



Analyses on the topic: wildland fires for “SAKAR” (NATURA 2000 site) and floods for “Derventska Heights 1” (NATURA 2000 site) on the territory of Haskovo region – Contributions to the the Environmental/ biodiversity protection study developed by Project Beneficiary 4

In connection with the implementation of the project „Protecting biodiversity at NATURA 2000 sites and other protected areas from natural hazards through a certified framework for cross-border education, training and support of civil protection volunteers based on innovation and new technologies” (eOUTLAND), financed under the INTERREG V-A Cooperation Program “Greece-Bulgaria 2014-2020”, Subsidy Contract No B2.6d.06/02.10.2017.



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I. INTRODUCTION

NATURA 2000 is a pan-European network of protected areas in order to ensure the long-term conservation of the most valuable species and habitats of Community importance. It has to be built in all member states of the European Union and is a requirement for the accession of the candidate countries. The establishment of the network is aimed at achieving a balance between the conservation of species and habitats and human activities. The establishment of NATURA 2000 is based on two EU-wide agreements on environmental and biodiversity protection. These are the Birds Directive and the Habitats Directive. Protected by both directives, there are about 140 natural habitats and more than 600 species of animals and plants that have been identified as significant for the European Community. The basic requirements of both Directives are reflected in the Bulgarian legislation through the Law on Biological Diversity. Pursuant to this law, the so-called "protected areas" in Bulgaria are declared that are part of the "national ecological network". The protected areas are the sites within the territory of the country that meet the requirements for the presence of habitats and species included in the Annexes to the Birds Directive and the Habitats Directive. The responsible institution for the construction of the ecological network in our country is the Ministry of Environment and Waters.

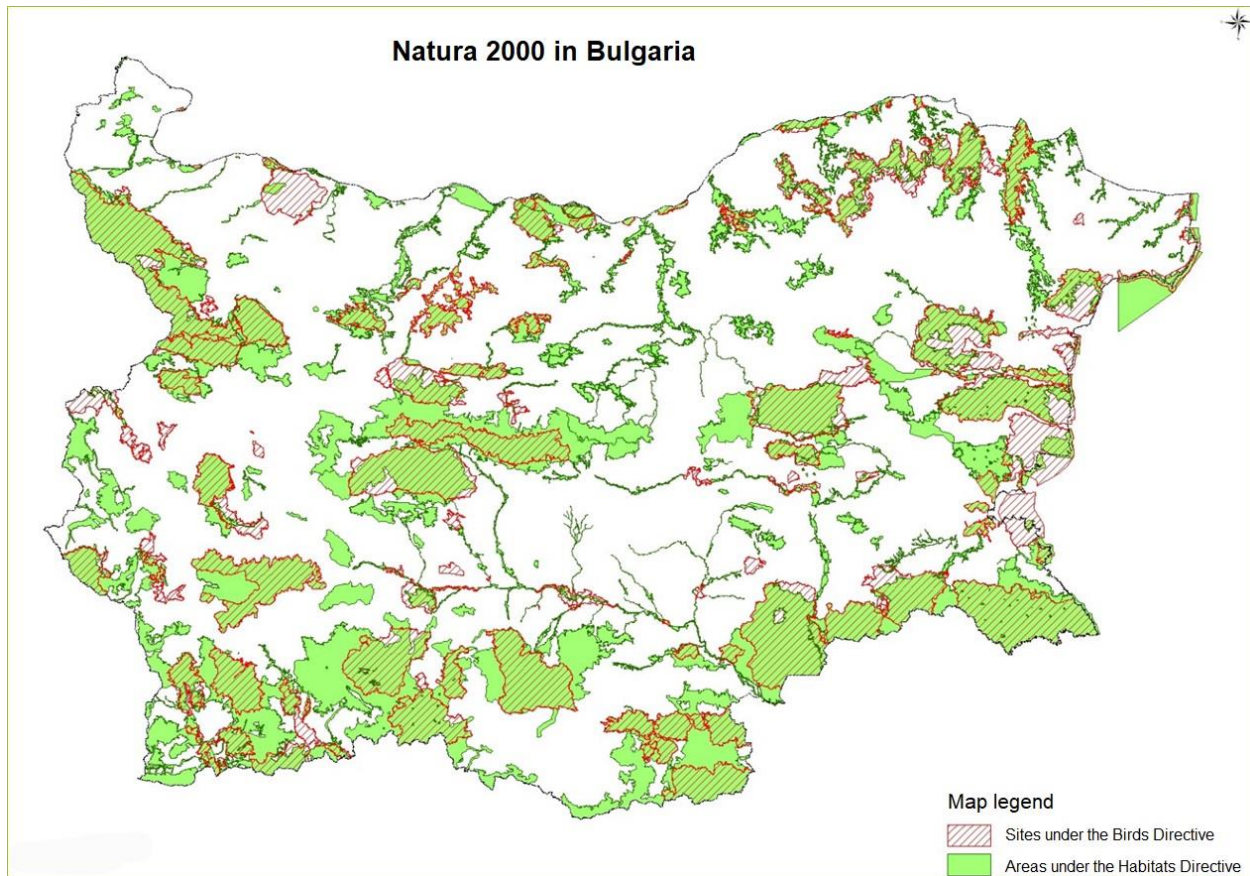
Bulgaria's obligations to the EU related to NATURA 2000 are generally as follows:

- to identify the most appropriate areas in terms of number and size for protection of species and habitats in the Directives. These territories must be sufficient for long-term maintenance and restoration of biodiversity. Special measures must be taken to protect wetlands of international importance;
- to take measures to prevent the destruction or deterioration of habitats and the deterioration of the populations of the species included in the Annexes to the Directives.

