



Republic of Serbia – Forest Fires in 2007

1. Statistical Data

On the Balkan Peninsula the fire season of 2007 was extremely severe – and Republic of Serbia was one of the countries most affected. Tables 1 and 2 provide comparative statistical data for the period 2005 to 2007 and details for the 2007 fire season.

Table 1. Wildfire occurrence and causes in Republic of Serbia 2005 to 2007

Year	Total No. of Fires on Forest, Other Wooded Land, & Other Lands (ha)	Total Area Burned on Forest, Other Wooded Land, & Other Land (ha)	Area of Forest Burned (ha)	Area of Other Wooded Land Burned (ha)	Human Causes (% of No.)	Natural Causes (% of No.)	Unknown Causes (% of No.)
2005	15	63	53	10	100	0	0
2006	29	569	537	31	94	0	6
2007	482	34,001	16,582	17,414	80	2	18

Table 2. Detailed fire statistics for Republic of Serbia 2007

No. of Fires on Forest & Other Wooded Land	Total Area Burned on Forest, Other Wooded Land						Type of forest fires		
	State forest			Private forest			Total Area Burned on Forest, Other Wooded Land, & Other Land (ha)	Crown (ha)	Surface (ha)
	Area of Forest Burned (ha)	Area of Other Wooded Land Burned (ha)	Total Area burned (ha)	Area of Forest Burned (ha)	Area of Other Wooded Land Burned (ha)	Total Area burned (ha)			
487	7,878	4,682	12,560	8,709	12,732	21,441	34,001	2,837	31,164

Causes and other factors influencing wildfires

In 2007 the forest fires in Serbia were 80% caused by humans. Like in previous years agricultural burnings were the main reason. Climate change is also influencing the forest fire situation. Very low level of rainfall in the period autumn-winter 2006-2007 and in spring-summer 2007 as well as unusual high temperatures – the highest recorded since the last 100 years – created favorable conditions for wildfire ignition and severe fire behavior. Figure 1 reflects that extremely dry and hot summers that occurred between 1990 and 2007 resulted in high areas burned.

During the year we had two critical periods when wildfires burned all over the country. The first extreme fire situation happened in April, caused in most cases by agricultural burning, after autumn and spring without rainfall. The second extreme fire situation occurred in July. At that time the drought

period continued while high temperatures reaching at maximum in urban regions (44-45°C) and more than 30°C in the mountains. A detailed breakdown of fire occurrence in 2007 is provided in Table 3.

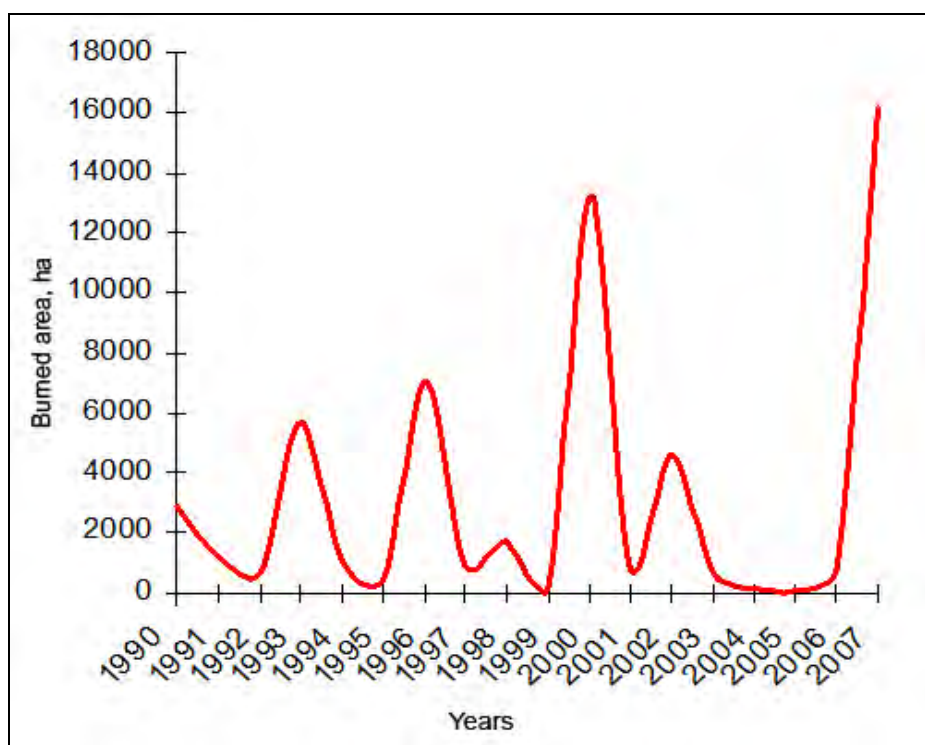


Figure 1. Forest areas burned in Serbia 1990-2007. Source: Directorate of Forests, Republic of Serbia

Table 3. Number of fire and size of burned areas by month in 2007

Month	No. of Fires in Forests and Other Wooded Land	Total Area Burned on Forest and Other Wooded Land (ha)
January – April	231	3946
May	2	69
June	23	357
July	208	28,773
August	7	856
Total	487	34,001

Preliminary data of damages caused by wildfires

Compared with damages in earlier years maximum damages of forests were experienced in 2007 (direct damages, indirect, costs of recovery and total costs) (Tab. 4). National Parks and protected areas were extremely affected by fires (Tab. 5).

