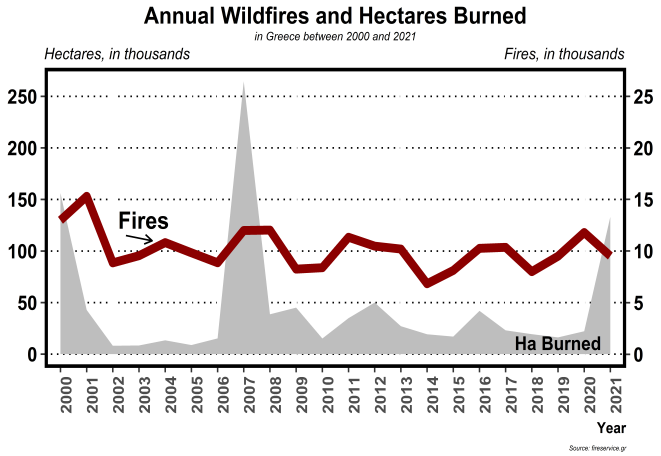
A Short Overview and Analysis of the Forest Fires in Greece since 2000.

Forest fires (the term used in the following to designate the unwanted fires burning forests and wild lands; also referred to as 'δασικές πυρκαγιές' by the Greek Fire Service) are a major hazard throughout Greece, producing large environmental losses among others and having an impact on human lives.



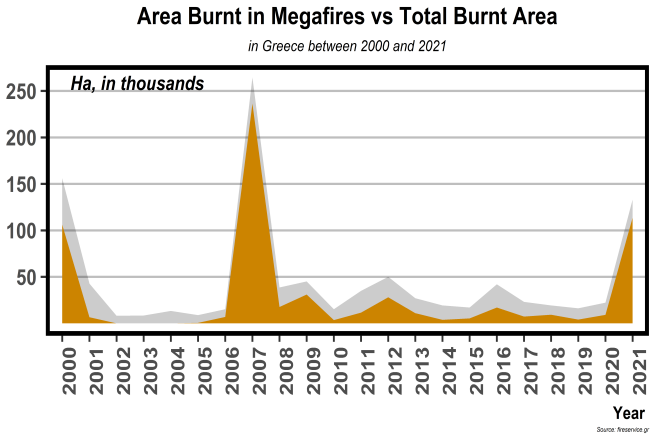
Only in Greece, more than 419.000 ha of area burnt in forest fires between 2010 and 2021. During the same years, there were more than 9.500 forest fires per year on average, however, a greater number of fires is not immediately implying that more forest area is burnt.

Solely in 2000, more than 150.000 hectares of area was burnt in contrast to 2001 where the number of fires was higher but the total land damage accounts for less than 50.000 hectares. The same trend of greater burnt areas whilst number of fires is reducing or staying stable, can be found in the pairs of years (2007,2008), (2011,2012) and (2020,2021).

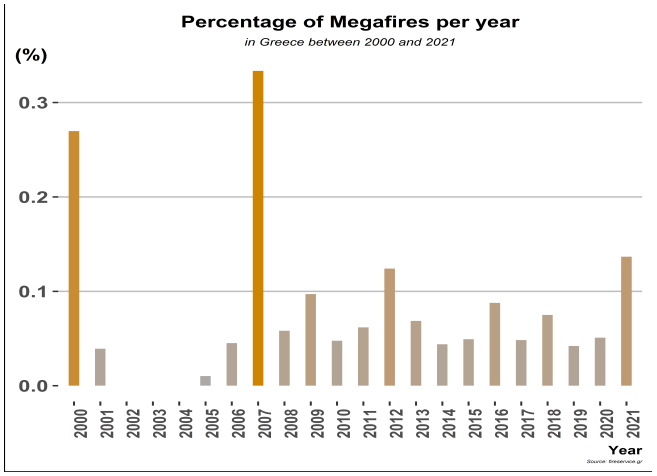
One important reason for this non-linear relation between the number of fires and the area burnt is the phenomenon of megafires. Megafires are defined by extreme fire behaviour characterised by rapid fire spread, intense burning, long-range fire spotting and unpredictable shifts.

In this investigation, we consider a fire to be a megafire if more than 500 ha of land area has been burnt.

