



Joint UNEP / OCHA Environment Unit

Ecological Damage Assessment of the Wildfires in the Former Yugoslav Republic of Macedonia in 2007

Joint Mission by the UNEP-OCHA Joint Environment Unit, UNEP, UNDP and GFMC

by

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Final Draft - 30 September 2007

Executive Summary

Between July and August 2007 the Former Yugoslav Republic of Macedonia (FYR Macedonia)¹ experienced extended wildfires, which severely affected forests and other vegetation on an area exceeding 50,000 hectares. By end of July 2007 the damages in fire-affected forests as well as the costs for suppression already amounted 21 million Euros. At the time of compiling this assessment there were no damage figures available for the month of August 2007. Although nearly 200 people were forced to evacuate from Bitola direct impact on residential areas has been thankfully minimal. Damage to infrastructure has been relatively slight. However, there were quite a few occasions where damage to these areas (communities and public infrastructure) was only averted at the very last moment.

In response to the request of the Government of FYR Macedonia, UNDP, in a cooperative effort with the Joint UNEP / OCHA Environment Unit, UNEP and the Global Fire Monitoring Center (GFMC), a mission was deployed to FYR Macedonia to assess the damages of the wildfires in FYR Macedonia in 2007 and to recommend action for future fire disaster risk reduction. The GFMC was deployed through the Joint UNEP/OCHA Environment Unit. The mission was implemented between 27 August and 7 September; the field assessment team was deployed between 29 and 31 August 2007. The field assessment was conducted in the most fire-affected regions. These regions were also representative for the fire occurrence and fire effects throughout the whole country. Agencies and individuals involved in wildfire prevention and suppression were consulted in all regions visited.

All wildfires were consequences of human activities, e.g., agricultural burnings, careless use of fire, and in some cases suspected arson. Extremely dry, hot and often windy weather conditions prevailing during the whole fire season created extreme fire situations and often made firefighting impossible. This situation is aggravated by the consequences of the rural exodus. The widespread abandonment of land cultivation is resulting in increasing loads of unused combustible materials in forests and former agricultural and pasture fallow lands. With a reduced presence of the young generation of rural population and average over-aging of the rural communities, the human resources available for fire prevention and fire suppression activities are dramatically dwindling.

 International Strategy ISDR for Disaster Reduction	Report prepared by the Global Fire Monitoring Center (GFMC)	
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¹ Note this report uses FYR Macedonia as country title throughout. Documents from external sources annexed to this report may use other designations.

The prime responsibility in fire prevention and initial fire suppression in the state-owned forests is with the Public Enterprise "Macedonian Forests". This basic responsibility is very appropriate. However, there are expectations by non-state landowners that P.E. Macedonian Forests would also be responsible for fire prevention and control on non-state forest and other lands. Legally this expectation cannot be met due to a lacking mandate, although the P.E. Macedonian Forests is usually and informally responding to all wildfires regardless of land ownership. However, human and technical resources for fire management of P.E. Macedonian Forests are inadequate to professionally and successfully suppress forest fires.

Besides a lack of trained personnel, most of the firefighting equipment is outdated, obsolete and overall insufficient. This severe underfunding and under equipping extends beyond fire management itself into areas of communications, basic office equipment, even office space.

Secondly and very much related to the scale of damage witnessed the general crisis-management system is requiring a severe overhaul. There is a great need for unity and a systematic approach to crisis management. The fires of 2007 have highlighted a picture of competing mandates, duplication of efforts, coordination and leadership clashes both at local and central level. Key preparatory activities are performed in isolation to others, the evident expertise the country has in various areas related to the crisis management system is either under-utilised or left outside the system altogether.

It is therefore recommended that a number of measures to be taken to overcome the institutional weaknesses and to improve capacities in fire management. The proposed measures include:

- Launch of a fire management capacity building programme for FYR Macedonia and initiation of a capacity building training programme at regional level; assistance to be sought e.g. through the Environment and Security Initiative (ENVSEC), the Joint UNEP / OCHA Environment Unit, UNDP, Council of Europe (CoE) through its Euro-Mediterranean Major Hazards Agreement (EUR-OPA) and GFMC
- Strengthening the fire management capabilities of P.E. "Macedonian Forests"
- Establishment of adequately trained and equipped voluntary rural fire brigades
- Call for a National Round Table on Fire Management to be supported by UNDP, GFMC and the UNISDR Regional Southeast Europe / Caucasus Wildland Fire Network
- Replacement of obsolete and procurement of sufficient fire fighting equipment for the local fire services and P.E. "Macedonian Forests" (provision of model units for wildland fire response, fully equipped with vehicles, tools and personal protective equipment); assistance to be sought through UNDP and national agencies
- Upgrading fire research and training at the Forestry Faculty in Skopje and conduct regional fire management summer schools
- As the FYR Macedonia is aiming at joining the EU, request of a "Twinning" (or Twinning Light) project between FYR Macedonia and a EU member state, to adapt Macedonian legislation and practical procedures in forest and fire management.
- Development of a regional strategy on cooperation in wildland fire management and establishment of a Balkans Regional Fire Monitoring Center; assistance to be sought through UNDP, GFMC and the UNISDR Regional SE Europe / Caucasus Wildland Fire Network, flanked by ENVSEC and CoE / EUR-OPA
- Convene a "Regional Balkan Wildland Fire Crisis Conference" (or "Summit"), in which highest-level possible government commitment should be sought, under the joint auspices, among other, of UN specialized agencies and programmes (UNDP, UNEP, the Joint UNEP / OCHA Environment Unit, FAO), the European Commission, Council of Europe / EUR-OPA, ENVSEC, OSCE and NATO, and facilitated by the UNISDR Global Wildland Fire Network and its regional network, the UNISDR Regional Southeast Europe / Caucasus Wildland Fire Network, with the main objective to:
 - Address the underlying causes of increasing threats of wildfires to the environment and society, notably the consequences of land-use change and climate variability
 - Outline the need for the development of national policies and strategies addressing land-use, forestry and forest protection, nature conservation and fire management
 - Elaborate agreement for strengthening fire management capabilities in the region through standardized and joint regional training and introduction of improved technologies for wildfire suppression
 - Development of border-crossing mechanisms and agreements on mutual assistance in fire emergency situations

1. Introduction

In July-August 2007 the FYR Macedonia was severely affected by extended forest fires and fires occurring in other vegetation. The extreme size and impacts of fires were determined by the extremely dry weather conditions on the one side, and the lack of human and technological resources for fire management on the other side.

In response to the request of the Government of FYR Macedonia UNDP, in a cooperative effort with the Joint UNEP / OCHA Environment Unit, UNEP and the Global Fire Monitoring Center (GFMC) deployed a mission to FYR Macedonia to assess the damages of the wildfires in FYR Macedonia in 2007 and to recommend action. This report focuses on one of the three parts of that mission: the ecological damage. Other aspects (socio-economic and crisis management) of the mission are examined separately. As this report on ecological damage is designed to also be prepared as stand-alone version there may be a little duplication in the areas of damage.

The mission was implemented between 27 August and 7 September; the field assessment team was deployed between 29 and 31 August 2007. The field assessment was conducted in the most fire-affected regions. These regions were also representative for the fire occurrence and fire effects throughout the whole country. Agencies and individuals involved in wildfire prevention and suppression were consulted in all regions visited.

This report provides a summary of the on-site assessment and investigations in the FYR Macedonia and recommendations for action for future prevention, response and mitigation of wildfires.

2. Mission Narrative

2.1 Preparatory meeting

The Preparatory meeting was held on Monday 27 August 2007 in Skopje in the UNDP office in Skopje. Participants included representatives of the all state stakeholders (Ministries, Agencies, Directorates, Public Enterprises, etc.) from the Republic of Macedonia, UNDP office (Skopje) staff, Mr. Jan Kellet (international expert) and Mr. Nikola Nikolov (national expert); the latter speaking also on behalf of the director of the Global Fire Monitoring Center (GFMC), Mr. Johann G. Goldammer, who joined the mission on 28 August 2007. (List of participants: Appendix 4.) After a short introduction of the terms of reference of the mission some of the participating stakeholders provided short reports, comments and proposals concerning the mission. Generally, it was concluded that the mission will have two parts (in agreement with TOR): The first part to be a field assessment with the duration of three days, followed by a week of post-field mission evaluation, analyses of materials and preparation of the report (with conclusions and recommendations). The main discussion was about places (burned areas), which should be visited during the field assessment. Taking into consideration the duration of the field assessment, amount and distribution of the burned areas, types of the vegetation/forest the proposal of itinerary provided by Mr. Nikolov was adopted (Appendix 4). The itinerary was designed to visit burned areas in different types of forests throughout Macedonia. At the same time regional meetings with all stakeholders of the local and regional level were planned.

2.2 Field assessment narrative

This narrative provides a short overview and description of locations visited and authorities contacted during the field assessment 29-31 August 2007. The itinerary is provided on a map in Appendix 4.

Day 1 (28 August 2007)

In agreement with the adopted plan on the preparatory meeting the field assessment began on 28 August 2007 at 07:00h from Skopje. The first field assessment was done in Katlanovo (point 2 on the map) at 07:40h at a burned area (>1000 ha) of degraded oak forests. The duration of the fire had been 10 days. The following resources were used for fire suppression: 2 helicopters (one day), 3 fixed-wing airplanes AN-2 (all days), 1 bulldozer and about 100 fire fighters each day.

At 10:30h the first regional meeting was held in Kocani (point 3 on the map). There were representatives of the all regional stakeholders – P.E. Macedonian Forests (PEMF), Directorate

for Protection and Rescue (DPR), Crisis Management Center (CMC), Ministry of Agriculture, Forestry and Water Economy (MAFWE), Local Self-Governance (LSG) and the Red Cross (RC). During the meeting the situation of forest fires in the region was presented by all stakeholders. The lack of equipment was emphasized in particular (lack of hand tools and special off-road vehicles) and insufficient number of fire fighters.

At 11:30h the fire brigade station Vinica was visited (point 4 on the map). At 12:30h a field assessment of the burned area in Berovo was conducted (point 5 on the map). More than 1000 ha high quality natural pine forest had been burned. The fire has been very severe and 3 days were needed for fire suppression involving 1365 firefighters in total, 4 off-road vehicles, 3 fire trucks and 2 helicopters.

At 14:30h a regional meeting was held in the building of the Administrative Unit "Males"-Berovo of the PEMF (point 6 on the map). There were representatives of all regional stakeholders: PEMF, DPR, CCM and LSG. During the meeting was presented the situation with the forest fires in the region from the all stakeholders. It was emphasized the caused damage from the forest fires, the need of quick sanitation of the burned area and its afforestation / rehabilitation as fast as possible, the lack of equipment (hand tools and special off-road vehicles) and insufficient number of fire fighters.

At 19:30h a regional meeting was held in Strumica (point 7 on the map). Representatives of the regional stakeholders participated (PEMF, DPR, CMC and LSG) and presented the situation and views on forest fires in the region.

Day 2 (29 August 2007)

At 08:00h a regional meeting was held regional near v.Miravci, along the highway Skopje-Solun, (point 8 on the map). There were representatives of all regional stakeholders (PEMF, DPR, CMC and LSG) who presented the situation of the forest fires in the region. Together with the stakeholders a field assessment of the burned area near to v.Miravci (point 9 on the map) was conducted. In the fire has been burned more then 1000 ha coppices of oak (*Quercus coccifera*) and v.Miravci has been under direct treat of the fire. One air plane has been used in the fire suppression, one firefighter has been injured and the rail way Skopje-Atina was out of operations for one day.

At 10:30h a regional meeting was held in the building of the Ministry of Defence in Prilep (point 10 on the map). There were representatives of the regional stakeholders: PEMF, DPR, CMC, LSG and the Regional Fire Brigade who presented the situation of the forest fires in the region. The forest fires in 2007 were predominantly surface fires in coppices. A small number of fires affected pine afforestations. The participants expressed their opinion that a big number of the fires were due to arson. For example, during the 2 August 2007 (a national holiday) 8 fires started at the same time. Besides burned forests the damages caused by the wildfires included one abandoned house. The lack of equipment was emphasized (hand tools and special off-road vehicles), lack of equipment for communication and insufficient number of fire fighters.

At 12:30h along the high way Prilep-Bitola a regional meeting was held with representatives from Demir Hisar (point 11 on the map). They briefly presented the situation of forest fires in that region. By 10 August 2007 a total of 27 forest fires had occurred and burned about 1500 ha oak and beech forests.

At 13:30h a field assessment of the affected Roma settlement and burned pine afforestations was conducted on Bitola (point 12 on the map). About nine temporary houses have been burned. 32 persons (including 14 children) lost their houses; they are accommodated temporarily in the vacation resort Nizo Pole (point 13 on the map). During this forest fire more than 2000 ha of pine afforestations (about 40 years old) were burned near Bitola. The highway Bitola - Resen was closed for four days.

At 14:45h a meeting was held with the major of Bitola. He expressed his concern about situation and highlighted the measures for sanitation of the burned area and afforestation. Again the lack of equipment was emphasized (lack of hand tools and special off-road vehicles), lack of equipment for communication and insufficient number of fire fighters. Also, it was emphasized the problem with unexploded ordnance, mainly stemming from the World War I. The same problem exists on

the territories on the municipalities along the front line from WW-I (Strumica, Valandovo, Gevgelija, Kavadarci, Prilep and Bitola).

At 18:00h a field assessment of the forest fires in the National Park "Galicica"-Ohrid was conducted (point 15 on the map). At 20:00h a regional meeting was held in the building of the Ohrid municipality (point 16 on the map). There were representatives of all regional stakeholders (PEMF, DPR, CMC, LSG and the Regional fire brigade) who presented the situation and views concerning the forest fires in the region.

Day 3 (30 August 2007)

At 07:30h a regional meeting was held in the building of the Administrative unit "Karaorman"-Struga (point 17 on the map). Representatives of PEMF, DPR, CMC, LSG and the Regional fire brigade presented the situation of forest fires in the region. The forest fires had occurred mainly in the lower parts of the mountains in oak forests. Some of them occurred along the state border with Albania. There is no collaboration with authorities from Albania during the fire season. A very small number of the local population participated actively in fire suppression. The need of equipment (hand tools and special off road vehicles), equipment for communication and trained fire fighters was emphasized.

At 10:00h a field assessment of the burned afforestations near Kicevo (Krusino) was conducted (point 18 on the map). Very valuable pine afforestation (about 70 years old) have been burned. The city of Kicevo had been under direct threat from the fire. With very quick response, with participation of about up to 500 people (volunteers and professional fire fighters) and help of one Canadair CL-415 the fire was suppressed within reasonably short time.