Table 4. Damages (€) caused by wildfires affecting forests in Republic of Serbia

Total Area Burned of Forests and Other Wooded Lands (ha)	Area of Forest Burned (ha)	Direct Damages (€)	Indirect Damages (€)	Costs of Extinction-Blackout (€)	Recovery & Rehabilitation (€)	Total Costs (€)
34,001	16,582	4,336,039	20,902,118	422,863	5,869,811	31,530,831

Table 5. Most significant fires affecting protected areas and National Parks of Serbia in 2007

National Park	Number of Fires	Total Area Burned on Forests and Other Wooded Lands (ha)
PE NP Đerdap	82	707
PE NP Tara	5	95
SRN Deliblato Sands	1	592
Nature Park Stara Planina	5	1,390
Total	90	2,784

2. Action Taken in 2007

Fire prevention measures

Usual measures were carried out in the beginning of the year, according to the Fire Protection Law and Forestry Law:

- Public enterprises prepare plans of protection against forest fires and convey them to the commanders of units of fire department in the Ministry of Internal Affairs, as well as to commanders of fire brigades and representatives of the Community.
- Republic forest inspectors in January-March control the plans, objects and equipment for forest fire protection.

Also, the Directorate of Forests and the Sector for Fire Prevention and Rescue improved cooperation in the beginning of the year. Seminars with were organized with all subjects involved in forest fire protection in which the current state, equipment and communication improvement were analyzed.

New measures were established in preparedness and expectation of heat and drought escalating in summer:

- A Fire Suppression Headquarters was established by the Government and also at local level
- Public enterprises established active attendance during 24 hours.
- In July 2007 the Forest Sector organized daily press conferences in order to inform and appeal public.



Figure 2. Public awareness signs and billboards are visible throughout the country (Photo: GFMC)

Response to fires

Pursuant to Law of Fire Protection and Law of Forestry the Republic Serbia has organized forest fire suppression according to the scheme provided in Figure 2.

When the lookout observers (foresters) detect a forest fire, they immediately inform the fire warden unit, headed by the forest officer. The crew goes to the site of the forest fire and undertakes the initial fire suppression. The action of forest fire fighting is directed by the chief forest officer, who is in permanent contact with the officer on duty within the local forestry enterprise. If it is estimated that the unit cannot extinguish the fire on their own, they inform the Fire Department of the Ministry of Internal Affairs of Serbia. Then, pursuant to the Fire Protection Law, the action of forest fire suppression is undertaken by the Commander of the fire crew unit.



Figures 3 to 5. Fire observation towers are equipped with camera systems, as demonstrated to visitors of UNISDR Regional Southeast Europe / Caucasus Wildland Fire Network and the Global Fire Monitoring Center (GFMC) during a field assessment in August 2007 (Photos: GFMC)



Figures 6 to 8. Hand tools are efficient and effective means for suppressing surface fires and cutting fire lines (Photos: GFMC and Directorate of Forests)

If the fire develops to a large-scale fire, the responsible officers at the Headquarters of the Public Enterprise are informed, i.e. the Executive Director of the Sector for Forestry and Wildlife Management. The authorized sector of the Headquarters can demand the engagement of the Army and also of other institutions to assist in fire suppression. In the case when several institutions participate in the suppression of forest fires, it is obligatory to form the Fire Suppression Headquarters, consisting of the leadership of all institutions involved.