"Protected Areas" is a term introduced by the Biological Diversity Act. The protected areas are referred to as the **"National Ecological Network"**, which is Natura 2000 in Bulgaria. Protected areas in Bulgaria are in fact announced in relation to the requirements of the Birds Directive and the Habitats Directive. Under the Biological Diversity Act, "Protected Areas are intended to conserve or restore the favorable status of natural habitats included therein, as well as species in their natural range of distribution.". Land ownership is preserved, with the resulting rights of the owners. They can sell their land and carry out various activities on it.

After joining our country in the project, 34.3% of the territory is covered by 336 distinct zones (Figure below). By "Protected Areas" indicator, Bulgaria occupies one of the top positions in the European Community.

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Restrictions in protected areas. The Biological Diversity Act does not specify bans on activities in protected areas. They did not stop the implementation of human activities. They develop under certain conditions agriculture, livestock, forestry, logging, hunting and other activities, even construction. In the protected areas, however, an integrated approach is in place to ensure sustainable development and biodiversity conservation. The possible prohibitions which to guarantee the sustainable management of sites and their preservation for future generations are contained in the announcement orders and protected area management plans. They are developed for each protected area according to the subject and the purposes of protection. For example, in protected areas declared because they are important for bird migration, only the construction of wind turbines could be prohibited. In places where there are hay fields, the owners will have to mow a little bit later in order not to affect bird nests in the meadows, etc. In case of owner damage, the EU provides for compensation mechanisms, thus balancing the interests of the owners with the long-term conservation of nature. Moreover, the fact that some land is included in NATURA 2000 gives farmers the right to receive compensation from the EU for

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activities they are already doing. Priority in NATURA 2000 is the development of eco-tourism, sustainable forestry and organic farming.

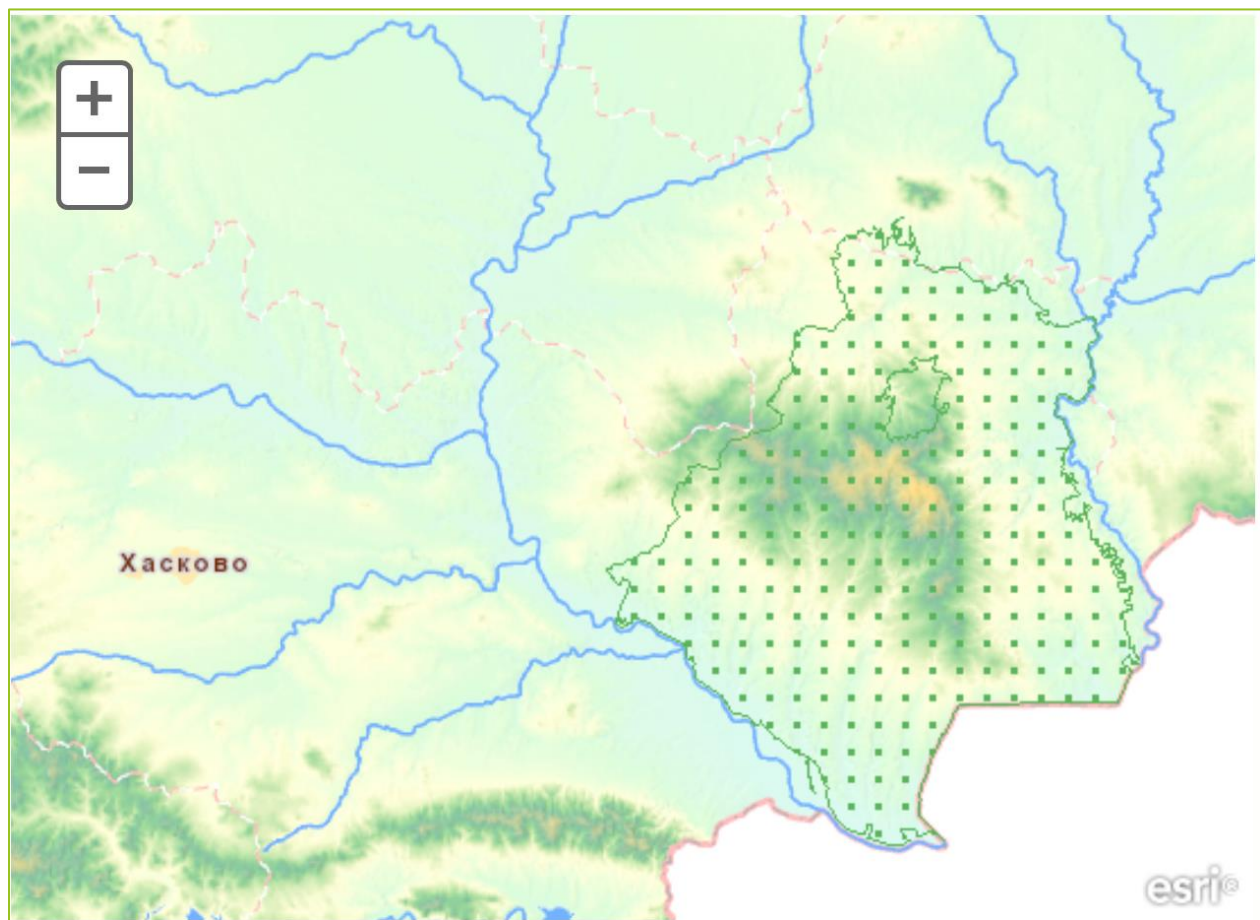
The most serious threats to biodiversity are referred to as prohibitions in declaring orders. Те се подлагат на обществено обсъждане. Evaluations are also subject to Activities that can have a significant negative impact on the site are also subject to evaluations - EIA (Environmental Impact Assessment) or Environmental Assessment (EIA) that indicate whether they will interfere with the long-term conservation of biodiversity should be carried out. Other activities can be performed. Protected areas may also have management plans to ensure their sustainable use and conservation.