Immediately after the field visit a meeting was held with the agencies from Kicevo (PEMF, DPR, CMC, LSG, Red Cross and the Regional fire brigade) (point 19 on the map). The need of equipment (hand tools and special off-road vehicles), equipment for communication and trained fire fighters was emphasized on the end of the meeting. After the meeting the burned area near to the electric power plant "Oslomej" (point 20 on the map) was inspected. The fire affected pine afforestations and oak forests. The fire threatened the power plant.

At 13:30h a field assessment of the fires near v.Zajas was conducted (point 21 on the map). At 14:40h a regional meeting was held in Tetovo (point 22 on the map). All regional stakeholders involved in fire presented the situation and emphasized the lack of equipment (hand tools and special off road vehicles) and insufficient number of trained fire fighters.

2.3 Debriefing

The debriefing was held at the Center for Crisis Management (CMC) on 1 September 2007. The mission team briefed the CMC Director and the Director of the Protection and Rescue Directorate, Skopje (list of all participants is provided in Appendix 3). A short presentation was given by Johann G. Goldammer (summary of the preliminary results of the mission). It was concluded that forest fires in the year 2007 were extraordinarily severe. The number of fires and the burned area are higher than the long-term average. Contributing reasons for that situation were included the meteorological condition (high air temperature and drought during June, July and August), difficulties encountered in the organization of fire suppression, most importantly the lack of equipment (hand tools and special off-road vehicles) and insufficient number of trained fire fighters. It was emphasized that the ecological and economic damages are very high and the sanitation of the burned area should to be done as fast as possible to avoid further damages (infestation by insects and diseases, soil erosion, etc). Mr. Jan Kellet provided a short review of the impact of the forest fires from the social economic point of view. (The presentation on the crisis management system was presented to the CMC and other stakeholders the following week.)

After these short statements the Director of CMC, Mr. Pande Lazarevski, commented and agreed with the conclusions and recommendations. The Director of the Directorate for Protection and Rescue, Mr. Kosta Jovcevski, equally supported these views.

At the end of the meeting it was concluded that follow up activities should to be initiated as soon as possible in accordance with the conclusions and recommendations of the final report.

3. Results of the on-site investigations and the field assessment

3.1 The 2007 fire season: Climatic conditions

In Summer 2007 the jet stream was flowing further south as compared to average years, allowing low pressure systems to sweep over Western / Atlantic Europe. Warmer air was pulled from Africa, which was affecting South-eastern Europe for weeks. Appendix 1 provides an example of a pressure chart, which is illustrating the reasons for the flow of hot air masses from Africa to the Balkans.

The extreme heat and dryness is reflected by the weekly averages of fire danger level, which were determined by the Joint Research Center (JRC) using the Fire Weather Index (FWI). An example for the month of July for Europe, including the Balkans, is provided in Appendix 1.

An exact comparison of climatological information for FYR Macedonia (long-term average weather data vs. weather data of 2007) is not yet possible due to the lack of evaluated weather data of the current year. However, the high temperatures recorded in summer of 2007 exceeded by far the long-term average temperatures for the summer months. Appendix 1 provides the long-term climatic conditions for a post-mission evaluation.

3.2 Preliminary summary of area burned by vegetation types

Detailed data on area burned and number of fires in August 2007 are not yet available. The fires recorded until the end of July 2007, however, indicate that the area burned by wildfires in 2007 most likely will be higher than in the most recent extreme fire year 2000.

Unfortunately the statistical data collected by various agencies or units – both long term as well as in 2007 – are inconsistent and probably not comparable. Different sources of fire statistical data come up with different numbers – see datasets provided by the Ministry for Internal Affairs (MIA) for the period 1989-2005 (Tables 2 and 3) vs. the data compiled by P.E. “Macedonian Forests” for 1999-2006.

The mission had the impression that the data compiled by the Public Enterprise “Macedonian Forests” are the most reliable. With a burned area of more than 32,000 ha recorded by end of July 2007, the total area devastated by fire in 2007 most likely will exceed the area burned in the extreme fire year 2000, during which ca. 46,000 ha of forests and other lands had been burned. It is assumed that the total area burned may exceed 50,000 ha.²

3.3 Fire causes

In many cases the causes of the fires are unknown. However, local briefings revealed that agricultural burnings, especially straw residual burning caused many fires, as it usually happens in late summer. Other fires may have been caused accidentally. Arsonists have set some fires. However, there is limited proof, except for two fires in Berovo and Katlanovo, which were set intentionally and which are currently investigated.

The long-term average data show that about 65% of wildfires in Macedonia were caused due to negligence, 7.5% were ignited intentionally and lightning caused only 2%. For 25.5% of fires, the causes were unknown due to difficulties in determine the cause. It is strongly assumed, however, that the majority, if not all, of the fires with unknown origin were started by people. Table 5 in Appendix 1 provides average data on fire causes in the Balkan region and reveals that lightning storms caused ca. 3% of all ignitions – a dimension also typical for Macedonia and most of Europe.

The farmers, who were using fire, most likely have not been aware of the extreme weather conditions, especially the influence of wind, which caused the spread of land-use fires and created high-intensity wildfires that were difficult to control.

² According to a quick satellite survey by the JRC a total of 36,492 ha of lands were affected by fire by end of August 2007, of which 30,645 ha were forest lands (84%):
http://effis.jrc.it/documents/2007/EFFIS_Newsletter_2_2007.pdf

3.4 Fire impacts on vegetation, environment and secondary disasters

An overview of the specific fire impacts is given in the following:

3.4.1 Forests

The degree of ecological and economic damages varied by forest types. High-value forests, such as natural or planted pine forests (*Pinus nigra*, to a lesser extent *P. sylvestris*), have been severely damaged (destroyed) by fire in many places. The “severity” of fires (i.e. the deep fire impact on the forest floor and soil cover; the consumption of all burnable material on the forest floor as well as damage of destruction of tree crowns) was often a result of extreme drought, strong winds and topography (on steep terrain high-intensity, up-slope moving fires are developing very fiercely). Most of the fire-affected pine forests will not regenerate sufficiently by natural regeneration, and need to be re-forested. The value of the partially burned timber (the tree stems are charred by fire) is reduced. The costs of salvage logging and preparation of the land for restoration / sanitation amount to ca. 1000 Euro / ha. It means that the costs for rehabilitation of 1000-ha burns (such fire sizes have been reported in many forest districts) will amount to 1 million Euro. This magnitude of costs must be kept in mind when judging the investments necessary for appropriate fire prevention and control measures.

As pine reforestations are very sensitive to fire, it should be considered to use different species for reforestation, e.g. oak species (*Quercus* spp.). Oaks are also affected by fire but have a good potential of regenerating naturally (from sprouting). Thus, fire affected oak stands may not require high investments for rehabilitation.

High-altitude forests with different tree species, e.g. spruce and fir species have not been visited during the assessment mission. However, there are reports of fires burning in national parks in which such forests may have been affected by fire. In general, these mountain forests are very sensitive to fires, and fires represent a threat to biodiversity and mountain ecosystem stability.

The forest fire damage assessment by the Public Enterprise “Macedonian Forests” estimates a damage of forest products and the costs for fire suppression in the magnitude of 21 Million Euro (as of end of July 2007).

For private forest owners the situation can be rather difficult. The majority of the ca. 60,000 private forest owners have very small forests; the average size is 0.5 ha. One farmer interviewed by the mission team lost the whole forest on his property of 3.5 ha. For such a case a fire can be economically very disastrous.

3.4.2 Other lands

Degraded forests affected by fire in some cases have a history of earlier fires and land-use. The economic value of degraded forests and brushland is less than the high-value forests.

Only a limited amount of agricultural lands or other cultivated lands have been affected by wildfires. The team noticed some viticulture and fruit tree plantations damaged by wildfires. The authorities in general did not report major damages in agricultural crops.

3.4.3 Infrastructures

In some places damages of infrastructures were reported and observed, e.g. some burned power and telephone masts. In general there was limited damage, although it was observed that many electric power lines were near or even over burned vegetation. The potential of damages, however, was very high, but was successfully prevented by fire suppression efforts. The TV tower at Katlanovo (near Skopje) was threatened by fire in July 2007, but successfully protected.

Near Gevgelija a short section of railway sleepers burned, but could be repaired at short notice. At the fires near Katlanovo the highway and tunnel had to be closed for several hours in order to avoid traffic safety problems due to fire and smoke.

Most endangered was the coal-fire electric power plant Oslomej near Kicevo. The fires burned nearby this power plant and created some spotting fires, which were falling on the main power plant facility. The fire personnel prevented the ignition of the facility. Burning of this power plant could have caused enormous direct and indirect damages (e.g. loss of electricity with subsequent economic losses in the region or even countrywide).

3.4.4 Social / humanitarian (public health, safety and security)

In a number of regions the loss of some buildings was reported, e.g. some weekend houses. In the outskirts of Bitola a small informal settlement of the local Roma population was partially burned down, several barracks were destroyed or damaged. The authorities evacuated 178 persons from the fire scene. There were no casualties. While some of the evacuees were allowed to return after the fire, a total of 32 persons are currently still hosted in a holiday resort and are waiting for decisions and actions by the city of Bitola to provide new housing ground and to assist building of barracks. Details on the fire impact on the Roma community in Bitola are provided in the tandem report.

Other regions reported about losses of private houses and equipment, e.g. in Berevo the loss of one house, one weekend house and one tractor was reported. In Strumica the authorities reported the loss of several barns and cattle stable.

The Red Cross units were actively participating in the fire and rescue operation in several places where peri-urban or village sites were endangered by fire, e.g. in Bitola and Kicevo. The Red Cross gave advice to people to protect themselves from heat stress. Although severe smoke pollution was reported in the call for international assistance (Appendix 3), the regional representatives of the Red Cross and other authorities did not consider smoke pollution and health risk as a major problem during the fire crisis.

The fire and forestry units reported about several critical situations in which firefighters were threatened by the wildfires, e.g. during fires burning near Prilep where firefighters were trapped by fire. However, no casualties were reported. For comparison: in Croatia six firefighters were killed and seven severely injured in a fire in the last week of August 2007. (Note: By 6 September the number of fatalities in Croatia has increased to 11 firefighters.)

In conclusion it can be stated that unlike the situation in Greece, where more than 64 people had been killed by fires and more than 3000 houses burned during the fire episode of August 2007, the humanitarian consequences of wildfires in FYR Macedonia were less severe.

However, the potential for higher losses was there, including the long-term effects of smoke pollution (damage through inhalation of smoke particles, with the risk of short-term effects on elderly and young people and those suffering cardio-vascular diseases, asthma, etc., or long-term effects such as cancer).

3.4.5 Other damages: Secondary damages and disasters

It is very likely that considerable damage will be caused by secondary events. Bark beetles most likely will infest pine forests, which were partially damaged by fires. The expected mass infestation will result in additional damages affecting surrounding unburned forest stands.

In most areas fires burned on steep terrain (slopes). The high severity of fires has burned the protecting humus layer and removed the grass-herb vegetation. In some places the fires penetrated the ground through burning of old tree stumps and roots. The effects of these hot-burning fires make these slopes very prone to soil erosion, with the consequence of loss of soil and nutrients. This will be a major impediment for regeneration and reforestation.

Once heavy rainfalls in autumn-winter will hit these burned sites, it is expected that massive surface runoff will lead to floods, landslides, mudslides and rock falls. The downstream effects of heavily burned sites may become more disastrous than the direct fire damage in terms of timber losses and reforestation costs.

3.4.6 Specific issues: UXO threat to human security

Many forest sites and non-forest lands in the Balkan region are contaminated by land mines and unexploded ordnance (UXO) from recent conflicts. In FYR Macedonia the threat of UXOs to be triggered and exploded by forest fire is stemming from World War I. Most contaminated is the former line of contact of 1917 between Strumica and Bitola (LoC between the Austro-Hungarian, German, Bulgarian and Turkish forces in the North and the Antanta Union in the South), where large numbers of grenades and mines are threatening firefighters and civilians. During the fires in July 2007 more than 70 explosions of ammunition were recorded in the immediate vicinity of Bitola, but no casualties occurred.

3.5 Fire management

The following summary is concentrating on the technical fire management capabilities. An analysis of the general Crisis Management System in light of the forest fires can be seen in the separate report (including some aspects of multi-stakeholder involvement at a local/national level).

3.5.1 Wildfire prevention and preparedness

The prevention of forest fires is the task of the forest owner (Law on Forests, 1997). The Public Enterprise "Macedonian Forests" plays an important role in this regard. However, the enterprise is allocating very limited resources for technical fire prevention measures, e.g. for creating firebreaks, pruning of trees alongside roads, planting of greenbelts, or construction and operation of fire watch towers.

The economic situation of private forests is rather difficult. The average small size of the forest properties, usually intermixed with forests of other owners, makes fire prevention measures extremely difficult, not to say impossible, unless agreement can be reached by a group of forest owners of a forest complex.

During the field mission it was noted that only very few billboards and other public education / information materials have been posted. Some leaflets addressing forest fire risk were presented by the authorities in Kicevo, including materials in Albanian language.

3.5.2 Wildfire response: Fire suppression

Forest owners have the primary responsibility for fire response. Since private forest owners have limited to none capabilities in fire suppression, the Public Enterprise "Macedonian Forests" is serving *de facto* as the only acting entity to initially respond to fires (initial attack) regardless of forest ownership. P.E. Macedonian Forests is actually acting like a public body ("Forest Service") although it does not have a mandate or budget to do so. P.E. Macedonian Forests is acting because there are no resources in private or community forests to respond to fire.

If a fire cannot be suppressed P.E. „Macedonian Forests“ calls the local Fire Service for support and the Directorate for Protection and Rescue is involved. In a declared "disaster situation" (emergency / crisis dimension of a fire) the Crisis Management Center is responsible for coordinating fire fighting. This task includes the coordination of foreign assistance, e.g. targeting foreign aerial resources to the fire to be suppressed.

The mission received several reports from the regions (e.g., Struga) that private landowners expected that P.E. Macedonian Forests should fight fires also on private lands. These landowners did not participate in fire fighting.

In almost all regions it was reported that there are insufficient to none volunteers for firefighting. Some exceptions, however, indicate the potential for volunteer involvement: In Kicevo-Krusino it was reported that a fire, which broke out on 26 July 2007 in the afternoon, the local population was immediately through the local media. Immediately about 400 to 500 people assisted the foresters, fire services and the armed forces in combating the fires and saving very valuable forest resources. In Tetovo a representative of a volunteer group pf Brevenica reported the availability of volunteers, which at moment have no budget and no equipment at all.

3.5.3 Equipment, professional competence and firefighters personnel safety

In all regional meetings visited (Annex: itinerary map of field assessment mission) the representatives of the agencies involved (P.E. Macedonian Forests, Fire Services, DPR, CMC) reported in detail about the available technical / equipment resources to combat fires. The reports reveal that the equipment for fire suppression in forests and other lands outside villages and towns are absolutely insufficient. Compared to international standards the available resources almost nil.