In the most vicious fires since 2000 in Greece, i.e in 2000, 2007 and 2021, the majority of land loss was a result of megafires.



For example, in 2007 almost 90% of the total area burnt was due to megafires, while in 2021 the same index accounts for 85%. At the same time, the number of megafires in these years accounts for only a rather small portion of the aggregate number of fires (0,27%, 0,33% and 0,13% respectively), indicating their high impact on forest land loss and the difficulty in their suppression.

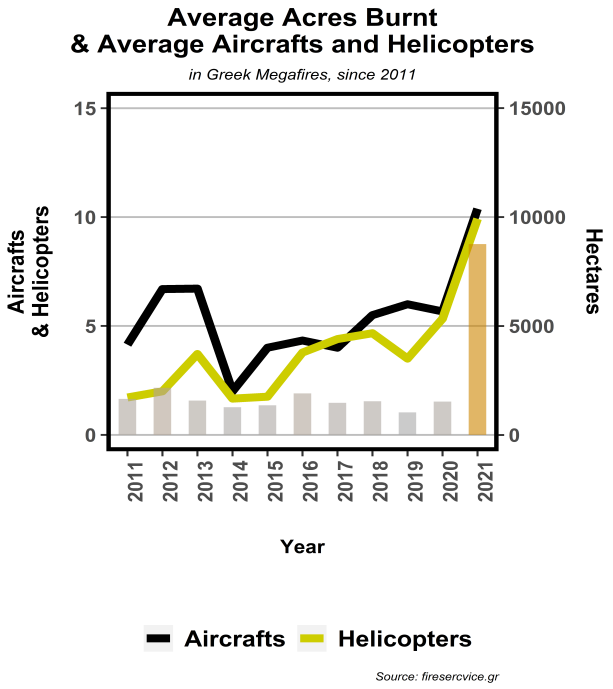


For the same years, it is evident that the more the ratio of megafires the more the land that is expected to be burnt and in fact most of it due to megafires. Moreover, observe that in the years 2012 and 2021 there was almost the same percentage of megafires

(around 0,15% of total fires), and in fact exactly 13 megafires on each year, but the average land area burnt in 2021 megafires was more than four times higher than in 2012 (2.158,7 ha/per megafire in 2012 as opposed to 8.759,8 ha/per megafire in 2021).

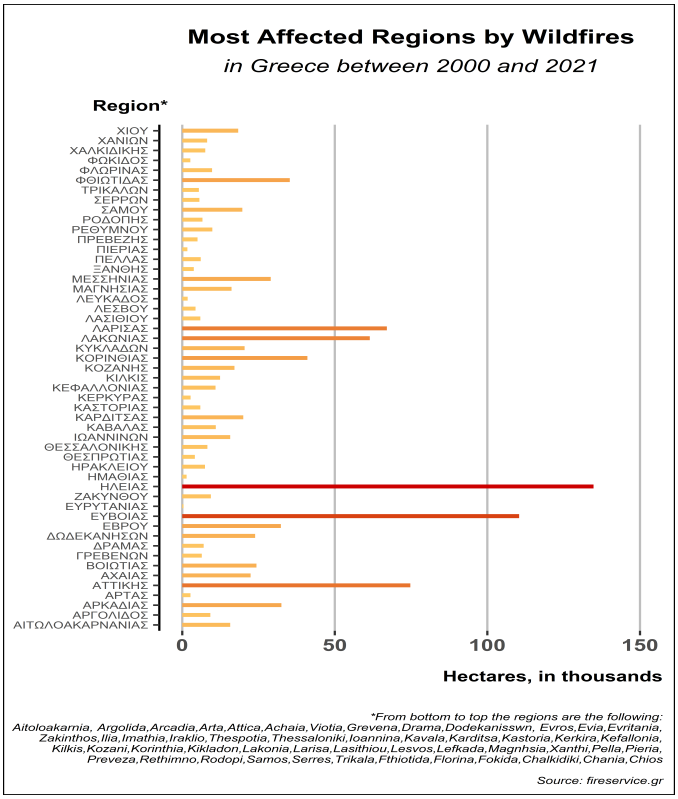
Thus, the task of suppressing such type of fire has become a central area of interest for the Fire Department. The main two factors determining megafires *are the weather conditions and the fire proneness of the forested landscapes*.