The sites to be included in NATURA 2000 are determined on the basis of scientific criteria. The Habitats Directive lays down such criteria, whereas the Birds Directive leaves it up to the Member States to decide on their approach to determining the most important sites in the Community (in Bulgaria these criteria have been developed by BSPB on the basis of BirdLife international criteria). The scientific criteria entirely outweigh the economic ones. Statistics show that NATURA 2000 covers 19% of the entire territory of the European Union. However, this can not be considered as a benchmark. Many countries in Europe have already lost their biodiversity and most of their territory simply does not meet the NATURA 2000 criteria. The size (area) of NATURA 2000 for each country is determined according to the richness of biodiversity and the conservation of ecosystems. Bulgaria is one of the countries with the highest biodiversity in Europe. This is due to the geographical location (in Bulgaria there are 3 biogeographical regions) and the varied relief and, on the other hand, to the attitude to the nature that the people have had in our previous historical development. For this reason, our country can not compare to countries such as England, Germany and others which have already lost their biological diversity. The same countries have already appreciated this loss and put tremendous resources and efforts to recover it.

II. ANALYSES ON WILDLAND FIRES IN NATURA 2000 - "SAKAR" (ON THE TERRITORY OF HASKOVO REGION)

1. Protected area Sakar

The protected area "Sakar" is located in the south-eastern parts of Bulgaria, covering parts of the lands of settlements of two centers - Haskovo and Yambol. On the territory of Haskovo region in the borders of the protected area lands of the villages in the **municipalities Topolovgrad, Harmanli, Svilengrad and Lyubimets will be included**. The area of the protected area is 1 257 222.834 decars and covers a low mountainous area with rounded hills and relatively open valleys of small rivers, tributaries of the Maritsa and Tundzha rivers, near the state border with the Republic of Turkey.



The terrains have an altitude of 50 to 856 meters. On its territory there are thirty small villages, Topolovgrad and a poorly developed system of roads. The lower parts of Sakar are occupied with farmland in the place forests of White oak *Quercus pubescens* and Oak of Virgil

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/Quercusvirgiliana/. Of these, around 15% of the total area, xerothermic grasslands are dispersed, with prevalence of */Dichantiumschaemum/*, *Poa bulbosa*, *Chrysopogongryllus* and more rarely with meso-xerothermic vegetation. *Paliurus spina-christi* mixed with and xerothermic grass formations are a good prerequisite for the relatively high number of *Lepuseuropeus* and *Spermophyluscitellus*. The ridge of the mountain and the slopes above 500 m above sea level are covered with mixed oak forests. There are also deciduous forests of "island - type" in the area of *Quercus pubescens* and *Quercusvirgiliana* with Mediterranean elements, at places secondary occurring. Along many of the gullies and rivers in Sakar old trees of *Populus alba*, *Salix sp.*, *Populus sp.* still grow which represent nesting base for rapacious birds.

1.1. Birds of "Sakar"

In the Sakar Protected Area, 220 species of birds have been identified so far, 91 of which are included in the "Red Book of the Republic of Bulgaria" (under seal). 96 of the species there are of European conservation importance (SPEC) (BirdLife International, 2004). 11 species are included as globally threatened in the SPEC1 category, whereas as endangered in Europe, respectively in SPEC2 category - 23 species, in SPEC3 - 62 species. Sakar provides suitable habitats for 76 species listed in Appendix 2 of the Biodiversity Act, for which special protection measures are required. Sixty-eight of them are also listed in Annex I of Directive 79/409 / EEC and more than half have significant breeding populations here. The region maintains the largest population in the country of *Aquila heliaca*, *Aquila pomarina*, *Buteo rufinus*, *Hieraetus pennatus* and *Milvus migrans*. Sakar is one of the most important places in Bulgaria of importance to the European Union for the species mentioned above as well as for *Accipiter brevipes*, *Anthus campestris*, *Melanocorypha calandria* and *Calandrella brachydactyla*, *Lanius nubicus*, *Burchinus oedicephalus*, *Circus pygargus*, *Dendrocopos syriacus* and *Hippolais livetorum* (Annex 11). *Ciconia nigra*, *Picus canus* and *Lanius collurio* also have representative breeding populations in the area. Two globally threatened species except Imperial Eagle nest in the important bird area "Sakar" even with small populations – *Crex crex* and *Falco cherrug*. During migration, there are another 8 species threatened with extinction in the world – *Phalacrocorax pygmaeus*, *Pelecanus crispus*, *Aythya nyroca*, *Circus macrourus*, *Aquila clanga*, *Falco naumanni* and *Gallinago media*.