In many regions the total amount of equipment included a small number of fire swatters (fire beaters) and backpack pumps. In some regions one single vehicle for transport of personnel was available. In some regions vehicles were borrowed or made available by private persons.

The units dispatched to fight forest fires do not have any specific training for capacitating the personnel to carry out fire suppression professionally and – most importantly – safely.

In all regions it was reported that units, which did not have any tools for fire suppression, had to attack fires burning with extreme intensities.

3.5.4 *Rehabilitation of fire-affected lands*

It was noted during the mission that P.E. Macedonian Forests was already working on preparations for post-fire sanitation cutting (salvage logging and removal of fire-damaged trees to reduce bark beetle infestations in burned pine stands) and reforestation.

The rehabilitation of forests damaged by high-severity fires (fires burning deep into organic terrain and depleting the soil from protecting humus and vegetation cover) must receive highest priority in order to reduce the degradation or loss of soils due to erosion and increased surface water runoff. Reforestation must receive priority in watersheds where heavy rainfalls may cause floods and destabilization of mountain slopes.

3.6 *International cooperation in fire suppression*

During the fire crisis in 2007 the government requested international assistance. Appendix 5 provides an overview of the assistance given by countries and donor organizations. Aerial fire fighting resources were received from some countries. The efficiency of foreign aerial firefighting missions varied. In the case of the fire near Kicevo the deployment and aerial attack of a Croatian Canadair CL-215 was particularly successful.

During the fire crisis in the whole Balkan region numerous fires crossed national borders. This was also the case in FYR Macedonia. Authorities in Struga reported about border-crossing fires from Albania. They reported that there were no official communication channels with Albania, and that all action at the border had to be done in an unofficial way. There is also no communication with the authorities in Kosovo.

During the peak of the fire crisis in Greece, the government of FYR Macedonia offered assistance to Greece by sending a mixed firefighter team with the most experienced personnel. The Greek authorities, however, did not allow the fire crew to cross the border.

4. Conclusions

4.1 General: Implications of changing socio-economic conditions and regional climate on fire regimes and institutional capabilities in fire management

The fire assessment mission team has been confronted the dramatic social, economic and political changes in the rural space of the FYR Macedonia. Most visible during the mission were:

Consequences of the rural exodus

- Reduction in agricultural and pastoral activities
- Reduction in the overall use of biomass
- Together with increasing size of fallow lands with bush and forest encroachment, the reduced utilization of biomass constituting an increasing availability and continuity of fuels available to wildfires
- Villages becoming over-aged and even completely vacated due to the exodus of the young generation to the cities
- Decrease of availability of young, active rural population ready to prevent and suppress fires

Consequences of political and structural changes in the society

- Institutional weakening of the authority and efficiency of the forestry authorities
- Degraded financial capabilities of the fire and rescue services and other stakeholders concerned directly or indirectly with fire prevention and control
- Impoverished private forest and land owners with virtually non-existing capability on fire prevention and control

Consequences of climate extremes such as in 2007

- Unprecedented heat wave
- Extreme desiccation of forests and other vegetation
- Extended dry season without rainfall
- Occurrence of strong dry and hot winds favouring the intensity, spread and uncontrollability of wildfires
- Neighbouring countries are similarly affected, with consequences on reduced availability of foreign fire disaster assistance

Consequences of fires on the country and the environment

- As a consequence of these developments the territory of the country is becoming increasingly vulnerable to fire
- The effects of fire on the natural environment in the country constitute a major threat to the sustainability of forests, forestry and the role of forests in the stability of the country's environment and society.

By evaluating the multiple and cumulative effects of human-driven and natural developments on the vulnerability of FYR Macedonia to fire, and the whole Balkan region respectively, it is concluded that highest political priority should be given to strengthen the protection of forest and other vegetation resources against the increasingly detrimental impacts of fire on ecosystem stability and society in the country and its neighbours.

Decisive action is urgently needed.

4.2 Current fire situation and fire management capabilities in FYR Macedonia

As a consequence of the weakened financial capabilities of all stakeholders concerned, the fire management capabilities in the country are extremely poor. In all regions visited and forestry and fire service units inspected the Fire Assessment Mission Team witnessed the almost non-existing capabilities in fire management.

Almost all local branches and fire service units had extremely small amounts of hand tools, often overaged and not functioning, limited to none means of transport, especially lack of off-road vehicles for transport of firefighters, no suitable fire trucks and limited amount of water tenders. There is no adequate personal protection equipment for the safety of firefighters available.

Special training required for professional forest (wildland) fire fighters does not exist in the country. Firemen are exclusively trained in structural fire fighting, or management of hazardous materials, but there was no indication of availability of training materials or procedures in forest fire fundamentals and suppression.

Several regional authorities underscored the lack of personnel, which is required by the Law on Local Self-government: "Fire Protection Provided by the Territorial Fire-fighting Units" i.a.w. the Law on Fire Protection ("Official Gazette of the Republic of Macedonia" No. 67/04), especially considering Article 6, which is stipulating the minimum number of firemen in the fire protection units i.a.w. the number of inhabitants of municipalities.

The responsible units of P.E. "Macedonia Forests" and the fire services reported that they were tackling large forest fires of sizes of up to several hundreds or more than thousand hectares with virtually not tools at all. In some cases firemen had to use / borrow private vehicles to drive to the fire front.

4.3 Needs for improvement of fire management capabilities

The weak status of the forestry authorities and other forest owners, notably the private forest owners, as well as the catastrophically inadequate equipment, operational means and training of the fire service and rescue units require a swift and massive response towards the improvement of professional capacity and equipment of the authorities concerned with fire protection. The investments that will be required will be rather moderate.

5. Recommendations

5.1 Fire management training in FYR Macedonia

Given the lack of professional training of forestry and fire service personnel in the country is recommended to conduct a fire management capacity building programme for FYR Macedonia.

Given the fact that the countries in the Balkan region are suffering similar problems of shortcomings in fire management, and the fact that many fires are crossing the borders between all Balkan countries, it is strongly suggested to initiate a capacity building training programme at regional level. The programme should first focus of "training for trainers" from the Balkan countries.

This is in line with the recommendations of the UNISDR Regional Southeast Europe / Caucasus Wildland Fire Network (Appendix 5) and, among other, the recommendations of the recent UNDP-UNEP Fire Mission to Kosovo.³

Given the interest and already existing engagement of the Environment and Security Initiative (ENVSEC) in addressing the increasing fire problem in the region – in particular with involvement of GFMC, UNEP and OSCE and considering the potential interests of NATO – it is recommended to implement this programme under the financing and implementation scheme of ENVSEC.

The Joint UNEP / OCHA Environment Unit and the Council of Europe (CoE) through its Euro-Mediterranean Major Hazards Agreement (EUR-OPA) have indicated a strong interest to partner in such a programme.

At academic level it is strongly suggested that the Forestry Faculty in Skopje should receive additional resources to enhance fire research and training of forestry students. Training courses for forestry students could also be conducted in conjunction with universities from neighbouring countries, e.g. in joint summer schools. This kind of academic training could be possibly financed by ENVSEC.

³ UNDP / Joint UNEP/OCHA Environment Unit / GFMC, Fire Situation Assessment Kosovo, Final Report, 15 August 2007 (on file at Joint UNEP/OCHA Environment Unit and GFMC).

5.2 Fire management organization

The fire season of 2007 revealed that the land managers (forest managers, managers of other lands), who have primary responsibility for fire prevention and initial attack, need to be strengthened in performing their duties.

It is strongly recommended that the P.E. "Macedonian Forests" shall be strengthened through provision of professional training and equipment in order to improve forest fire prevention, preparedness and initial suppression capabilities.

Considering the increasing degradation and destruction of the forests of the country as a consequence of climate extremes, socio-economic changes and fire, as well as secondary damages or disasters following the fire, it should be considered to elevate the status of P.E. "Macedonian Forests" to a National Forest Service mandated to have primary responsibility and supervisory functions for forestry and forest protection, notably fire protection, in the whole country.

This would follow the principle of "land managers being responsible for fire management". The negative experiences in other countries, notably in Greece, where urban-focussed fire services have prime responsibility for rural fire management, should be taken into consideration when taking decision to strengthen the land manager's capabilities.

However, the improvement of efficient support of the professional and voluntary fire services to P.E. "Macedonian Forests" is very crucial.

Given the need on the one side, and the availability / willingness of civil society on the other side, to involve civil and voluntary engagement on forest fire management it is urgently recommended to implement Article 22 (1) (11) of the Law on Local Self-government: "Fire Protection Provided by the Territorial Fire-fighting Units" i.a.w. the Law on Fire Protection ("Official Gazette of the Republic of Macedonia" No. 67/04), especially considering Article 7, which is stipulating:

(1) For the purpose of extinguishing fires in woods and open spaces, under circumstances of increased danger of occurrence of such fires, the municipalities – at a request of the Protection and Rescue Directorate – shall engage seasonal firemen, who operate as part of the units of Article 5 herein. Priority in engaging seasonal firemen is given to firemen working in voluntary firefighting units and associations in which they have been active for at least two years.

It is recommended that UNDP to sponsor the national dialogue necessary for the development of a national fire management strategy. A national Round Table on Fire Management could be facilitated through the GFMC and the UNISDR Regional Southeast Europe / Caucasus Wildland Fire Network. This network can contribute with relevant expertise.

5.3 Fire suppression hardware

As reported by local / regional authorities and confirmed by the Mission, the fire fighting equipment in FYR Macedonia is obsolete. In most regions the firefighting equipment is outdated, often broken. Besides a need for fire management training there is a need to strengthen the technical capabilities of the Fire Services by upgrading the fire suppression hardware

It is suggested that UNDP to take the lead to support the country in resources mobilization and procurement of services and equipment for improving fire management capabilities. This project would constitute the hardware delivery and should be closely coordinated with the "soft" component of capacity building of human resources, tentatively to be covered by the ENVSEC / CoE EUR-OPA mechanism (cf. 5.1). The hardware to be purchased would constitute a number of model units for wildfire response, fully equipped with vehicles, tools and personal protective equipment (PPE).

The purchase of hardware component through a UNDP initiative should support the Government of FYR Macedonia in making decisions for further investments in forest fire management.

5.4 Rehabilitation and securing the stability of fire-damaged forests and other lands

The rehabilitation measures to be taken in order to secure regeneration or reforestation of fire-damaged lands and to prevent secondary pests (e.g., bark beetle infestation) or secondary disasters and other detrimental post-fire effects (loss of topsoil and soil nutrients by erosion; landslides, mudslides, flash floods and extended floods as a consequence of increased surface runoff) need to be planned carefully. This task is primarily conducted by P.E. "Macedonian Forests". The decision about the future stocking of the fire-damaged lands must be taken carefully. Pine reforestations will continue to be vulnerable to wildfire, particularly on areas with limited access, e.g. on steep terrain and lacking forest roads. It is strongly recommended to analyze the historic and potential natural vegetation of fire-affected sites in order to avoid reforestation with the wrong species (e.g. pine reforestations in places that should better be reforested with oak species), and to consider future climate conditions and the overall wildfire risk. Securing of the stability of fire-damaged stand must include carefully sanitation cuttings, particularly for the prevention of mass outbreaks of bark beetles in fire damaged opine forests. Attention should be paid, however, to avoid cutting of partially fire-affected trees (scorched trees) which could survive if properly protected from bark beetle infestation. Monitoring of bark beetle populations with pheromone traps is recommended.

Sensitive watersheds must be reforested with highest priority in order to prevent the loss of soil and excessive surface run-off of water during heavy rainfall events. P.E. "Macedonian Forests" must be provided the necessary funding to implement the rehabilitation of the damaged areas during the winter 2007-2008.

5.5 Proposal for a EU Twinning project for fire management

As the FYR Macedonia is aiming at joining the EU, it should be considered to initiate a "Twinning" (or Twinning Light) project between FYR Macedonia and a EU member state, to adapt Macedonian legislation and practical procedures in forest and fire management. The GFMC and the Forestry Faculty of Skopje / UNISDR Regional SE Europe / Caucasus Wildland Fire Network are available to facilitate the development of a Twinning request.

5.6 Proposal for a coordinated regional (Balkan) fire management strategy

The concurrent problems and needs of all neighbouring Balkan countries to improve fire management capabilities are implying a regional approach to be taken in which the limited capabilities of the Balkan countries to encounter the fire problems would be strengthened by coordinated, collective and mutually enabling action. In 2006-2007 the UNISDR Regional SE Europe / Caucasus Wildland Fire Network developed a draft regional strategy on cooperation in wildland fire management, which is offering an initial concept of regional cooperation (Appendix 5). There is a need to further develop the strategy at inter-governmental level.

UNDP, through the GFMC and the UNISDR Regional SE Europe / Caucasus Wildland Fire Network, flanked by ENVESC and CoE / EUR-OPA, could support the endeavours to strengthen the regional dialogue and networking.

Concrete proposals for immediate action, e.g. the establishment of a Regional Fire Monitoring Center for the Balkan region or the inclusion of the Balkan languages into the international Wildland Fire Management Glossary could be implemented relatively swiftly and at moderate costs.

5.7 Proposal for a Balkan Regional Fire Crisis Conference or Summit

At the time of delivery of this report the fire season in the FYR Macedonia and neighbouring countries is almost over. From Bulgaria in the North down to Greece in the South of the Balkans all countries have suffered an unprecedented severe fire season in 2007. The severity of the fire season was an expression of the accumulated societal, economic and environmental changes in the region – and this should be evaluated. Decisive action must be taken to address the underlying causes for the extreme fires and to reduce the increasing vulnerability of forests and society to fire.

The Balkan countries have recognized the inter-connectedness and interdependence of the natural space and its protection efforts. The autumn rains have begun. The region should not go to hibernation. Instead, it is suggested to call urgently for a “Regional Balkan Wildland Fire Crisis Conference” (or “Summit”), in which highest-level possible government commitment should be sought. The summit should

- Address the underlying causes of increasing threats of wildfires to the environment and society, notably the consequences of land-use change and climate variability
- Outline the need for the development of national policies and strategies addressing land-use, forestry and forest protection, nature conservation and fire management
- Elaborate agreement for strengthening fire management capabilities in the region through standardized and joint regional training and introduction of improved technologies for wildfire suppression
- Development of border-crossing mechanisms and agreements on mutual assistance in fire emergency situations

The Global Fire Monitoring Center (GFMC) through the UNISDR Global Wildland Fire Network and its regional network – the UNISDR Regional Southeast Europe / Caucasus Wildland Fire Network – are available to facilitate this process.

This crisis summit should be co-sponsored by those who have been involved in mastering the fire crisis in the region in 2007 and / or are available to assist the region to build capabilities in fire management. It is suggested that the main actors to be invited to provide joint auspices would include, among other, UN specialized agencies and programmes (UNDP, UNEP, the Joint UNEP / OCHA Environment Unit, FAO), the European Commission, Council of Europe / EUR-OPA, ENVESC, OSCE and NATO.