As far as weather conditions are concerned, *the projected increase in drought severity and associated increase in fuel flammability due to climate change are further intensifying forest fire risk beyond existing fire prone areas. Hence, there is a need to integrate forest fire prevention principles in land and forest management strategies.* So, the fuel and forest management are two of the cornerstones in dealing with wildfires whereas preparedness of local communities and authorities is essential, as well.



The importance of fire prevention can be also outlined by examining the relation of the size and the cost of the flying firefighting fleet and the land loss in megafires. A fact that stands out, is that in 2021 the aircraft and helicopter operations in megafires were almost twice as many as in the previous years on average, however, the toll of average burnt area due to megafires reached unpreceded levels (>8000 ha per megafire). Futhermore, the cost of leasing aircrafts and helicopters used for fire suppression in 2021, came was 40.800.000€ which accounted for more than 46% of the aggregate budget for the Fire Departments' procurement the same year.

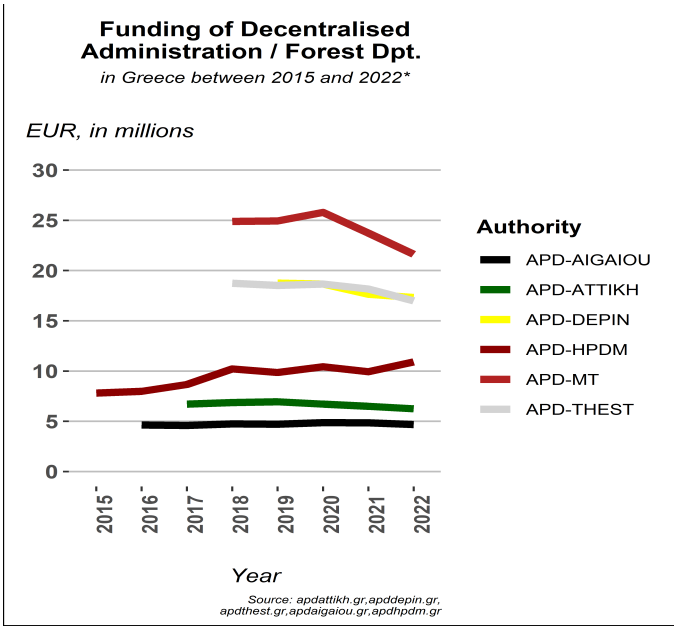
This fact raises concerns about the capability to control rapidly and effectively a megafire, by using more temporary and instantaneous solutions such as the employment of leasehold aircrafts and helicopters.



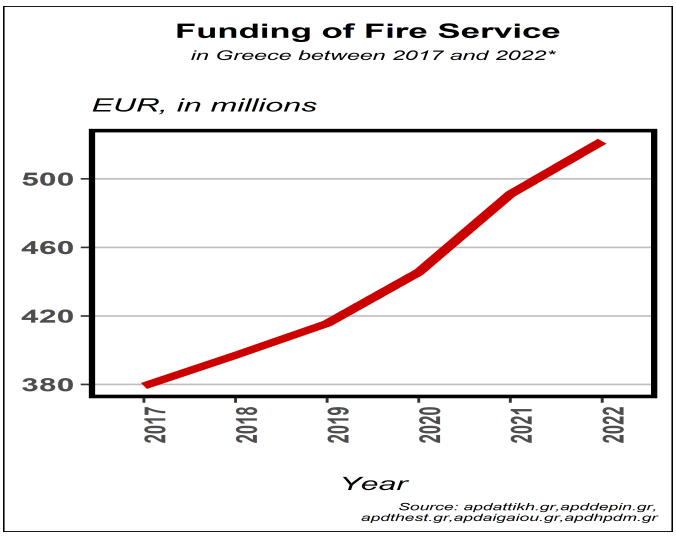
At the same time, as different regions have variant vulnerability towards fire seasons, an adjusted fire prevention scheme for each region and an effective collaboration between decentralised and general authorities is required.