1.2. Threats

The area of the Sakar Protected Area is used by local people extensively (in a traditional and environmentally friendly way, with minimal use of chemicals, heavy machinery and overexploitation of the soil), mainly for livestock farming and to a lesser extent for agriculture and

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forestry activities. It is sensitive to the intensification of agriculture and forestry as well as to the change in agricultural practices. The reduction of pasture, followed by succession /development of the ecosystem/ as well as the plowing of pastures leads to the loss of grass habitats for the birds (Melanocoryphacalandra, Calandrellabrachydactyla, Miliaricalandra) and for Spermophiluscitellus, which is a major nutritional component for the Imperial Eagle and other rapacious birds. The pesticides used in the area are dangerous for birds. Dry pastures and meadows are particularly vulnerable to fires, both natural and man-made. In dry years large areas are burned. Existing transmission grids are dangerous to rapacious birds and storks. The forestry activities associated with the clearing of old trees deprive the Imperial Eagle directly from a breeding ground as the species builds its nests only on large old trees. Illegal trees cutting, collecting firewood and afforestation with non-indigenous species fort the region deteriorate the quality of forest habitats. A potential threat to both habitats and birds in the area is the construction of wind farms.

1.3. Prohibitions

- removal of landscape features (hedges, singles and groups of trees) in the use of agricultural land as such;
- afforestation of pastures and meadows, as well as their conversion into farmlands and permanent crops;
- the use of pesticides and mineral fertilizers in pastures;
- Unlocking new and expanding the area of existing quarries, diggings and mines, with the exception of those for which, at the date of promulgation of the order in the State Gazette, the procedure has been initiated or have been agreed in accordance with Chapter Six of the Environmental Protection Act and / or Art. 31 of the Biological Diversity Act;
- the construction of new photovoltaic systems and wind generators for electricity generation, except those for which, at the date of promulgation of the order in State Gazette, the procedure has been initiated or have been agreed in accordance with Chapter Six of the Environmental Protection Act and / or Art. 31 of the Biological Diversity Act. The regime does not apply for building:
 - photovoltaic systems in properties with a mode of sustainable use according to the Unified Classifier of the Cadastre and their corresponding codes from the groups of "agricultural yards and agricultural production bases", "livestock farms and farms" which are connected to the electricity distribution network;

- wind generators, ground, roof and facade photovoltaic systems used as their own sources of electricity;
- the construction of non-insect aerial transmission networks;
- the use of non-selective pesticides in agriculture;
- mowing the meadows from the periphery to the center with fast-moving equipment and before 15 July.

1.4. Division of Protected Area "SAKAR"

1.4.1. Protected Area "SAKAR" with ID BG0000212

Type: Habitats protected area overlapping a protected area under the Birds Directive.
Subject and conservation objectives (according to art. 8, para. 1, p.2 of BDA)

1. Conservation objectives:

- Conservation of the area of natural habitats and habitats of species and their populations subject to conservation within the protected area.
- Conservation of the natural state of the natural habitats and habitats of species protected within the protected area, including the natural habitat types, typical species and environmental conditions.
- Restoration, where necessary, of the area and natural state of priority natural habitats and habitats of species as well as populations of species protected within the protected area.

2. Subject of conservation:

- Natural
- Habitats
- Mammals
- Amphibians and reptiles
- Plants

1.4.2. Protected Area "SAKAR" with ID BG0002021

Type: Protected area under the Birds Directive, which overlaps a protected area under the Habitats Directive.

Subject and conservation objectives (according to art. 8, para. 1, p.2 of BDA)

1. Conservation objectives:

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- Conservation of the area of natural habitats and habitats of species and their populations subject to conservation within the protected area.
- Conservation of the natural state of the natural habitats and habitats of species protected within the protected area, including the natural habitat types, typical species and environmental conditions.
- Restoration, where necessary, of the area and natural state of priority natural habitats and habitats of species as well as populations of species protected within the protected area.

2. Subject of conservation: BIRDS – nesting, migrating and wintering: Species, included in Annex 2 of the Biological Diversity Act (Annex. I of Directive 79/409/EEC)

2. Forest fires in Sakar Protected Area (Natura 2000) for the period 2013 - 2017

This section analyzes data on forest fires occurring in the Sakar Protected Area of Natura 2000 and presented years to provide comprehensive and objective information to analyze the full picture of forest fires in the target territory.

