify weaknesses and shortcomings and take appropriate measures for improvement.



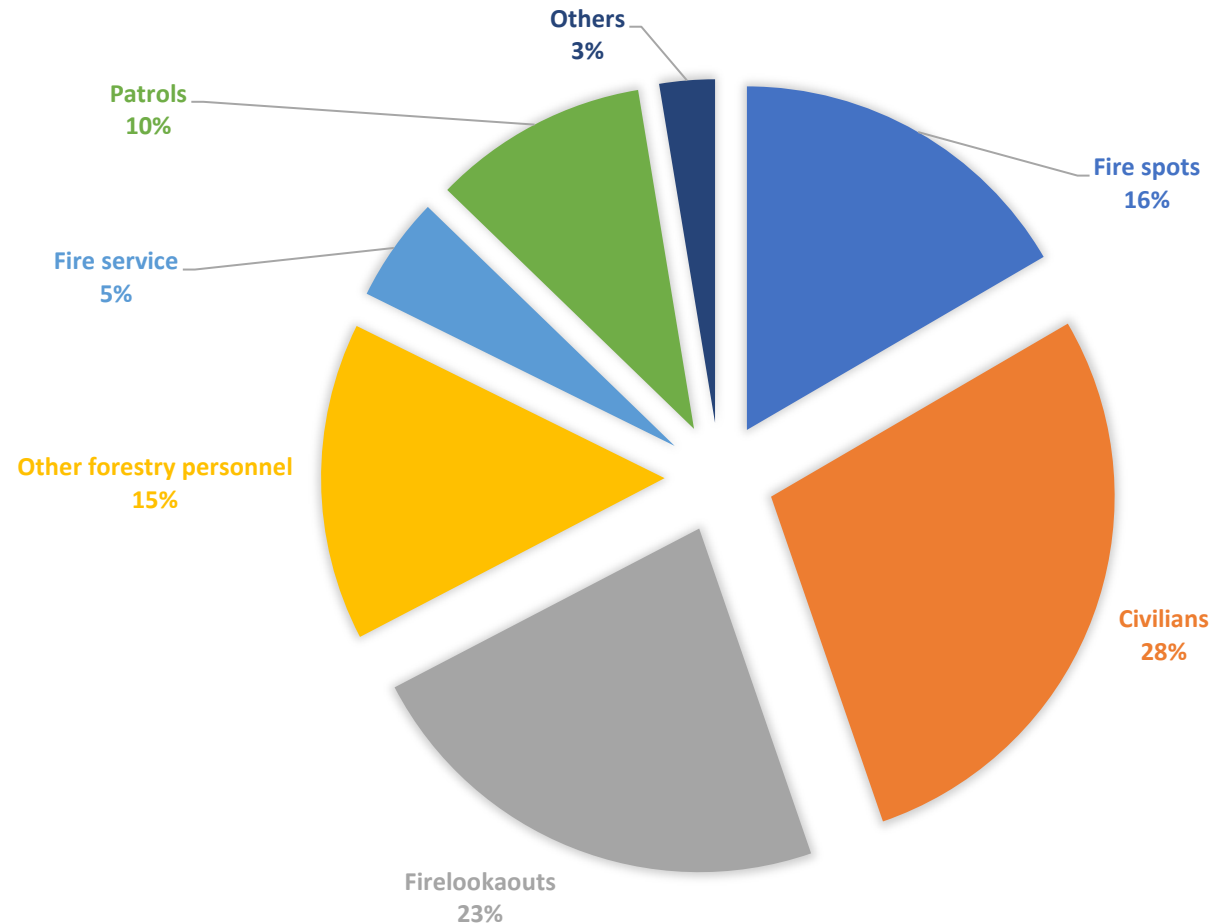
Suppression

- ❖ The aim of the suppression measures, are to facilitate rapid intervention and effective fire fighting of any fire incident.
- ❖ This is achieved through the guidelines of the "**Astrapi**" plan, which provides and ensures the participation of the larger number of fire fighting forces available at the scene of the fire - in the shortest time possible
- ❖ **Objective:** To ensure that the largest possible volume and number of forces are concentrated and involved in the shortest possible time in the incident, so that, as far as possible, forest fires are suppressed in their early stages. The implementation of the Plan aims to reduce the average extinguishing time and the average area burnt per fire.