6. Appendices

1. Weather pattern 2007 and data long-term average climatological data
2. Forest fire statistical data (long-term 2007 fire season)
3. Situation reports, satellite reconnaissance of fires and international assistance
4. Mission itinerary and composition: Map, mission team and list of persons participating in main meetings
5. International cooperation in fire management (UNISDR Regional Network): Background documents
6. Photographs of the mission

Appendix 1

Weather pattern 2007 and data long-term average climatological data

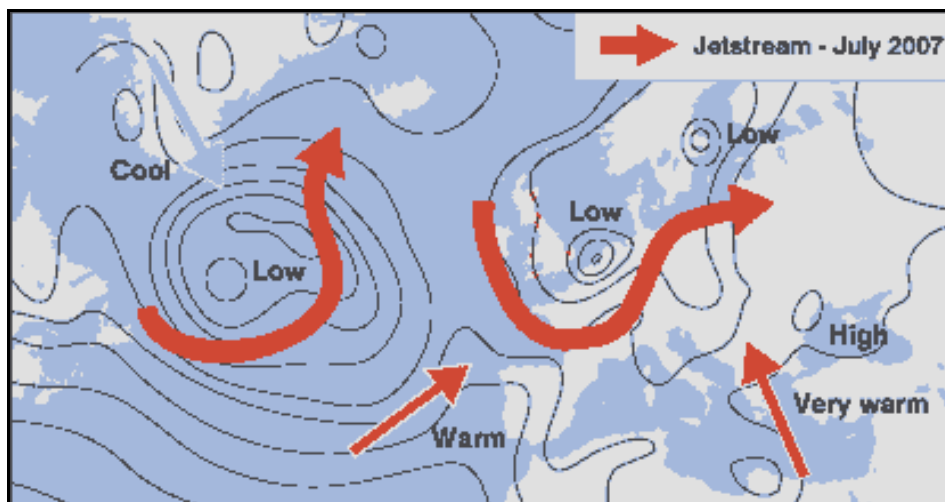


Figure 1. In Summer 2007 the jet stream was flowing further south as compared to average years, allowing low pressure systems to sweep over Western / Atlantic Europe. Warmer air was pulled from Africa, which was sweeping over South-eastern Europe. Example of pressure chart:: 24 July 2007. Source: UK Met Office

Table 1. Climatological information for FYR Macedonia: Average weather data provided by WMO

Month	Mean Temperature °C		Mean Total Rainfall (mm)	Mean Number of Rain Days
	Daily Minimum	Daily Maximum		
Jan	-3.6	4.0	36	10
Feb	-1.3	8.4	36	9
Mar	1.9	13.6	40	10
Apr	5.4	18.6	40	10
May	10.0	23.9	60	11
Jun	13.0	27.4	46	10
Jul	14.8	29.8	34	7
Aug	14.6	30.0	27	6
Sep	11.4	26.1	36	6
Oct	6.3	19.5	42	7
Nov	1.4	11.2	56	9
Dec	-2.2	5.3	51	11

Source: WMO <http://worldweather.wmo.int/090/c00199f.htm#wxforecast>

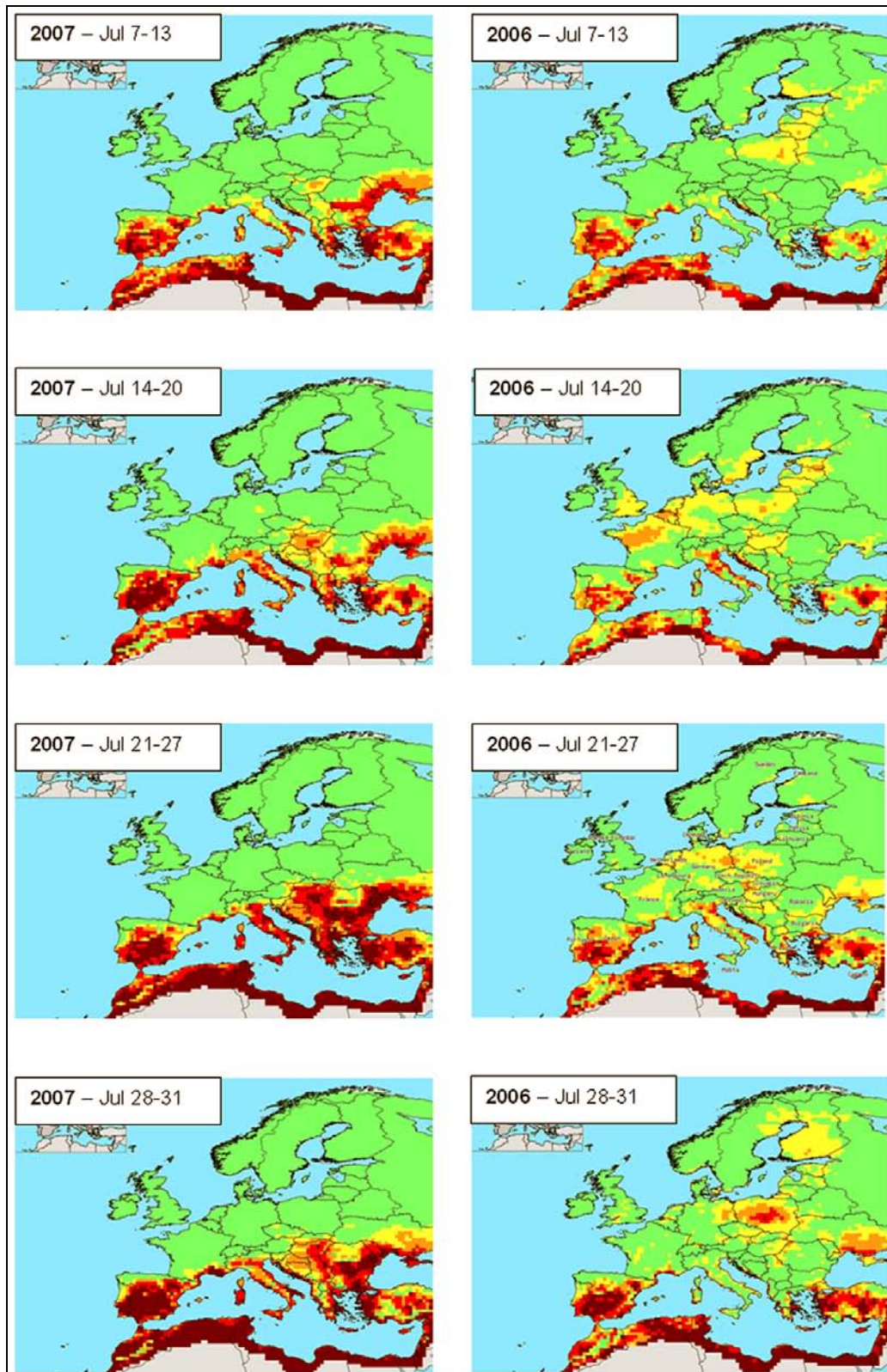


Figure 2. The extreme heat and dryness in the Balkan region is reflected by the weekly averages of fire danger level, which were determined by the Joint Research Center (JRC) using the Fire Weather Index (FWI). An example for the month of July for Europe including the Balkans (left column) as compared to 2006 (right column) has been extracted from the European Forest Fire Information System (EFFIS) Newsletter No. 7 (6 September 2007): (http://effis.jrc.it/documents/2007/EFFIS_Newsletter_2_2007.pdf).

Appendix 2

Forest fire statistical data (long-term and 2007 fire season)

Table 2. Overview of forest fires in the FYR Macedonia for the period 1 January to 31 July 2007. Source: Private Enterprise "Macedonian Forests". Note: 1 Euro = 60 denars. The total damages / costs of 1,255,626,112 denars correspond to 21 million Euro.

	Administrative Unit	Number of Fires	Burned Area (ha)	Burned Timber (m ³)	Suppression Costs (denars)	Total Damages / Costs (denars)
1	Malesevo - Berovo	17	1548.8	163931.0	567,556.00	75,265,125.45
2	Ravna Reka - Pehcevo	23	424.0	800.0	436,001.00	1,815,285.00
3	Osogovo - K.Palanka	15	179.7	1436.2	254,054.00	13,104,280.00
4	Kratovo - Kratovo	4	105.0	3300.0	245,719.00	1,621,159.00
5	Osogovo - Kocani	17	403.1		544,287.00	544,287.00
6	Serta-Stip	6	443.6	8446.0	342,000.00	80,534,800.00
7	Plackovica - Radovis	19	486.8	4236.0	441,100.00	1,920,900.00
8	Plackovica - Vinica	43	733.0	2000.0	750,370.00	4,802,675.00
9	Belasica - Strumica	33	2346.8	816.0	431,304.00	520,584.00
10	Salandjak - Valandovo	6	28.5	184.0	55,500.00	398,650.00
11	Kozuv - Gevgelija	14	1855.2	31254.0	565,560.00	16,583,041.77
12	Demir Kapija - D.Kapija	8	124.5	615.0	200.,00.00	687,610.00
13	Bor - Kavadarci	12	245.5	197.0	334,869.00	8,077,429.00
14	Crn Bor - Prilep	18	664.0		502.,07.00	502,107.00
15	Babuna - Veles	47	2396.9	40196.0	2,688,137.00	66,572,582.00
16	Sumarstvo - Sv. Nikole	7	93.0		475,800.00	475,800.00
17	Kajmakcalan - Bitola	10	6022.0	132020.0	727.,60.00	298,013,230.00
18	Bigla - Demir Hisar	24	1165.6	42444.3	1,158,305.50	14,852,867.63
19	Lipa - Krusevo	2	462.0	21489.0	47,650.00	8,997,462.00
20	Prespa drvo - Resen	6	110.0		225,860.00	375,860.00
21	Galicica - Ohrid	15	452.3	1826.0	279,952.00	3,115,129.00
22	Jablanica - Struga	16	632.0	350.0	478,860.00	478,860.00
23	Stogovo - Debar	5	28.0	195.0	18,000.00	388,500.00
24	Lopusnik - Kicevo	55	1696.8	14640.0	1,506,054.00	80,474,289.50
25	Sandanski - M.Brod	32	1374.5	34022.5	1,422,720.00	49,608,975.00
26	Sar - Gostivar	17	1395.2	26317.2	334,689.00	15,818,196.00
27	Lesnica - Tetovo	41	1739.4	9417.0	176,285.00	125,956,647.60
28	Karadjica - Skopje	52	3297.9	46397.5	2,736,250.00	361,380,750.00
29	Kumanovo - Kumanovo	12	1831.0	5395.0	1,017,740.00	22,461,160.00
30	Golak - Delcevo	13	379.9	80.0	277,870.00	277,870.00
Total		589	32,665	592,005	19,243,360	1,255,626,112

Table 3. Number of forest fires in FYR Macedonia for the period from 1989 to 2005 (Source: Ministry for Internal Affairs - MIA)

Land Use	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total	Average
Deciduous	33	65	9	57	111	68	9	15	26	26	256	395	58	26	25	22	13	1 214	<i>71.4</i>
Coniferous	11	43	6	32	50	23	3	18	36	20	34	133	26	5	22	22	18	502	<i>29.5</i>
Mixed	31	73	11	98	141	65	9	40	78	73	82	454	60	21	41	26	20	1323	<i>77.8</i>
Shrub forests	9	37	4	26	43	14	0	5	10	11	-	-	7	4	0	1	1	172	<i>10.1</i>
Other	11	23	8	22	45	25	3	12	24	21	80	205	14	3	8	2	6	512	<i>30.1</i>
Total-forests	95	241	38	235	390	195	24	90	174	151	452	1187	165	59	96	73	58	3723	<i>218.9</i>

Table 4. Burned area in FYR Macedonia for the period from 1989 to 2005 (Source: MIA)

Land Use	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total	Average
Deciduous	172.2	1 987.6	49.5	904.4	6 034.3	1 486.3	47.5	54.3	271.0	160.9	1062.2	16 182.9	2 468.7	472.3	491.7	890.00	766.5	33 502.3	<i>1 970.7</i>
Coniferous	40.5	1260.6	5.7	208.2	1 368.2	2 523.1	1.3	100.6	1 299.7	156.7	332.1	1 660.5	1 007.7	5.2	115.6	92.87	227.1	10 405.67	<i>612.1</i>
Mixed	118.8	876.4	35.9	7 632.9	4 446.8	1 471.8	5.4	429.8	652.7	1 282.1	343.2	17 345.4	2 888.6	111.1	3 025.8	589.18	2985.7	44 241.58	<i>2 602.44</i>
Shrub forests	1 258.8	1 214.0	345.0	359.6	462.9	174.3	0.0	85.0	1 138.3	21.5	0.0	0.0	77.5	44.5	0.0	1.50	1.0	5 183.9	<i>304.9</i>
Other	43.1	421.8	7.7	285.1	2 111.6	146.2	51.2	316.4	2 12.1	268.0	254.5	2 739.7	224.3	26.0	303.2	10.50	36.3	7 457.7	<i>438.7</i>
Total-forests	1 633	5 760	444	9 390	14 424	5 802	105	986	3 574	1 889	1 992	37 929	6 667	659	3 936	1 585	4 017	100 791	<i>5 929</i>

Table 5. Number of forest fires, burnt area (ha), burnt timber mass (m³) and economic losses (euros) in FYR Macedonia in the period 1999-2006. Source: P.E. "Macedonian Forests"

Year	Number of Fires	Burnt Area (ha)	Burnt Timber (m ³)	Extinguishing Costs (Euro)	Total Damages / Costs (Euro)
1999	69	2 414.80	1 950.0	32 512.00	372 921.00
2000	476	46 235.73	711 782.00	976 142.00	15 642 775.00
2001	161	6 263.30	88 260.00	66 810.81	9 851 849.00
2002	65	1 186.30	24 661.28	15 193.10	298 902.00
2003	144	1 068.88	10 987.00	44 607.87	251 527.00
2004	94	892.05	4 322.30	23 214.55	1 469 090.00
2005	182	1 368.00	1 063.00	42 018. 11	411 181.10
2006	138	2 085.95	12 978.00	45 311.20	2 437 914.46
Total	1 329	61 515.01	856 003.58	1 245 809.56	30 736 159.56
Average	166	7 689	107 000	155 726	3 842 020

Table 6. Causes of forest fires in the South East European Region

Country	Causes (%)		
	Human	Natural	Unknown
Albania	63.7	0.8	35.5
Bulgaria	30.4	1.7	67.9
Croatia	75.3	0.8	23.9
Greece	55.5	3.0	41.5
Republic of Macedonia	72.5	2.0	25.5
Slovenia	45.9	8.3	45.8
Serbia and Montenegro – Serbia –	66.0	3.0	31.0
Turkey	60.9	6.7	32.4
Average	58.8	3.3	37.9

Source: Nikolov, N. 2006. Thematic report on forest fires in the Balkan Region. Global Forest Resources Assessment 2005. FAO Fire Management Working Paper FFM/11/E, Rome.