- **2013** – There are no forest fires registered in 2013
- **2014** – 2 forest fires:
 - **May 25** – town of Topolovgrad; Time of occurrence: 10.35 o'clock
Destroyed: forest unsuitable areas – 40 decares, pine forest – fire without loss
 - **September 20** – town of Topolovgrad; Time of occurrence: 12.50 o'clock
Destroyed: coniferous forest – 1 decares
Insignificant in number and scale forest fires due to the rainy summer.
- **2015** – 7 forest fires:
 - **July 11** – land of Radovets village, Topolovgrad Municipality; Time of occurrence: 11.35 o'clock
Destroyed: deciduous forest – 70 decares
 - **July 17** - land of Radovets village, Topolovgrad Municipality; Time of occurrence: 15.10 o'clock
Destroyed: deciduous forest – 40 decares
 - **July 22** - land of Driptchevo village, Harmanli Municipality; Time of occurrence: 14.53 o'clock
Destroyed: deciduous forest – 650 decares, forest unsuitable areas 2850 decares

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- August 04 - land of Filipovo village, Topolovgrad Municipality; Time of occurrence: 14.00 o'clock

Destroyed: deciduous forest – 40 decares

- August 11 - land of Mramor village, Topolovgrad Municipality; Time of occurrence: 17.30 o'clock

Destroyed: coniferous forest – 10 decares

- August 18 - land of Shtit village, Svilengrad Municipality; Time of occurrence: 12.20 o'clock

Destroyed: deciduous forest – 10 decares

- November 20 - land of Radovets village, Topolovgrad Municipality; Time of occurrence: 16.40 o'clock

Destroyed: coniferous forest – 3 decares

The fires are mainly on the southern slope of Sakar Mountain, except for the village of Mramor. The period of occurrence is in most cases in mid-July - mid-August. Reasons for almost all cases are related to grassland cleaning. The time of occurrence is about midday and early afternoon when the temperatures are highest between 11 and 17.30. **823 decares** of forest massifs have been destroyed. There are no damages in urban territories.

- **2016 – 10 forest fires:**

- July 14 – land of Izvorovo village, Harmanli Municipality; Time of occurrence: 14.20 o'clock

Destroyed: deciduous forest – 200 decares, coniferous forest - 100 decares, forest unsuitable areas – 100 decares, Crops – 100 decares

Total area of the fire – 1600 decares

- August 03 – land of Radovets village, Topolovgrad, Municipality; Time of occurrence: 15.40 o'clock

Destroyed: deciduous forest – 300 decares, forest unsuitable areas - 14700 decares,

Total area of the fire – 50 000 decares

- August 04 - land of Lisovo village, Svilengrad Municipality; Time of occurrence: 12.55 o'clock

Destroyed: deciduous forest – 1050 decares, almond forest - 800 decares, forest unsuitable areas - 1150 decares, 100 bee hives

- **August 10 – land of Yerusalimovo village, Lyubimets Municipality; Time of occurrence: 13.00 o'clock**

Destroyed: deciduous forest – 214 decares, forest unsuitable areas - 250 decares, outbuilding - 1

Total area of the fire – 2 000 decares

- **August 14 - land of Radovets village, Topolovgrad Municipality; Time of occurrence: 14.29 o'clock**

Destroyed: deciduous forest – 120 decares, coniferous forest - 300 decares, forest unsuitable areas - 2500 decares, walnut forest - 150 decares

Total area of the fire – 20 000 decares

- **August 20 - land of Dripchevo village, Harmanli Municipality; Time of occurrence: 13.56 o'clock**

Destroyed: deciduous forest – 4753 decares, coniferous forest - 0 decares, forest unsuitable areas - 40000 decares, crops – 500 decares, vineyards - 500 decares, pastures and meadows – 200 decares

Total area of the fire – 50 000 decares

- **August 21 - land of Mladinovo village, Svilengrad Municipality; Time of occurrence: 13.20 o'clock**

Destroyed: deciduous forest – 201 decares, coniferous forest - 300 decares, forest unsuitable areas - 650 decares, walnut forest - 250 decares

Total area of the fire – 20 000 decares

- **August 30 - land of Bulgarska polyana village, Topolovgrad Municipality; Time of occurrence: 13.03 o'clock**

Destroyed: mixed forest – 9000 decares, coniferous forest 0 decares, forest unsuitable areas 5000 decares, pastures and meadows – 500 decares

Total area of the fire – 30 000 decares

- September 15 – land of Bulgarska polyana village, Topolovgrad Municipality; Time of occurrence: 15.40 o'clock

Destroyed: coniferous forest - 5 decares

Total area of the fire – 35 decares

- September 16 - land of Bulgarska polyana village, Topolovgrad Municipality; Time of occurrence: 13.03 o'clock

Destroyed: deciduous forest – 30 decares, coniferous forest - 0 decares, forest unsuitable areas - 70 decares, tractor - 1 бр

Total area of the fire – 950 decares

The fires are mostly on the southern slope of the Sakar Mountains. Period of occurrence 15 July - 15 September. Reasons in almost all cases are related to grassland cleaning. The period of occurrence coincides with the declared verification period of the Paying Agency. Time of occurrence early afternoon when temperatures are highest between 13 and 16 o'clock.