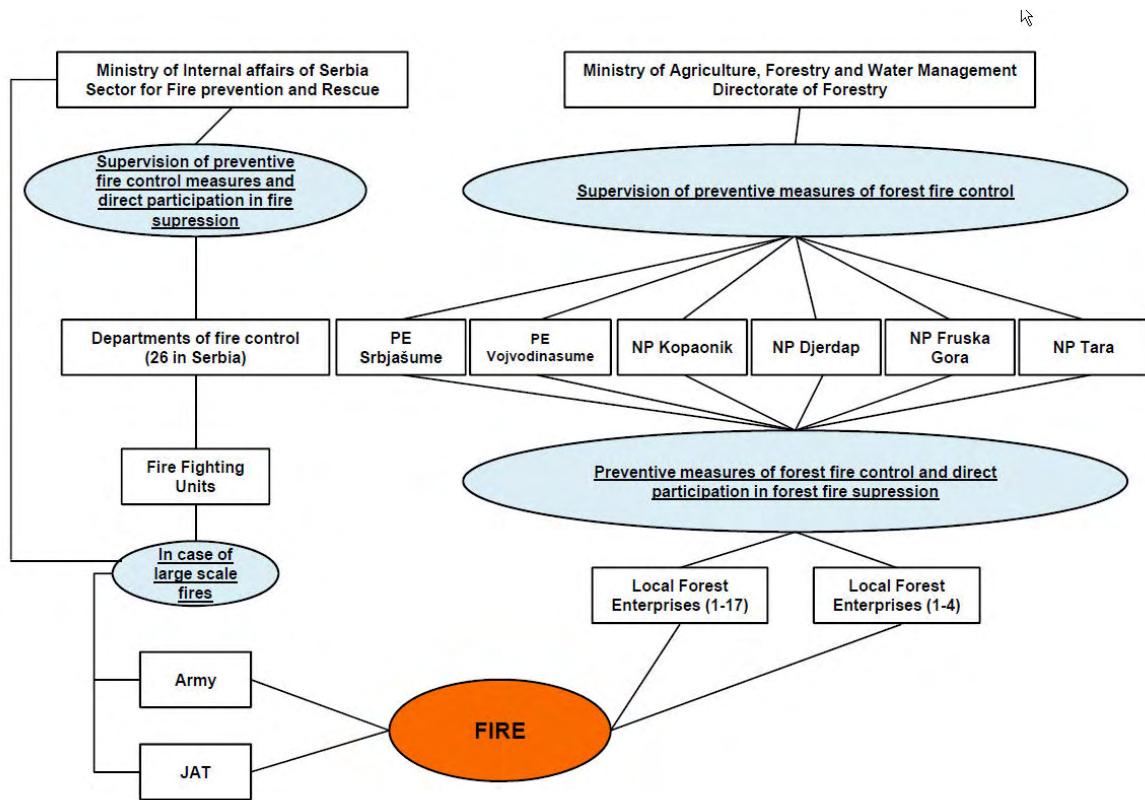


Figure 9. Organization of forest fire suppression in Republic of Serbia

Organizational structure and units/persons responsible for organization of protection from forest fire and extinction in PE "Srbijašume" or PE "Vojvodinašume" are:

- General direction – Sector for Silviculture and Forest Protection
- Forest estate – The officer responsible for silviculture and forest protection
- Local forestry enterprises or Forest Managing Unit (FMU) – Chief of the FMU
- Forest section – The responsible forest engineer
- Operation units – The responsible forester

Moreover, regular police, Army, hunters, organized in Hunting Association of Serbia, participated in fire suppression this year, as well as local population and others.

3. National Cooperation in Response to the 2007 Fires

Cooperation between Sector of forestry (MAFWM – Directorate of Forests, Public Enterprises and National Parks), the Ministry of Internal Affairs (Sector for Fire Prevention and Rescue) and the Ministry of Defense was very efficient.

Civil society didn't have important role in fire suppression this year. The highest number of volunteers traditionally exists in AP Vojvodina, but this year the number of forest fires there was small. Also, in another part of the Republic civil society representatives serving as volunteers are engaged more on an individual basis and thus their overall role is less significant.

The role and involvement of local communities in earlier years was more active than in 2007.

4. International Cooperation in Response to the 2007 Fires

The Ministry of Internal Affairs had a good cooperation with Republic of Bulgaria in managing several fires that were crossing the borders between the two countries.

Receiving assistance

Republic of Serbia received assistance from Russia by a deployed Iljushin-76, which we used in fire suppression in July, at locations where the ground forces could not stop the fires for long time and the fire size had grown to large areas. The airplane was used in the following places: Stara planina, Svrljiške planine, Kuršumlija Deliblatska peščara (Fig. 3).



Figure 10. Aerial suppression by the Russian IL-76 of extended fires in the mountains of Serbia
(Photo: GFMC archive)

Providing assistance

Ministry of Internal Affairs of Serbia, Sector for Fire Prevention and Rescue sent in Greece help which include 55 firemen and 6 special motor vehicles for fire suppression.



Figures 11 and 12. View of open lands and forests affected by wildfires in Republic of Serbia in 2007
(Photos: Directorate of Forests and GFMC)

5. Analysis and Recommendations

The following problems have been identified:

1. Inadequacy in the application and outdated legal principles regarding to the protection of forest fires
2. Lack of human resources for prevention and suppression measures
3. Inadequate material and technical equipment of all subjects to enforce measures for fire protection
4. Lack of educational measures for firefighters and personnel of headquarters
5. Lack of means for communication
6. Weak information of the public
7. Most of forests are not enough accessible by roads and insufficient extent of firebreaks

Recommendation are given for enhancing effectiveness for international cooperation

1. Organization of training courses for firefighters and personnel of headquarters
2. Definition of procedures for receiving and providing assistance from neighbor countries and other countries
3. Establishment of unique terms definition and elements for data base

References / Sources

1. Ministry of Agriculture, Forestry and Water Management, Directorate of Forests
2. Public enterprises Srbijašume and Vojvodinašume
3. National Parks Tara, Fruška Gora, DJerdap

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