Situation reports, satellite reconnaissance of fires and international assistance

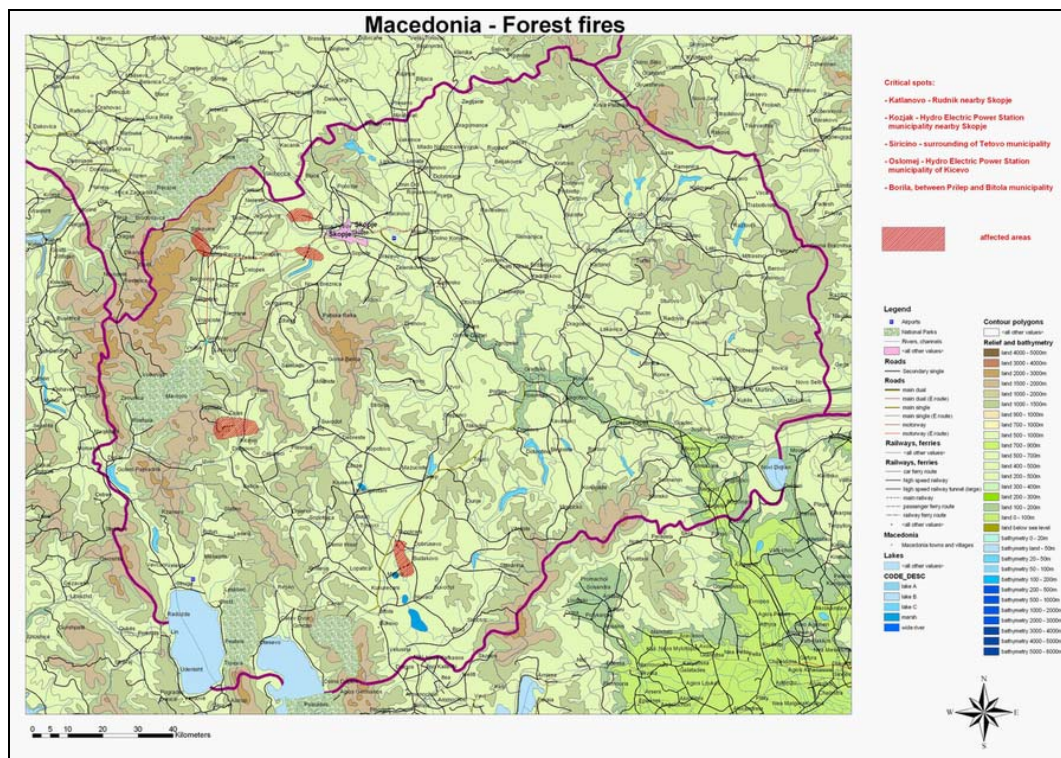


Figure 3. Fire location map provided by Relief Web (27 July 2007)

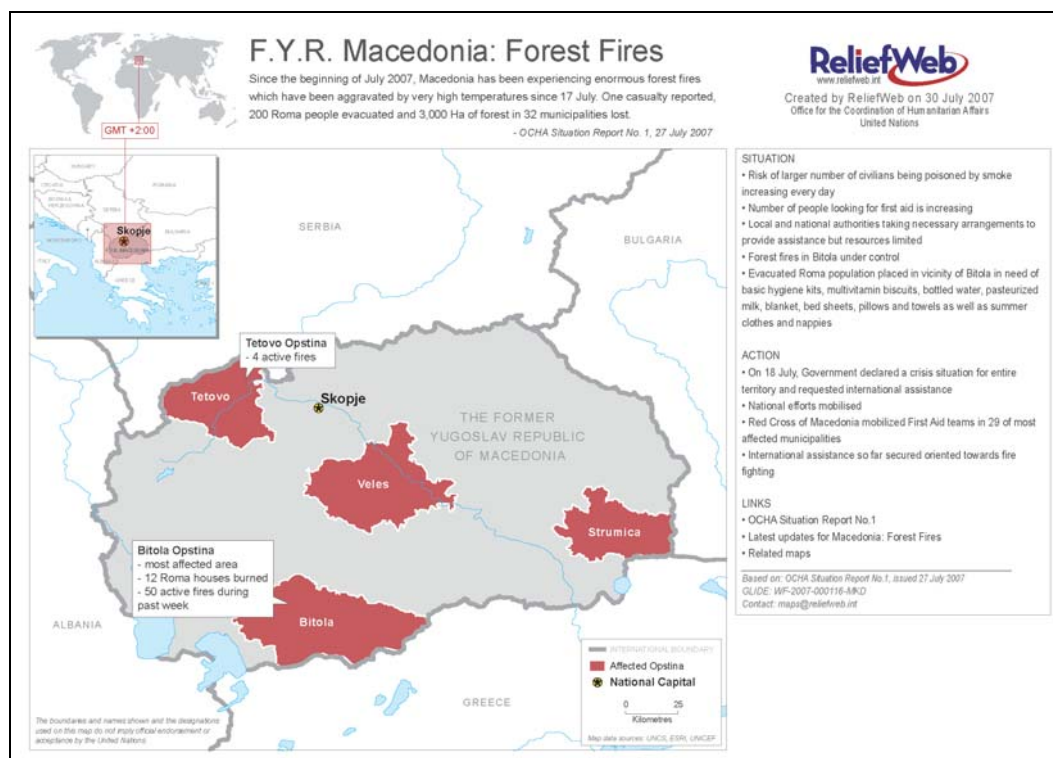


Figure 4. Fire location map provided by Relief Web (30 July 2007)

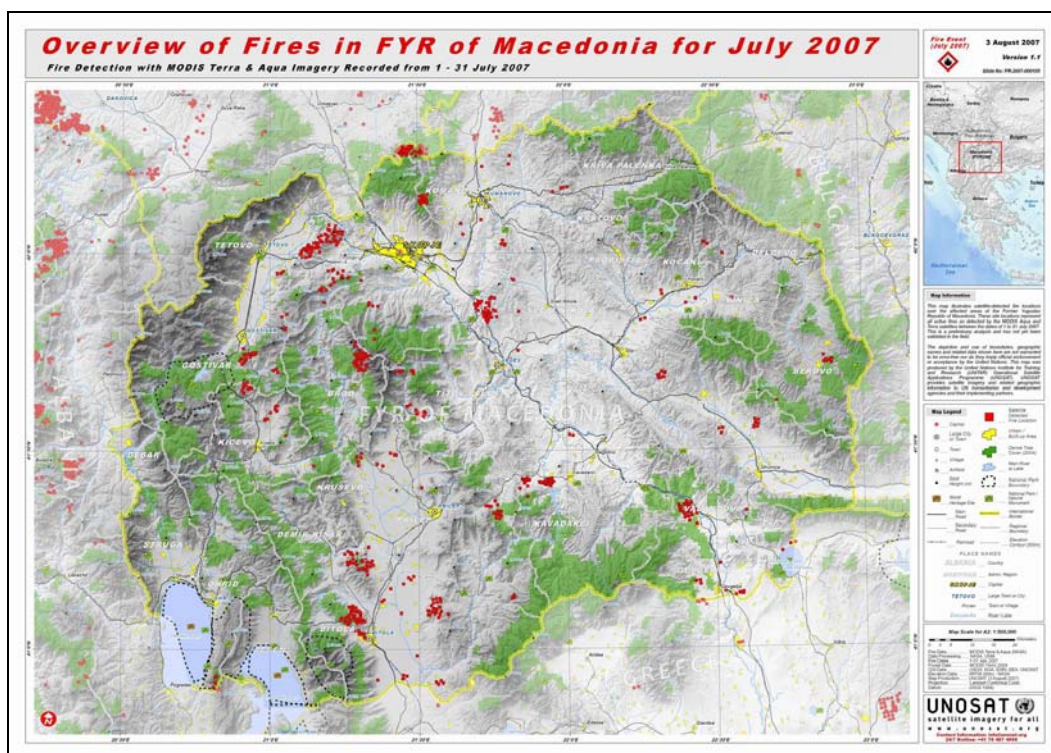


Figure 5. Fire location map provided by UNOSAT for the period 1-31 July 2007

**Macedonia - Forest Fires
OCHA Situation Report No. 1
27 July 2007**

This situation report is based on information received from the UN Resident Coordinator Office in Macedonia.

Summary

- The Government declared a national crisis situation on 18 July in view of the numerous fires affecting 3,000 hectares of forest;
- The Government requested international assistance.

SITUATION OVERVIEW

1. Since the beginning of July 2007, Macedonia has been experiencing enormous forest fires which have been aggravated by very high temperatures since 17 July. As a result, one human casualty has been reported due to smoke poisoning, 200 Roma people (approximately 45 families) have been evacuated and 3,000 Ha of forest in 32 municipalities have been lost. The risk of larger number of civilians being poisoned by the smoke is increasing every day. According to the Ministry of Health (MoH), the number of people looking for first aid is increasing.

2. The most affected part is the region of Bitola (South-West) where 12 Roma houses burned. The Fire Fighting (FF) reported more than 50 active fires during the past week. The number of fires is changing on a daily basis, varying from more than 20 on 21 July to 39 on 26 July. Local and national authorities are taking necessary arrangements to provide assistance but resources are limited.

3. The Tetovo region (West) is affected with 4 active fires. The fires are considered dangerous in view of their proximity to a 400KW electrical sub-station on the lake of Kozjak in the surroundings of Saraj (a suburb a few kilometres away from Skopje). In the Central part of the country, the area of Veles is also affected.

4. Fires are under control in Bucin, Sveta, Krusevo and Suvodol; hence, the initially planned evacuation of the population did not take place. Forest fires in Bitola were finally put under control. In the Strumica region (south) there has been an active fire since 20 July. The FF Unit, local inhabitants and the Public Company reported being able to control the fire but their capability could decrease rapidly, depending on the weather conditions. Based on information received from the Crisis Management Centre as well as from the Red Cross of Macedonia there is no need for massive evacuation of the population.

6. The evacuated Roma population placed in the vicinity of Bitola is in need of basic hygiene kits, multivitamin biscuits, bottled water, pasteurized milk, blanket, bed sheets, pillows and towels as well as summer clothes and nappies.

NATIONAL RESPONSE

7. On 18 July the Government declared a crisis situation for the entire territory and requested international assistance from the United Nations, the European Union Monitoring and Information Centre (MIC) and the NATO Euro-Atlantic disaster Response Coordination Centre (EADCCR).

8. The Government's Crisis Management Centre (CMC) is meeting on a daily basis to assess the emergency situation and changes on the ground. National efforts have been mobilised and the Government of Macedonia has so far (through CMC, DPR, Army, the Red Cross of Macedonia, Public Forest Enterprises, Fire Fighters as well as other forces at local level) engaged 3 air planes (private owned), 2 army helicopters as well as 420 soldiers. These are additional forces that, based on the recommendation from the CMC, were engaged to support the ongoing activities to resolve the current situation.

9. The Red Cross of Macedonia has mobilized its First Aid teams in 29 of the most affected municipalities.

INTERNATIONAL RESPONSE

10. International assistance so far secured is oriented towards fire fighting (one Croatian airplane with a squad of 10 people, 1 helicopter from Slovenia; 1 helicopter from Germany; one helicopter and one airplane from Turkey.). Austria has also offered 2 national experts from the Austrian fire brigades. Sweden sent 2 national experts to assess the situation. Poland donated fire extinguishing material and bottled mineral water (scheduled to reach the country on 29 July). The NGO "Pompiers de l'Urgence Internationale France" is in contact with the Ambassador of the Republic of Macedonia to propose assistance. Estonia offered a financial support of 31,956 EUR intended for the procurement of fire fighting equipment.

11. Based on the UNRC request to UNDP-BCPR, a cash grant of USD 100,000 has been released from BCPR to support the Regional Crisis Management Centres in coordination, assessment and logistics. OCHA has also offered an Emergency Cash Grant of USD 30,000.

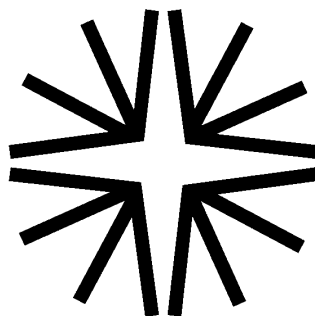
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NON - CLASSIFIED

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EADRCC SITUATION REPORT N° 3

FOREST FIRES IN THE FORMER YUGOSLAV

REPUBLIC OF MACEDONIA⁴

Message N°. : OPS(EADRCC)(2007)0028
Dtg : **26 JUL 2007, 15:00 UTC**
From: : Euro-Atlantic Disaster Response Coordination Centre
To : Points of Contact for International Disaster Response in NATO and Partner Countries
Precedence : Priority
Originator : Duty Officer Tel: +32-2-707.2670
Approved by : Head EADRCC Tel: +32-2-707.2673
References : Request for Assistance,
OPS(EADRCC)(2007)0022

This report consists of: -3- pages

1. The Authorities of the former Yugoslav Republic of Macedonia¹ have provided the following situation updates:

1.1. Despite of mobilised national and international efforts, the overall situation in the country remains critical. There are twenty-two active fires burning and new ones breaking out. The largest fires are located in Gevgelija near Davidovo, with 600 Ha of low wood affected and in the same area near Udovo and Miravci 600 Ha of forest burning with a tendency to spread. A new fire broke out in Berovo, Smojmirovo village affecting 250 Ha of pine woods. Fires are devastating 120 Ha of forest in the National Park Jansen.

1.2. All national resources are deployed to cope with the lasting disastrous fire situation including governmental capabilities (the Army in support of the Ministry of the Interior), local governance, public forest enterprises and non governmental organisations: 3 airplanes, 2 Army helicopters as well as an undetermined number of fire fighters, military and local personnel have been employed.

1.3. Weather conditions will stay dry and hot with high temperatures up to 40 centigrade for the next days.

2. The further needs for international assistance:

2.1. There is still an urgent need for additional aerial firefighting capacities as up to the present time the situation remains to be critical.

3. Point of Entry: Alexander the Great airport near Skopje in Petrovec

4. Assistance offered or provided by EAPC nations:

4.1 The Croatia sent one fire fighting aircraft (CL-415 Canadair) with 2 crews and 4 technicians (10 people). The aircraft will be staying in the former Yugoslav Republic of Macedonia¹ until the fire threat will be removed or Croatia itself will need it for fighting fires on its own territory. Croatia provides assistance on a bilateral basis.

⁴ Turkey recognizes the Republic of Macedonia with its constitutional name

- 4.2 Slovenia has also responded to the request of assistance on a bilateral basis and provides one firefighting helicopter (He 412-B) manned with 5 people (2 helicopter operators, 2 firefighters and 1 liaison officer).
- 4.3 On 25 July, one firefighting airplane and one firefighting helicopter from the Republic of Turkey joined the firefighting operation in the stricken area.
- 4.4 Today, in the morning, Austria offered 2 national experts from the Austrian fire brigades. The offer was accepted by the Authorities of the former Yugoslav Republic of Macedonia¹. The Austrian experts are scheduled to arrive at Skopje airport today, at 15:30, and to stay in the country for six days.
- 4.5 Eight EAPC countries have informed the EADRCC that, regrettably, they do not possess the requested capabilities or that the capabilities are not available at this moment.