- **2017 – 7 forest fires:**

- August 16 - land of the village of Hlyabovo, Topolovgrad; Time of occurrence: 12.40 o'clock

Destroyed: deciduous forest - 60 decares, vineyards - 40 decares, pastures - 400 decares, bee hives – 12

Total area of the fire - 900 decares

- August 16 - the land of the village of Prisadets, Topolovgrad; Time of occurrence: 1.50 o'clock

Destroyed: deciduous forest - 600 decares, coniferous forest 2 decares, forest unsuitable area - 2500 decares, pastures - 1000 decares

Total area of the fire - 7 000 decares

- August 17 - land of the village of Knyazhevo, Topolovgrad; Time of occurrence: 13.03 hours o'clock

Destroyed: mixed forest - 530 decares

Total area of the fire - 1 000 decares

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- 25 August - land of the villages of Prisadets, Varnik, Matochina, Topolovgrad Municipality and Svilengrad Municipality; Time of occurrence: 13.10 o'clock

Destroyed: deciduous forest - 80 decares, forest unsuitable area - 2000 decares

Total area of the fire - 8000 decares

- 31 August - land of the village of Izvorovo, Harmanli; Time of occurrence: 16.00 o'clock

Destroyed: deciduous forest - 100 decares, vineyards 300 decares

Total area of the fire - 500 decares

- September 14 - the village of Studena, Svilengrad Municipality; Time of occurrence: 12.55 o'clock

Destroyed: Coniferous forest - 2 decares

Total area of fire - 5 decares

- September 16 - land of Raikova mogila village, Svilengrad Municipality; Time of occurrence: 12.55 o'clock

Destroyed: Coniferous forest - 20 decares

Total area of the fire - 50 decares

The fires are mostly on the southern slope of the Sakar Mountains. Period of occurrence 15 August - 15 September. The reasons are in any case related to grassland cleaning, except the only fire in the village of Knyazhevo, for which the reason is the intention. The period of occurrence coincides with the declared verification period of the Paying Agency. Early afternoon when temperatures are highest between 12 and 15 hours.

The main conclusion that can be made is that there is a contradiction between:

- On the one hand, prohibiting the mowing of meadows from the periphery to the center with fast-moving equipment and before 15 July;
- On the other hand, the period 15 July - 15 September is the most fire-hazardous, with the most likely occurrence of fires, and grass-cutting must be carried out exactly during this period. In most Mediterranean countries, the penetration of agricultural machinery into forest areas in the fire season is absolutely prohibited;

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- There is no legislation or regulation for fire safety rules in carrying out this type of activity;
- There is no adequate mechanism for sanctions and / or suspension of subsidies for causing fires in pastures and meadows when cleaning them.

3. Normative basis, organization and measures to protect forests from fires

3.1. Regulatory base

- **Forest Act**, Chapter 6, Section III protection of forests against fire / Art. 136 to Art. 143/
- **Ordinance No. 8 / 11.05.2012** on the conditions and procedure for protection of forest areas from fires. The Ordinance defines the order and the organization for the protection of the forest territories; duties of officials; fire actions and requirements for the protection of forest areas; organization and obligations to ensure successful firefighting in forest areas.

3.2. Forest Protection Organization

Measures and events for protection of forest areas from fires are planned for each forest territorial unit regardless of the ownership of the territory and are mandatory for implementation. Planning of measures and events for protection of forest areas from fires is at the expense of the state budget. The implementation and maintenance of the measures and events for the protection of the forest areas from fires shall be organized and carried out by the owners, respectively by the persons to whom the territory is assigned for management, on their own account. The terms and procedure for designing measures and events for the protection of forest areas from fires shall be determined by the abovementioned ordinance. The provisions of this Ordinance:

- apply to all forests and real estate located in, or adjacent to, the forest areas, regardless of their ownership, territorial and functional purpose, as well as permanent or temporary sites located in or near them;
- are mandatory for all owners or users of forest areas, as well as for persons crossing and / or carrying out activities in or near them.

The protection of forest areas from fires is a complex of measures and events for fire safety and includes actions, measures and requirements for preventing, detecting, limiting and eliminating fires in the forest territories. **For all forest areas**, irrespective of their ownership, **plans are prepared for their fire protection activities**, which are at the expense of the state budget and are an integral part of the forest plans and programs as well as **part of the protected areas management plans and the protected zones**. Measures and events for protection of forest areas

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from fires are planned, implemented and maintained as a unified system for all forest areas regardless of their ownership, territorial and functional purpose. The documents regulating the carrying out of activities in the forest areas or in their immediate vicinity include measures for the protection of forest areas from fires.

The implementation and maintenance of measures and events for the protection of forest areas from fires is organized and carried out by:

- The State Enterprises (SE) under Art. 163 of the Forestry Act and their territorial units - state forest farms (SFFs) and state hunting farms (SHFs) - in forest areas - state property, as well as those allocated to them - at their own expense;
- The Ministry of Environment and Water (MOEW) - in the forest territories and the lands of the protected areas - exclusive state property within the meaning of the Protected Areas Act, at the expense of its budget;
- Study and experimental forestry farms (SEFF) - in the forest areas managed by them, as well as in managed ones - at their own expense;
- The municipalities - in forest territories - municipal property, as well as in municipalities, allocated to them - at the expense of the municipal budget;
- Owners and users of forests and lands in forest areas.