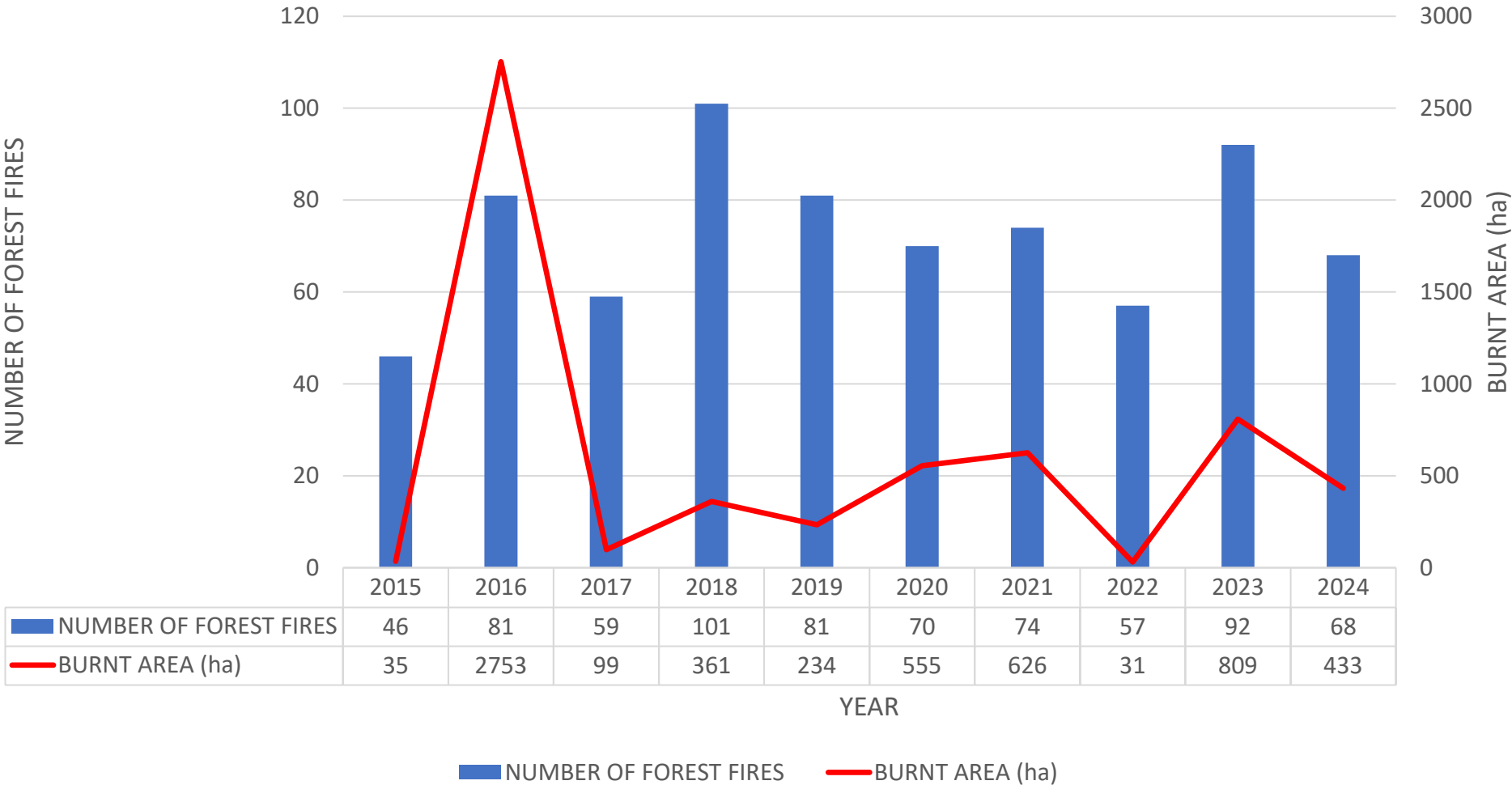
❖ The average response time to fire incidents by the Department of Forests firefighting forces for decade 2015 - 2024 was **12,5 minutes**.

DETECTION MEANS OF FIRES IN DEPARTMENT OF FORESTS RESPONSIBILITY
AREA FOR THE DECADE 2015 2024



The Department of Forest detected the 64% of the fires, the Civilians the 28% and others the 8%

Number of Forest Fires and Burnt areas in Department of Forests responsibility zone for the period 2015-2024



Number of forest fires and burnt areas averages for the period 2000-2024

Parameter	Period	State forest	Within the zone of 2 km from the State forest boundaries	Total within the zone of responsibility of the Department of Forests
Number of forest fires	2000 – 2024 (Average for the period)	21	41	62
	2015 – 2024 (Average for the decade)	20	53	73
	YEAR 2024	17	51	68
Burnt area (Ha)	2000 – 2024 (Average for the period)	211	220	431
	2015 – 2024 (Average for the decade)	358	236	594
	YEAR 2024	37	396	433
Average fire size (Ha)	2000 – 2024	10,0	5,4	7,0
	2015 – 2024	17,9	4,5	8,1
	YEAR 2024	2,2	7,8	6,4

- ❖ Forest fires are a difficult, complex and constantly worsening problem.
- ❖ It can only be tackled by implementing an integrated management system.
- ❖ Efforts to improve the system must be continuous and the emphasis must be placed equally on the three pillars of Prevention - Readiness - Suppression.



Thank you very much for your attention