5. The Operational Point of Contact in the former Yugoslav Republic of Macedonia¹ can be reached in the following ways:

Name:	Urim Vejseli, Olgica Gjoreska, Maja Misevska
Organisation:	Crisis Management Centre
Telephone:	+389 2 32 49 200, +389 2 32 49 160
Mobile phone:	+389 75 343 707
Fax 1:	+389 2 31 36 266
Fax 2:	+389 2 32 49 213
E-mail:	Snezana.sokolova@cuk.gov.mk Urim.vejseli@cuk.gov.mk Olgica.gjoreska@cuk.gov.mk
Operating hours:	24/7

6. Response co-ordination

With a view to providing a coordinated response to the stricken nation's requirements, nations in a position to meet these demands, in full or in part, are invited to reply to the Operational Point of Contact of the Stricken Nation, with an information copy to EADRCC, by any of the communication means listed above and below.

The United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA) in Geneva and the European Union MIC have been informed by the same communication.

The Euro-Atlantic Disaster Response Coordination Centre can be reached in the following ways:

Telephone: +32-2-707.2670
 Fax : +32-2-707.2677
 Mobile Phone: +32-475-829.071
 e-mail: Eadrcc@hq.nato.int
 Internet <http://www.nato.int/eadrcc/home.htm>

Table 7. Received assistance for the fire crisis situation in 2007

Received assistance for the crisis situation						
Nr	State or Institution	Assistance in FF equipment	Assistance in expertise	Financial assistance	Value (\$SD)	Value (EURO)
1.	Norway	FF equip.	/	/		494.963
2.	Sweden	FF equip.	2 experts	/	110 375 \$	
3.	France	1 FF vehicle	6 experts	/		/
4.	Austria	FF equip.	2 experts	/		7.100
5.	Germany	FF equip.	/	/		50 000
6.	Poland	FF equip.	/	/		110 000
7.	Czech Rep.	FF equip.	/	/		/
8.	U K	FF equip.	4 experts	/		/
9.	Estonia	/	/	/		31 956
10.	Denmark	FF equip.	/	/		/
11.	Israel	FF equip.	/	/		/
12.	Lithuania	FF equip.	/	/		/
13.	UNDP	/	/	100 000 \$	100 000 \$	/
14.	UN OCHA	Relief items		30 000 \$	30 000 \$	
15.	UNICEF	Relief items		100 000 \$	100 000 \$	
16.	USAID	/	/	50 000 \$	50 000 \$	/
				Total[#]:	390 375 \$US	694 000 EURO

[#] The grand total it's not presented due to the fact that the assistance is still being accepted.



Office of the United Nations Resident Coordinator

PRESS RELEASE

UNITED NATION ASSISTANCE TO COMBAT FOREST FIRES

Skopje, 31 July 2007 - In relation to the official assistance appeal by the Crisis Management Centre (CMC) sent to the office of the United Nations Resident Coordinator, on 23rd of July 2007, and based on the immediate action taken upon the appeal following is the breakdown of the actions taken by different UN Agencies present in the country:

United Nations Office for Coordination of Humanitarian Affairs (OCHA) has released the Emergency Cash grant in amount of \$ 30.000. The grant is to be used for local purchase of items to assist the affected people by the recent disaster.

UNDP/Bureau for Crisis Prevention and Recovery (UNDP/BCPR) has allocated \$ 100.000 to support the coordination of the government and the international community efforts to combat the fires and address the needs of the affected population. UNDP will also support the assessment of the situation, jointly with the government and other UN agencies and other partners. This includes protection equipment and transport for the personnel conducting the assessment and other kinds of similar equipment. In addition to the assessment, **UN Environment Programme (UNEP)** will provide a team of environmental damage experts to assess the ecological damage of the recent forest fires.

UNICEF is procuring emergency relief items for the most affected populations of Bair neighbourhood in Bitola municipality. Basic hygiene kits, water, blankets, bed sheets and towels will be distributed through the local Red Cross to all of the evacuees from this neighbourhood. In addition, 100,000 US\$ received from the Office of Emergency Programmes in New York Headquarter will be used to respond to the situation. This will include: four wheel drive vehicles to facilitate access to rural populations affected by the fires, cooling systems (Air Conditioners) for public health and social service institutions for children throughout the country and supplies to increase water coverage for the most affected populations (water dispensaries and water tablets).

World Health Organization (WHO) has provided technical guidelines for extreme weather events, including key public health messages to the general public and information for the health professionals. Possibility for purchasing air-conditioners for the emergency medical care centres is in process of negotiation.

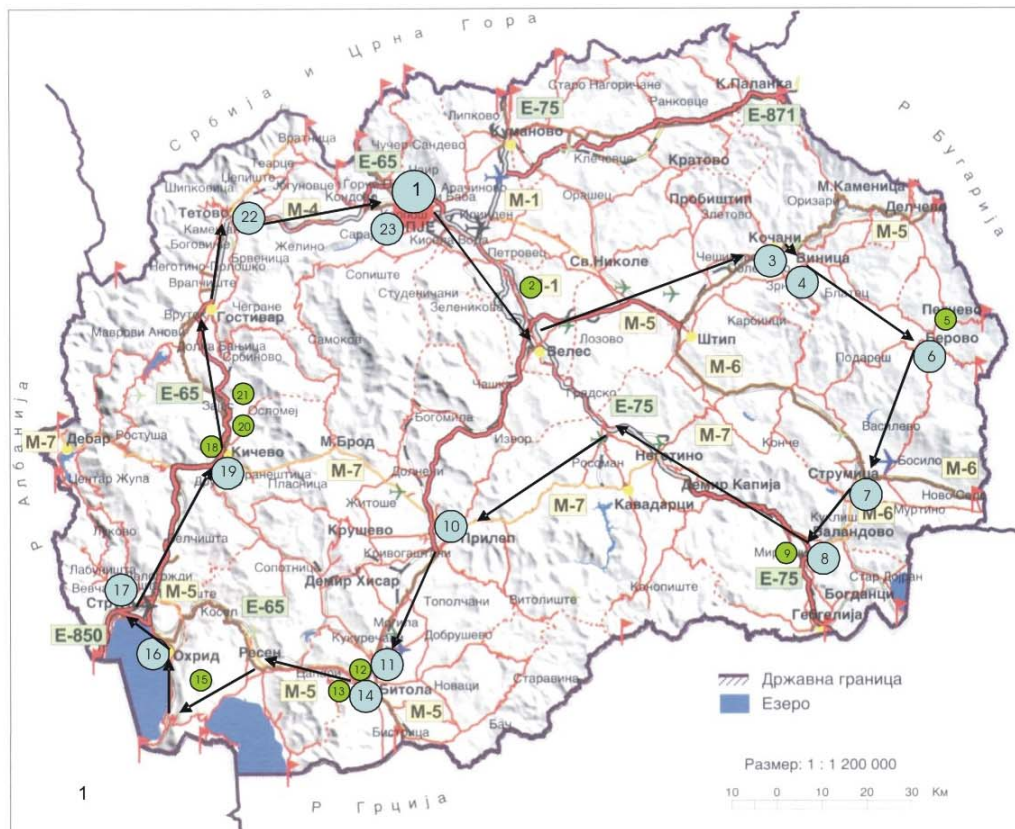
Food and Agriculture Organization (FAO) is closely monitoring the situation through formal UN channels and the Ministry of Agriculture, Forestry and Water Economy. In case the government will need forestry expertise to improve the Forest Fire Management FAO is ready to provide assistance.

For more information please contact Mr. Ibrahim Mehmeti, UN Communications Officer (02/3249 570)

Appendix 4

Mission itinerary and composition: Map, mission team and list of persons participating in main meetings

Figure 6. Itinerary Map of the field mission “Ecological Damage Assessment of the Wildfires in FYR Macedonia” (29-31 August 2007)



- 1- Kick-off meeting (Skopje 26.08.2007)
- 2- Field assessment (Katlanovo 28.08.2007)
- 3- Regional meeting (Kocani 28.08.2007)
- 4- Regional meeting (Vinica 28.08.2007)
- 5- Field assessment (Berovo 28.08.2007)
- 6- Regional meeting (Berovo 28.08.2007)
- 7- Regional meeting (Strumica 28.08.2007)
- 8- Regional meeting (Miravci 29.08.2007)
- 9- Field assessment (Miravci 29.08.2007)
- 10- Regional meeting (Prilep 29.08.2007)
- 11- Regional meeting (Demir Hisar 29.08.2007)
- 12- Field assessment (Bitola 29.08.2007)
- 13- Field assessment (Bitola 29.08.2007)
- 14- Regional meeting (Bitola 29.08.2007)
- 15- Field assessment (Gallica 29.08.2007)
- 16- Regional meeting (Ohrid 29.08.2007)
- 17- Regional meeting (Struga 30.08.2007)
- 18- Field assessment (Kicevo-Krusino 30.08.2007)
- 19- Regional meeting (Kicevo 30.08.2007)
- 20- Field assessment (Osipmej 30.08.2007)
- 21- Field assessment (Zajas 30.08.2007)
- 22- Regional meeting (Tetovo 30.08.2007)
- 23- Meeting with Directors of the Crisis management center and Direction for rescue and protection (Skopje 1.9.2007)

Members of the Field Assessment Team (29-31 August 2007)

- Mr. Johann G. Goldammer, Global Fire Monitoring Center (GFMC), Freiburg, Germany (Team leader)
- Ms. Jelena Beronja, UNEP, Vienna, Austria
- Mr. Nikola Nikolov, GFMC, Coordinator of the UNISDR Regional Southeast Europe / Caucasus Wildland Fire Network, Skopje
- Mr. Jan Kellet, Head of Resident Coordinator's Office
- Mr. Dragi Tarcugoski, Crisis Management Center, Skopje
- Mr. Ljupce Petroski, Directorate for Protection and Rescue, Skopje
- Mr. Samir Memedov, UNDP office, Skopje

List of participants at the preparatory meeting (27 August 2007)

- Mr. Dragi Tarcugovski, Crisis Management Center, Skopje
- Mr. Petrovik Mirjana, Crisis Management Center, Skopje
- Mr. Mile Jakimovski, Ministry of Environment and Physical Planning, Skopje
- Ms. Smiljka Teneva, Ministry of Environment and Physical Planning, Skopje
- Ms. Daniela Tanasovska, Ministry of Economy, Skopje
- Mr. Ljupce Petroski, Directorate for Protection and Rescue, Skopje
- Mr. Nikola Nikolov, GFMC, Coordinator of the UNISDR Regional Southeast Europe / Caucasus Wildland Fire Network, Skopje
- Mr. Dragan Serafimovski, Ministry of Agriculture, Forestry and Water Economy, Skopje
- Mr. Dusko Petrovski, Crisis Management Center, Skopje
- Mr. Angele Spirovski, P.E.Macedonian Forests, Skopje
- Mr. Jan Kellet, Head of Resident Coordinator's Office
- Ms. Anita Kodzoman, UNDP office Skopje
- Mr. Samir Memedov, UNDP office Skopje

List of participants at the debriefing (01 September 2007)

1. Mr. Pande Lazarevski - Director of the Crisis Management Center, Skopje
2. Mr. Kosta Jovcevski – Director of the Directorate for protection and rescue, Skopje
3. Ms. Celeska Duska – Kabinet of the Directorate for protection and rescue, Skopje
4. Mr. Johann G. Goldammer, Global Fire Monitoring Center (GFMC), Freiburg, Germany
5. Ms. Jelena Beronja – UNEP, Vienna, Austria
6. Mr. Nikola Nikolov, GFMC, Coordinator of the UNISDR Regional Southeast Europe / Caucasus Wildland Fire Network, Skopje
7. Mr. Jan Kellet - Head of Resident Coordinator's Office
8. Mr. Dragi Tarcugoski - Crisis Management Center, Skopje
9. Mr. Ljupce Petroski - Directorate for Protection and Rescue, Skopje
10. Mr. Samir Memedov, UNDP office, Skopje

Appendix 5

Proposal for a Regional Strategy on International Cooperation in Wildland Fire Management in the Regional South East European / Caucasus Wildland Fire Network



Proposal for a Regional Strategy on International Cooperation in Wildland Fire Management in the Regional South East European / Caucasus Wildland Fire Network

First Draft Presented to the
33rd Session of the FAO European Forestry Commission
Zvolen, Slovakia, 25 May 2006

and discussed and revised with representatives of the region at the

**Regional Wildland Fire Consultation on the Development of a
Strategy on International Cooperation in Wildland Fire Management in the
Regional South East European / Caucasus Wildland Fire Network**
Sofia, Bulgaria, 19-21 March 2007

Rationale

The demographic, socio-economic and political changes in many countries of Southeast Europe in the early 1990s, particularly on the Balkan in the Caucasus Region, have resulted in an increase of wildfire occurrence and wildfire disaster risk, destabilization of fire management capabilities and increased vulnerability of ecosystems and human populations. In some countries some of the main reasons for this development include the transition from centrally planned to market economies, national to regional conflicts, creation of new nations, involving political tensions and war, and land-use change. New solutions are required to address the increasing fire threat. Cooperation in fire management between the South East European countries, notably on the Balkan, the Caucasus Region and also with the neighbouring countries of East and West Europe, is promoted by the Regional Southeast Europe / Caucasus Wildland Fire Network.

Cooperation and networking on forest fires within the ECE region and the region of the European Forestry Commission has a long tradition. In 1981 the FAO/UNECE Team of Specialists on Forest Fire was established as an activity of the Joint FAO/ECE/ILO Committee on Forest Technology, Management and Training. The team's main task is to provide a platform for communication and cooperation between fire scientists, managers and policy makers. The main activities include (1) the production of UNECE/FAO International Forest Fire News (IFFN); (2) organization of seminars; and (3) promotion of synergistic collaboration between governments, non-government institutions, and individuals, especially science and technology transfer. The Global Fire Monitoring Center (GFMC), based in Freiburg (Germany), is in charge of team coordination and editorial office of IFFN. GFMC is serving as secretariat of the Global Wildland Fire Network and the Wildland Fire Advisory Group of the UN International Strategy for Disaster Reduction (UNISDR).

With the creation of the UNISDR Global Wildland Fire Network in 2002 and its recognition as an activity of UNISDR since 2004 the networking on forest fires in the region began to diversify in regional settings and activities.