The authorities of the Directorate General for Fire Safety and Protection of the Population (DGFSP) at the Ministry of Interior (MoI) exercise their powers to prevent, detect, limit and eliminate fires in forest areas under the Ministry of the Interior Act and the Implementing Regulations of the MoI Act.

The Executive Forest Agency (EFA), its structures and specialized territorial units control the implementation of actions, measures and events as well as compliance with the requirements for protection of forest areas from fires.

State enterprises through the State Forestry Authority/State Hunting Authority and Study and experimental forestry farms, MoEW, as well as the municipal and private forest structures organize a system for the prompt detection of fires in the forest territories, create an organization and participate in their extinction.

3.3. Annual events to protect forests from fires

1. By February 15th, the Directorate General for Agriculture and Forestry and the Environmental Protection Agency will develop an **inter-action plan**.

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2. On the basis of the approved plan, joint inspections are carried out by officers of Directorate General for Fire Safety and Protection of the Population and Executive Forest Agency until March 30. The inspections shall verify the implementation of the measures for the previous year and the planned events for the current year on the basis of the annual plans for the protection of forest areas from fires. Such plans are being developed:

- Territorial units of the State Enterprises under article 163 of the Forestry Act;
- municipal forest structures;
- forest owners - legal entities, natural persons and their associations, with a total area of landed property of over 50 ha.

The annual plan for the protection of forest areas from fires contains:

- a description of the reasons for the occurrence of fires during the previous five years and of the main factors causing the occurrence of fires in the forest territories;
- a description of existing methods and tools for preventing, monitoring and fighting fires in forest areas as well as control systems;
- a description of specific actions aimed at overcoming the effects of the fire hazard factors, including ways of:
 - a) removing the main causes creating a fire hazard;
 - b) improvement of fire prevention and detection systems;
 - в) improvement of control systems;
- a list of specific measures and events for protection of forest areas from fires depending on the fire hazard;
- a copy of the forest fire protection card with red-colored roads suitable for the movement of fire and other heavy equipment, fire-fighting depots, water sources, ponds, landing sites for helicopters;
- lists of the specialized extinguishing group and of the voluntary formations under Art. 15, para. 1, item 3 for the settlements of their territorial scope of activity;
- a list of equipment, machinery and tools to be used for fire fighting in forest areas;
- a list of the persons responsible for the interaction with the authorities of the General Directorate for Fire Safety and Protection of the Population;
- a description of the order and methods of provision of food, drinking water and other necessary means for the participants in the extinguishing of fires in the forest territories,

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as well as a list of the names of the persons responsible for it;

- Schedule for timely disclosure when a fire occurs;
- a record of joint inspections carried out with the Forestry Regional Directorate and the authorities of General Directorate for Fire Safety and Protection of the Population;
- a list of persons with their telephone numbers, which must be notified in the event of a forest fire.

The plan complements with the measures and events foreseen for implementation under the Forest management projects or Forest management plans (FMP/FMP) for the respective year. FMP are developed for a 10 year period, for each State Forestry Authority or State Hunting Authority, as well as for all private and municipal forests with total area over 500 decares. They plan all forestry activities, incl. type of clearing, quantities of wood collected, afforestation, forestry construction, etc. for a period of 10 years. The management of non-state forests with a total area of less than 500 decares is carried out through a forestry program (FP), which also has a validity of 10 years. For the first three years of the term, fire-fighting measures are implemented to implement or maintain already implemented measures.

3. Development of a plan of **Regional Directorate for Fire Safety and Protection of the Population /respectively of Regional Service for Fire Safety and Protection of the Population/ for the protection of forests against fires.**

4. On the basis of the plans for protection of the forest territories approved by the Director of the Regional Forestry Directorate, a **Regional Program for the Protection of Forest Areas from Fires** shall be elaborated and submitted for acceptance to a Commission, designated by a joint order of the Directorate General for Fire Safety and Protection of the Population (DGFSP) and the Forestry Executive Agency, which shall be implemented by the owners or users of the forest areas.

5. At the proposal of the Director of Regional Forestry Directorate, on the grounds of Art. 137, para. 1 of the Forestry Act, the Regional Governor **announces the fire season in the forest territories.**

6. By 30 July each year, according to the plan for interaction between the Directorate General for Fire Safety and Protection of the Population and the Forestry Executive Agency, **control inspections are carried out on the implementation of the annual plans for the protection of forest areas from fires.**

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4. Forces and means of extinguishing forest fires on the territory of the “Sakar” Protected Area

The immediate organization of the fight against forest fires is carried out by the authorities for fire safety and protection of the population with the assistance of the state forestry and state hunting authorities, the municipalities, the owners and users of forest areas, as well as the persons carrying out activities in them. The mayors of municipalities, districts, mayoralties and mayors' offices organize at the expense of the municipal budget voluntary formations for combating forest fires under the Disaster Protection Act. The directors of state-owned forestry farms and state hunting farms organize specialized groups of employees and workers for fire-fighting activities.