Since 2000, the regions facing the greatest forest

loss are Ilia (“Ηλεία”), Evia (“Ευβοίας”) and Attiki (“Αττική”). The Forest and Fuel Management in these areas is (also) a responsibility of the regional Decentralised Authority's Forest Directorate.
Namely, Ilia's forest management is under the control of APD-DEPIN (see graph below), Evia is under APD-THEST direction and Attiki under APD-ATTIKH. In all cases, we observe a slight decrease in the funding for Forest and Fuel Management.

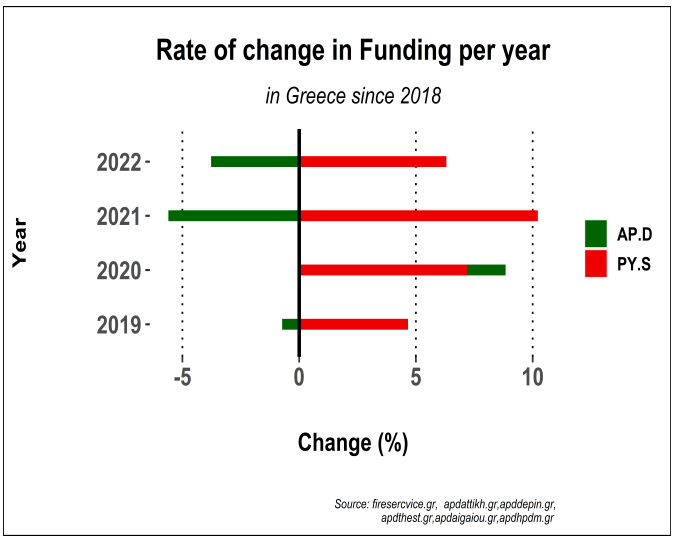


In the meantime, the aggregate funding of Forest Service is increasing rapidly since 2017, and as we have already stated a great part of the increase from 2020 to 2021 was the leaseholding of firefighting aircrafts.



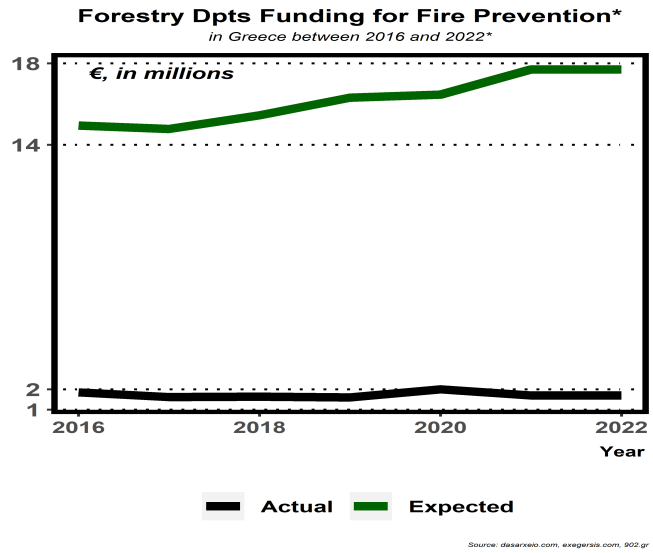
This fact does not immediately imply wrong decision making in Fire management, but as EU's Booklet for Fire Mangement Policies is stating “*currently, fire prevention forms are part of the fire management policy in all southern European countries, however, there is no enough focus on fire prevention strategies and ways of funding does not receive the necessary emphasis and funding compared to fire suppression planning.*”

In Greece, this imbalanced funding is evident and can be seen in the following graph, where the rates of change in funding Prevention and Suppression Policies are recorded, since 2018.



Here we see that except 2020, where a small incease compared to 2019 in the funding of Forest Offices of Decentralised Authorities occurred, from 2018 onwards there is a constant trend of opposite funding. As an instance, in 2021 the Forest Departments had over 5% diminish in their budget compared to 2020, whereas between the same years the Fire Service Funding increased by over 10%.

Another example showing that State funding in Greece is not meeting the needs and the demands of Local Forest Directorates is shown in the following figure. On this occasion, from 2016 onwards, local authorities have published a detailed account of the funding needed for specific fire prevention initiatives, and finally the funding that they have actually received.



Note: All text in *italics* is extracted from EU's Booklet *Sparking and Firesmart Policies in the EU*

Stavros Alfieris, August 2022