Regional networking in South East European was initiated in 2002, at that time called "Regional Balkan Wildland Fire Network". A major regional activity was the "UNECE/FAO Conference on Forest Fire Management and International Cooperation in Fire Emergencies in the Eastern Mediterranean, Balkans

and adjoining Regions of the Near East and Central Asia" (Antalya, Turkey, 30 March - 3 April 2004) (Annexes I). The conference was followed by a regional forest fire exercise "Eastern European, Near East and Central Asian States Exercise on Wildland Fire Information and Resources Exchange - EASTEX FIRE 2005" (Annex II). At a regional consultation in the Republic of Macedonia in 2005 members of the Balkan Network decided to invite neighbouring countries and to expand its area of joint activities to Southeast Europe. Subsequently the network was renamed "Regional South East European Wildland Fire Network" (Annex III). With the growing interest of the countries adjoining to the regional, notably in the Caucasus region, it was suggested in 2006 to broaden the geographic scope of the region by including countries of the Caucasus region. Representatives from the Ukraine have indicated a strong interest to join the network.

On 19-21 March 2007 the Global Fire Monitoring Center (GFMC) convened the "Regional Wildland Fire Consultation on the Development of a Strategy on International Cooperation in Wildland Fire Management in the Regional South East European / Caucasus Wildland Fire Network" in Sofia, Bulgaria. The consultation was held under umbrella of the UNISDR Wildland Fire Advisory Group / Global Wildland Fire Network through its Coordinator and Secretariat, the GFMC, and was kindly supported and hosted by the National Forestry Board, Ministry of Agriculture and Forests, Bulgaria. The participating countries included Albania, Armenia, Bulgaria, Bosnia and Herzegovina, Croatia, Georgia, Hungary, Macedonia, Serbia, Slovenia, Romania, Turkey and Ukraine. Due to technical reasons invited focal points from Greece, Slovakia and Azerbaijan could not participate in the meeting.

Introduction

This document provides a draft outline of aspects to be considered for the development of a Regional Strategy on International Cooperation in Wildland Fire Management in the Regional South East European / Caucasus Wildland Fire Network.⁵ For an initial discussion with the UN a first draft was presented to the 33rd Session of the FAO European Forestry Commission.⁶ It is proposed to develop the regional strategy under the joint auspices of the UN, including UNISDR, FAO and ENVSEC.

Vision and Goals

The vision of this regional strategy is to enhance and strengthen bilateral / multilateral and international cooperation in wildland fire management for creating synergies and sharing knowledge, technical and human resources between countries in the Region of South East Europe and Caucasus by accepting and promoting principles, norms, rules and decision-making procedures within a guiding framework agreed upon by individual countries.

Mechanisms of cooperation in wildland fire management in the Region of South East Europe and Caucasus will include:

- Bilateral / multilateral cooperation between two or more countries at national level within the region: This type of cooperation generally includes mechanisms for assistance in major emergencies to suppress fires, and technical assistance in specific cases. Cooperation should be extended to other areas of wildland fire management, such as wildland fire prevention, establishment of common databases, training programmes, etc. (Annex IV gives an overview on existing cooperation activities in the Region. Detailed information will be provided at the regional workshops; Annex V provides the "International Wildland Fire Management Agreements Template" which was adopted by the International Wildland Fire Summit in 2003).
- International (including inter-regional) between international donors and countries in the region: This type of cooperation will require financial and technical assistance mechanisms. Other elements of international cooperation may include the development of norms and rules that would not require any additional finances.

⁵ Note: During 2005 several activities took place, which provided the basic framework for developing the regional strategy. The most important was Regional Balkan Wildland Fire Network / Global Wildland Fire Network International Technical and Scientific Consultation "Forest Fire Management in the Balkan Region", which was held from 4 to 5 April 2005 in Ohrid, Republic of Macedonia. There was recognized the need of regional approach for cooperation in solving the wildland fire problems in the region.

⁶ Zvolen, Slovakia, 25 May 2006.

The Regional Strategy on Cooperation in Wildland Fire Management will give priority to:

- Strengthen existing bilateral and multilateral cooperation mechanisms
- Develop new bilateral and multilateral cooperation mechanisms
- Reach consensus by participating countries on agreed principles, norms, rules and decision making procedures in wildland fire management (Incident Command System - ICS)
- Create an enabling atmosphere for international cooperation in wildland fire research and management, including international donors.

The mid-term goals include:

- Facilitating a dialogue between government's national focal points, research and educational institutions, NGO's, civil society, and regional and international stakeholders through the Regional South East European/Caucasus Wildland Fire Network.
- Supporting the development of national policies.
- Serving as catalytic and supporting link for the development and improvement of national wildland fire strategies.
- Promoting sharing of resources between neighbouring countries in the Region.
- Strengthening national and regional technical capacities in wildland fire management.
- Promoting joint wildland fire research and training activities.

Long-term goals include:

- Promoting sustainable cooperation between countries of the Region.
- Strengthening the Regional South East European/Caucasus Wildland Fire Network.
- Supporting the development and implementation of a global strategy and / or the development of an international agreement on cooperation in wildland fire management.

The objectives of the Regional Strategy are:

- To contribute to the development and implementation of a national and regional organizational framework with principles, alignments, procedures and technical-operational formats agreed upon by the countries of the Region.
- To promote the development and strengthening of national fire management policies and strategies.
- To establish a fire information system available, standardized and agreed between the countries of the region to support decision making.
- To develop fire detection early warning systems to enable prompt fire detection and to improve response time in an effective, organized, and safe manner leading to the minimization of effects on countries in the Region.
- To improve national emergency control cooperation between countries of the Region.
- To support sustainable cooperation between the countries of the Region based on a concerted strategy and bilateral or multilateral programmes agreed to in terms of fire management, training and research.

The political dimension of the strategy

At the **national level**, it is important that the individual countries of the Region adopt the regional strategy and recognise the role and mandate of the Regional Wildland Fire Network. Some of the activities addressed by the strategy might require bilateral or multilateral cooperation agreements. Others might require informal agreements between countries (agencies, institutions, individual scientists). Preferably the informal agreements should receive official support and adoption by national government agencies. Strengthening or establishment of national structures / capabilities in fire management are prerequisite for efficient cooperation between countries and organizations.

At the **regional level**, it is desirable that the mandated regional institutions or cooperation mechanisms consider the regional strategy, as well as the participation of the South East European/Caucasus Regional Wildland Fire Network, in the implementation of their overall work programmes.

At the **international level**, institutions and organizations (for example UNDP, UNEP, OSCE, UN ECE, NATO, World Bank, FAO, UNISDR, REC, GFMC and bilateral donors) must be encouraged to provide financial and technical assistance.

Thematic areas of cooperation within the Region

Existing cooperation activities and agreements between the countries in the region (see Annex IV) should be evaluated through regional analyses. Based on the existing structures and achievements in developing fire management capabilities in the region, the detailed thematic areas to be addressed by the strategy should be discussed and developed. To guide these discussions, a list of proposed thematic areas has been developed (Table 1).

Financing mechanisms

The possibilities of financing or otherwise supporting the proposed activities of this strategy and the functioning of the Network must be carefully investigated.

If adequate medium- to long-term financing mechanisms are not provided, most activities of the Network and the regional strategy will not be able to carry on in a sustainable manner.

Financing resources should be identified for all levels of implementation of the strategy, including international, regional and national, as well as for all activities to be determined within the thematic areas.

Contacts

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Table 1. Proposed thematic areas

Thematic area of cooperation	Justification of enhancing cooperation within those areas
Terminology	A clearly defined and agreed terminology in wildland fire science and management is not available in all languages of the Region . Bilateral / multilateral cooperation must be based on a proper, agreed terminology. The updated FAO Wildland Fire Terminology would serve as a starting point.
Statistical Database	An internationally agreed methodology and procedure for the establishment of a wildland fire database is not yet in place. Such a database is important for decision support at national, regional and international levels. The statistical format of the Global Wildland Fire Assessment 2004 (GFMC) would serve as a starting point.
Information Exchange	There is a need to establish a regional facility for receiving, processing and disseminating-wildland fire data as well as other information on wildland fire, connected with a network of national fire management agencies. It will be connected to the Global Fire Monitoring Center (GFMC).
Wildfire Prevention and Use of Fire	Valuable practices and methods in the prevention of wildfires and application of fire in land-use systems developed inside and outside of the Region, particularly community involvement (Community-Based Fire Management – CBFIM), could be applied in the countries of the Network.
Early Warning	Methods and dissemination of information on early warning of fire danger developed in some countries of the Region could be applied in other countries lacking such systems. Priority must be given to the end-users of early warning information – particularly local communities.
Detection and Monitoring	The use of spaceborne assets for the detection and monitoring of wildland fires is not yet fully utilized by all countries of the Region. Information generated by existing institutions that already have satellite data receiving and processing capabilities should be systematically disseminated and utilized by all countries of the Region.
Wildland Fire Suppression	During extreme fire situations (wildfire emergencies) a country may be short of fire suppression resources, including command and coordination personnel. Standardized protocols, agreements, command systems and methods would ensure that countries delivering to, or receiving assistance from other countries in the Region would effectively cooperate. Besides clearly defined bilateral or multilateral agreements it would be important to utilize a unified standard system, e.g. the Incident Command System (ICS), for cooperation in wildfire incidents.
Capacity Building / Training Courses	Many countries in the Region do not have their own resources in capacity building in wildland fire management. Wildland fire specialists from throughout the Region should be trained in the thematic areas listed above. Besides training at national level it would be desirable to conduct regional training courses for high-ranking officials responsible for wildland fire management. Such international training courses will support the development of a culture of transnational cooperation and mutual understanding.
Policies, Legislation and Strategies	Some countries in the Region have developed policies, legislation and strategies in wildland fire management and gained experience in their implementation and enforcement. This experience should be shared with other countries. Through the harmonization of efforts in the development of policies, legislation and strategies, synergies could be developed to meet the requirements of regional or international agreements (e.g., secondary disasters, biodiversity conservation, combat of desertification, air pollution and green house gases reduction,, and poverty alleviation).
Research	Wildland fire research needs to address the environmental, social and political changes that affect fire regimes, vulnerability of population and risk of secondary disasters. Similarity of conditions in neighbouring countries should encourage the development of regional wildland fire research projects in which resources will be economized and synergies created. The involvement of the academia (the wildland fire research community) in the overall concept of regional cooperation will contribute to the sustainability of cooperative efforts.

Annex I

					
Conference on Forest Fire Management and International Cooperation in Fire Emergencies in The Eastern Mediterranean, Balkans and Adjoining Regions of the Near East and Central Asia					
Antalya, Turkey, 30 March - 3 April 2004					

**Antalya Declaration
On Cooperation in Wildland Fire Management in the Balkans, Eastern Mediterranean,
Near East and Central Asia
Antalya, 1 April 2004**

The Conference:

- Recalling the rationale and recommendations of the World Summit for Sustainable Development (Johannesburg – 2002) concerning the international endeavours to secure sustainable development of the global vegetation resources,
- Expressing concerns about the increasing occurrence and destructiveness of forest fires in the regions between the Balkans, Eastern Mediterranean, Near East and Central Asia,
- Recognizing that the reasons for this development are due to increasing population pressure in many countries, increasing socio-economic problems of rural populations, increasing vulnerability of humans and the occurrence of extreme fire seasons that can possibly be explained by climate change,
- Recognizing the endeavours of the United Nations Economic Commission for Europe (UN-ECE) to address the fire problems in the Northern Hemisphere, notably through the work of the UN-ECE/FAO Team of Specialists on Forest Fire since 1993,
- Endorsing the endeavours of the International Strategy for Disaster Reduction (ISDR) and its Wildland Fire Advisory Group in supporting to harmonize and strengthen efforts by the United Nations agencies and programmes, as well as other international organizations including non-government organizations, to reduce the negative impacts of wildland fires on the environment,
- Endorsing the goal of the Food and Agriculture Organization (FAO) of the United Nations to promote and strengthen bilateral and multilateral agreements for cooperation in fire management,
- Recognizing and supporting the goals and joint endeavours of the UN Convention on Biological Diversity (CBD), the Convention to Combat Desertification (UNCCD), United Nations Framework Convention on Climate Change (UNFCCC), the UN Forum of Forests (UNFF) and the Ramsar Convention on Wetlands, to protect the global vegetation resources and the global atmosphere from negative influences by vegetation fires, as well as the promotion of knowledge and techniques to utilize the beneficial role of fire in ecosystem management,
- Endorsing the recommendations of the International Wildland Fire Summit (Sydney – 2003) concerning common international standards for fire management and the strategy for strengthening international cooperation in wildland fire management,
- Supporting the objectives of the ISDR Global Wildland Fire Network and its Secretariat, the Global Fire Monitoring Center (GFMC), to systematically enhance the intra- and inter-regional cooperation in wildland fire management throughout the world,

- Welcoming the availability of the government of Turkey -- the host country of this conference -- and the delegates of participating nations to actively cooperate to share experience and resources in wildland fire management
- Concluding from the national case studies and analyses on the wildland fire situation in the participating countries, as well as from the discussions held at the conference, that the majority of countries in the region are available to establish and strengthen a regional dialogue on cooperation in wildland fire research and management
- Expressing the intent to jointly overcome the currently existing gaps and deficits in
 - Early warning systems of wildland fire
 - Spaceborne fire monitoring systems
 - Decision-support systems for fire management
 - Wildland fire research
 - Training / capacity building in wildland fire management
 - Transnational agreements and operations for bilateral and multilateral assistance in wildland fire emergency situations

Recommends the following Antalya Plan of Action for the region between the Balkans, Eastern Mediterranean, Near East, Western and Central Asia:

(1) The countries participating at the conference encourage governments to develop or strengthen, and international organizations to support

- Bilateral and multilateral agreements on cooperation in wildland fire management, based on international standards as proposed by the FAO and the International Wildland fire Summit
- Introduce the Incident Command System (ICS) as the international standard for all wildland incident management participating in international or interagency agreements and exchanges.
- Regional systems for early warning and satellite monitoring of wildland fires
- Cooperative regional wildland fire research projects and programmes
- Decision-support systems
- Training / capacity building in wildland fire management

(2) To regularly conduct follow-up activities aimed at further promoting collaborative efforts and procedures

- Multilateral wildland fire emergency exercises, starting with the multinational exercise EASTEX FIRE 2004 in Bulgaria and the tri-national exercise in Croatia in 2004
- Regional workshops aimed at further defining priority issues to be jointly addressed, especially considering the needs of collaboration with countries of the region that were not represented at the conference

(3) To develop arrangements to support collection and dissemination of wildland fire information, facilitation of regular regional dialogue and joint projects between the countries, and to technically support countries in need of aerial assets for wildland fire suppression by the creation of

- A Regional Fire Monitoring Center, hosted by the Government of Bulgaria
- A Regional Advisory Board of Senior Fire Officers, hosted and facilitated by the Government of Turkey in Antalya
- Special regional mobile airborne fire response units, based on Public-Private Partnership arrangements, e.g., those companies participating at the conference (Russian Irkut Corporation [fixed-wing aircraft – BE-200] and UT Air [helicopter assets])

(4) To inform national governments about the need to prepare statements in favour of enhancing international cooperation in wildland fire management at the following forums:

- The forthcoming Meeting of the three Rio Conventions (UN CBD, UN CCD, UN FCCC) (Viterbo, Italy, April 2004)

- The forthcoming 16th Session of the FAO Near East Forestry Commission, with regard to establishing networking structures in Western Asia (May 2004)
- The World Conference on Disaster Reduction (WCDR) (Kobe-Hyogo, Japan, January 2005)
- The FAO Ministerial-Level Meeting, devoted to wildland fire management and international cooperation (Rome, Italy, March 2005)

Participating Countries:

Bulgaria, Croatia, Cyprus, Germany, Greece, Hungary, Israel, Italy, Kazakhstan, Macedonia, Poland, Russian Federation, Turkey, Ukraine.

International Organizations: ECE, FAO, ISDR Global Wildland Fire Network

Contact:

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Annex II



MINISTRY OF THE INTERIOR DIRECTORATE NATIONAL FIRE AND EMERGENCY SAFETY SERVICE BULGARIA

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Eastern European, Near East and Central Asian States Exercise on Wildland Fire Information and Resources Exchange 2005 (EASTEX FIRE 2005)

Report and Analysis by the Host Country Bulgaria

The International exercise "EASTEX FIRE 2005" on forest fire extinguishing was held at the field exercise area "Koren", Haskovo Region, Bulgaria, 20-22 April 2005, with the participation of forces and equipment of fire services from the Republic of Bulgaria and neighbouring Balkan countries

This exercise was held in pursuance of the written statement approved by the "Conference on Forest Fire Management and International Cooperation in Fire Emergencies in the Eastern Mediterranean, Balkans and adjoining Regions of the Near East and Central Asia" which was held in Antalya, Turkey, 30 March - 3 April 2004.

This event was organized in accordance with the "Working plan 2005 of the Standing Committee for management of forces and equipment of Ministry of the Interior during crisis situations", as well as the "Annual working plan 2005 of the Standing Committee on population protection in case of disasters, emergencies and crashes at the Council of Ministers" of Bulgaria.

The exercise was a practical drill with imitation of real situation. Participants in this event were the institutions responsible for the prevention and extinguishing of forest fires in the Republic of Bulgaria and fire crews from the Balkan countries.

Objectives of this exercise were as follows:

1. Improvement of the interaction between competent bodies from Balkan countries during forest fires management.
2. Carrying out of united management of forces and equipment in the conditions of forest fires and working off the procedures on interaction and co-ordination between institutions responsible for crisis management in the Republic of Bulgaria and the leaders of international crews.
3. Provision of logistics for the needs of participants in similar operations.

This exercise was held in two main stages:

- First stage – organization actions and staff drill.
- Second stage – practical actions of specialized crews within the zone of the wildfire crisis.

Following activities were included in the first stage of this exercise:

- Receiving of a call with a report on the outbreak of the fire. Undertaking of due measures by the competent institutions from the Republic of Bulgaria. Concentration of forces and equipment at the fire location.

- Provision of permanent information exchange concerning fire development between the head of firefighting operations and representatives of executive and local authorities. Alerting, information and taking immediate measures for the deployment of forces and equipment in the zone of crisis situation.
- Introduction of action plans for crisis situations intended for institutions responsible for extinguishing of forest fires, which might develop into emergency situations.
- Provision of information to neighbour countries about the crisis situation and implementation of procedures for request of assistance. Creation of organization for reception and escorting of foreign crews.

Following practical actions of participants were included in the second stage:

- Survey and observation of the fire region; management of forces and equipment; emergency rescue and fire fighting operations; closing off the disaster area; provision of escorting and movement of crews taking part in the operation; creation of additional organization of moving within crisis zone; medical and psychological assistance for the sufferers and personnel, taking part in firefighting and their transportation to the hospitals; specifying the places of natural and man-made barriers suitable for fire spread stopping; determination the needs of equipment for making of cuttings.
- Creation of organization for reception of foreign fire crews from neighbour countries at border control checkpoints and their escorting to the place of crisis situation. Provision of communication with the forces, dispatch to render assistance for fire elimination. All participating crews were instructed about labour safety measures during extinguishing of a forest fire.

In the course of exercise different tactical actions intended for extinguishing of forest fires were worked off depending on the equipment of participants. Representatives of the countries having predominant deciduous vegetation like the Republic of Macedonia, Bosnia and Herzegovina used backpack fire extinguishers and impulse fire extinguishing systems for fighting forest fires of low intensities. Representatives of fire service of Romania used equipment for water supply from the natural and man-made water sources. Crews from the Republic of Bulgaria, Republic of Greece and Republic of Turkey, where coniferous vegetation is predominant, used fire vehicles with high cross-country capability and larger quantities of fire extinguishing media, owing to the lack of enough water sources at the territories of their countries. Heavy engineering equipment was used for cutting firebreaks with the purpose of limiting the fire spread.

Following results were achieved during the exercise:

- There was good organization for efficient co-ordination and interaction between institutions in the Republic of Bulgaria responsible for the forest fires elimination and leaders of foreign crews during the operations for limitation and elimination of the forest fire.
- United centralized management of all operations and efficient communication between all participants in the exercise EASTEX FIRE 2005 were realized.
- This exercise contributed to the strengthening of cross-border co-operation with respect to management of forces and equipment of Balkan countries during elimination of forest fires developed into crisis situations.
- EASTEX FIRE 2005 was a further step towards the establishment of the Regional Southeast Europe Wildland Fire Network under the Global Wildland Fire Network of the United Nations International Strategy for Disaster reduction (UNISDR) and its cooperative activities between the Balkan countries. It is closely related to the initiative of Global Fire Monitoring Center (GFMC) within the framework of European Union program INTERREG III B, priority zone 4 "Environment Protection, Resources Management and Risk Prevention". The Central Adriatic Danube Southeast Region (CADSES) is referred.
- This exercise contributed to the strengthening of international co-operation with respect to forest fire management and mitigation of their consequences; the improvement of co-operation between competent institutions at the Balkans responsible for extinguishing of forest fires; the consolidation of capacity for fire management.

EASTEX FIRE 2005 demonstrated the capacity of Balkan countries to cope with forest fires, spreading on large areas and having undesirable environment impact.

Annex III



UNITED NATIONS



UN-ISDR Wildland Fire Advisory Group / Global Wildland Fire Network

Coordinator and Secretariat: Global Fire Monitoring Center (GFMC), Freiburg, Germany

Regional Balkan Wildland Fire Network / Global Wildland Fire Network

International Technical and Scientific Consultation

"Forest Fire Management in the Balkan Region"

Ohrid, Macedonia, 4 to 5 April 2005

Conclusions

On 4-5 April 2005 the Republic of Macedonia hosted the International Technical and Scientific Consultation "Forest Fire Management in the Balkan Region". The conference was sponsored by the UN-ISDR Wildland Fire Advisory Group / Global Wildland Fire Network through its Coordinator and Secretariat, the Global Fire Monitoring Center (GFMC). Funding of the consultation was provided by the German Foreign Office (represented by the GFMC) and contributions by the participating and contributing countries (Albania, Bulgaria, Croatia, Greece, Hungary, Macedonia, Serbia and Montenegro, Turkey).

The participants of the consultation:

Recognizing the importance of forests as providers of environmental services and social, economic, and ecological benefits to humankind in Southeast Europe;

Expressing concern about the increasing frequency and destructive force of wildfires in Southeast Europe affecting human health and wellbeing, economic assets, property, biodiversity, water resources, soil, atmosphere and climate;

Noting that changing land use and rural exodus in some parts of the region is resulting in increased wildfire hazard and vulnerability of ecosystems; likewise urban encroachment in wildlands resulting in increased vulnerability of human populations to fire, notably at the rural-urban interface;

Noting an increase in vulnerability of humans and ecosystems to secondary disasters following fires, including floods, landslides and soil erosion;

Noting that the effects of climate variability and climate change caused by human activities are already producing periods of extreme drought resulting in an increase in the severity of fires in some ecosystems;

Concluding from the analyses and reports of the countries of the Balkan region presented at this consultation, it is evident that the majority of countries in the regions are ready to establish and strengthen a regional dialogue on cooperation and exchange of information, research and wildland fire management as a contribution to forest and environmental protection, stability and peace; bilateral and multilateral agreements should be considered;

Expressing the intention to overcome **current gaps and shortages** in:

- Consistent information and statistics about fires, their causes and their effects
- Applied research in social sciences and humanities, including finances for research
- Integration of social, economic, environmental considerations and institutions in developing tangible policies and practices related to wildland fire
- Integration of fire as a component of land, resource, and forest management
- Community-based approaches to fire management
- Training in the appropriate use of fire (for example, prescribed burning for fuel reduction and nature conservation)

- Training in the safe and efficient use of resources for fire suppression (for example, appropriate equipment for fire suppression, wildland fire safety)
- Compatible approaches, e.g., global implementation of the Incident Command System (ICS) and the International Wildland Fire Agreements Template

Recalling the recommendations of the International Wildland Fire Summit (Sydney, 2003), the UN-ISDR Wildland Fire Advisory Group / Global Wildland Fire Network (2004), and the FAO Ministerial Meeting on Forests (2005) with respect to the management of wildland fires and the strategy to strengthen international cooperation in wildland fire management;

Endorsing the efforts of the United Nations International Strategy for Disaster Reduction (UN-ISDR) and its Wildland Fire Advisory Group to assist and strengthen the efforts of United Nations bodies, other international organizations, and non-governmental organizations, to reduce the negative impacts of wildland fires;

Supporting the objectives of the ISDR Global Wildland Fire Network (GWFN) and the Global Fire Monitoring Center (GFMC) to systematically increase the intra- and inter-regional cooperation in wildland fire management for the world;

Expressing gratitude to the Faculty of Forestry of Skopje, represented by Mr. Nikola Nikolov, for the preparation and organisation of the consultation;

Recommend to governments, international organizations and non-government organizations the following action plan for cooperation on wildland fire research and management in Southeast Europe:

Research

- Secure financing of a regional wildland fire research programme
- Strengthen wildland fire research cooperation between neighbouring countries
- Develop standardization of terminology and procedures
- Develop standardized data collection i.a.w. the further development of global wildland fire data collection
- Encourage increased involvement of the science community in wildland fire-related research programmes (interdisciplinary research)
- Support the establishment of national or regional (international) wildland fire research centers
- Establish a regional wildland fire weather network
- Approach the EU Erasmus/Sokrates programme for developing a dedicated programme for wildland fire exchange

Consolidation of the Regional Network

- Expand the current focus on the Balkan Region to a "Regional South East European Wildland Fire Network" and invite countries adjoining to the Balkan region to cooperate
- Establish a network of country Focal Points, preferably with one representative of a government agency and a representative of the academia
- Support the network co-coordinators that are representing the main stakeholders involved (Mr. Nikola Nikolov, Macedonia, Research; Mr. Vladimir Konstantinov, Bulgaria, Forest Service; Mr. Dulfjano Grum, Croatia, Fire Service) (initially nominated for a 1-year period)
- Seek for widespread membership in the network
- Maintain a publicly accessible website of the network (communication language: English)
- Produce an initial publication of this regional consultation and the network foundation, to be published in UN-ECE/FAO International Forest Fire News, including a summary of previous activities in international cooperation in the SE European Region
- Conduct a first Regional Advanced Wildland Fire Management Training Course not later than 2006, based on experiences in other regions and the FAO courses in Bulgaria; seek support from the German Foreign Office
- Request a FAO Technical Development Project (TCP) on "Development of a Regional SE European Strategy for International Cooperation in Wildland Fire Management", preferably to be conducted before 2007
- Improve access and reliability of regional and country / ecosystem specific early warning information, including automatic distribution
- Participate at the 4th International Wildland Fire Conference, Madrid, Spain (May 2007)
- Convene the next network meeting not later than 2006

Annex IV

BASELINE INFORMATION

Current State of International Cooperation in Wildland Fire Management of countries belonging to the Regional South East Europe Wildland Fire Network

For the preparation of the regional strategy an overview of bilateral / multilateral mechanisms / agreements of cooperation in place in the Region of South East Europe is provided (Table 1). Table 2 provides an overview of existing agreements between individual countries of the region and countries of other regions.

Table 1. Overview of bilateral / multilateral mechanisms / agreements of cooperation in place the Region of South East Europe and Turkey

	Al	BiH	Bg	Hr	Gr	Hu	Mk	Md	Ro	SCG	Si	Tr	
Al													
Arm													
Az													
BiH				x									
Bg					x		x			x		x	
Ge													
Gr			x				x						
Hr		x				x					x		
Hu				x						x	x		
Mk			x		x					x			
Md													
Ro										x			
SCG			x			x	x		x				
Si				x		x							
Tr			x										
Ua													

* The abbreviations used in this table correspond to the following countries:

Al	– Albania
Arm	– Armenia
Az	– Azerbaijan
BiH	– Bosnia and Herzegovina
Bg	– Bulgaria
Hr	– Croatia
Ge	– Georgia
Gr	– Greece
Hu	– Hungary
Mk	– R. of Macedonia
Md	– Moldova
Ro	– Romania
SCG	– Serbia and Montenegro
Si	– Slovenia
Tr	– Turkey
Ua	– Ukraine

Table 2. Overview of existing agreements between individual countries of the region and countries of other regions.

	Italy	Slovakia	Poland	Austria	France	Russian Federation	Ukraine	Germany
Albania								
Armenia								
Azerbaijan								
Bosnia and Herzegovina								
Bulgaria								
Croatia	x	x	x	x	x	x	x	
Georgia								
Greece								
Hungary								
R. of Macedonia								
Moldova								
Romania								
Serbia and Montenegro				x		x		x
Slovenia	x							
Turkey								
Ukraine								

Institutional framework relevant for regional cooperation in wildland fire management

Information on institutions responsible for wildland fire management at national level and responsible for international cooperation at national and regional levels will be provided in the regional report.

Legal framework relevant for regional cooperation in wildland fire management

This information will also be provided in the regional report, for the national level.

Appendix 6 - Photographs

A limited number of photographs taken by Jelena Beronja (UNEP) are provided to illustrate main fire phenomena encountered during the field mission.



Burned pine forest on a site with high erosion risk.



Fire-affected informal settlement of Roma at the outskirts of Bitola.



Infrastructure, e.g. telephone lines and electric power transmission lines at risk.



UXO collected in the surroundings of Bitola and stored in the Army Base Bitola: During the fires in July 2007 more than 70 explosions of WW-I grenades and other UXO were recorded nearby Bitola.



The electric power plant Oslomej near Kicevo was at threat to be affected by wildfires burning at the very edge of the facility (left in the photograph) by burning embers (spot fires) falling out on the structures of the power plant.