The institutions responsible for maintaining the preparedness of forces and means to deal with forest fires occurring in the "Sakar" protected area are:

1. Territorial Divisions of the Regional Directorate of Fire Safety and Protection of the Population - Haskovo:

- Regional Service Fire Safety and Protection of the Population Topolovgrad – 3 specialized vehicles and 16 staff members
- Regional Service Fire Safety and Protection of the Population Svilengrad – 4 specialized vehicles and 26 staff members
- Regional Service Fire Safety and Protection of the Population Harmanli – 4 specialized vehicles and 26 staff members
- Service Fire Safety and Protection of the Population Lyubimets - 2 specialized vehicles and 16 staff members

2. Territorial Divisions of the South-Eastern State Enterprise /SESE/ - Sliven

- State Hunting Authority – Topolovgrad – 1 specialized vehicle and 20 staff members
- State Hunting Authority - Svilengrad – 1 specialized vehicle and 20 staff members
- State Hunting Authority - Madzharovo – 1 specialized vehicle and 40 staff members
- Общинско предприятие „Горска Компания“ – Harmanli - 1 specialized vehicle and 12 staff members

3. Voluntary Formations established under the Disaster Protection Act

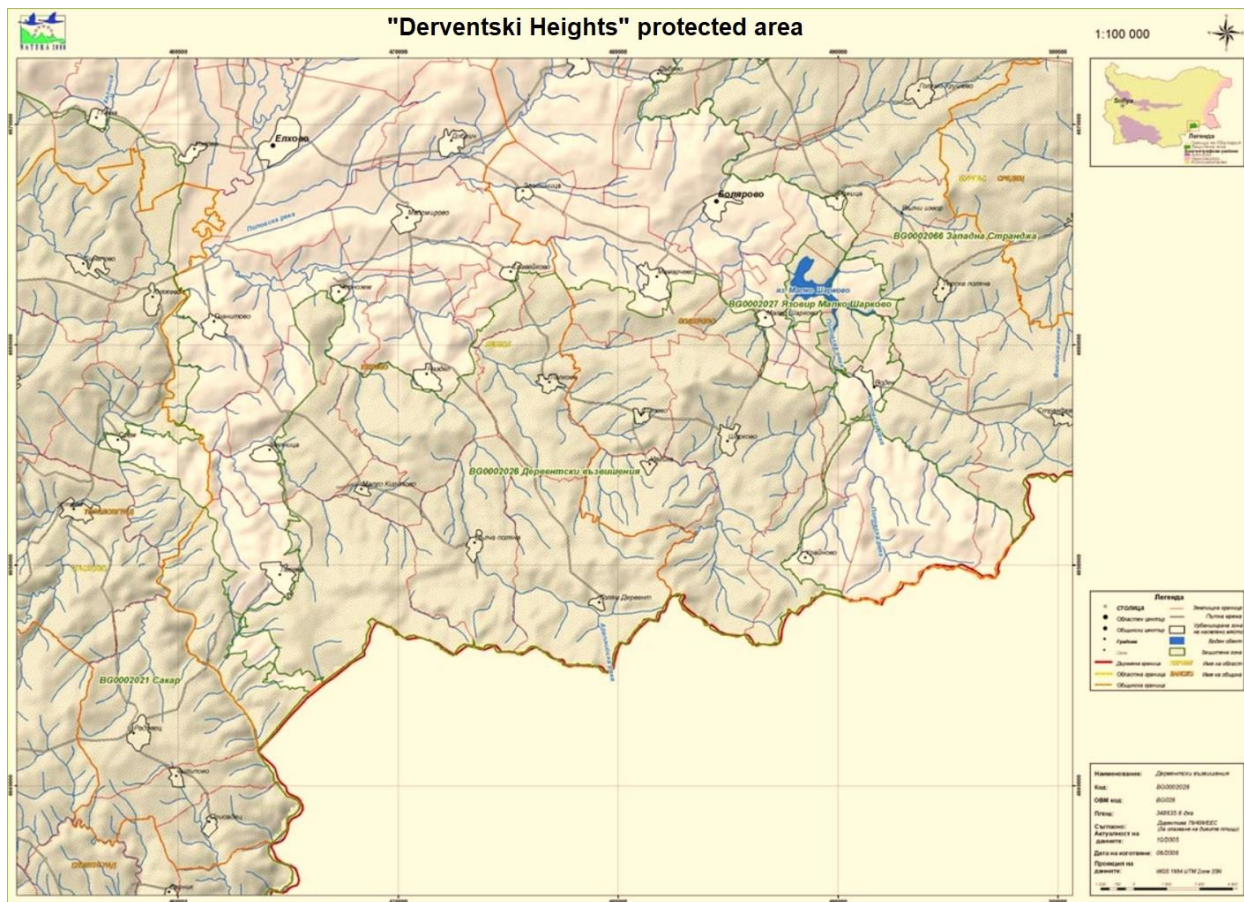
- Svilengrad - VF " Svilengrad " with 20 staff members
- Lyubimets - VF "Шейновец" with 15 staff members
- Topolovgrad - FV "Sakar - 12" with 15 staff members and 3 specialized vehicles

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III. ANALYSIS OF THE FLOODS IN NATURA 2000 - "DERVENTSKI HEIGHTS 1" ON THE TERRITORY OF HASKOVO REGION

1. Derventski heights

Derventski Heights are heights in Southeastern Bulgaria (about 40%), Yambol District and European Turkey (about 60%).

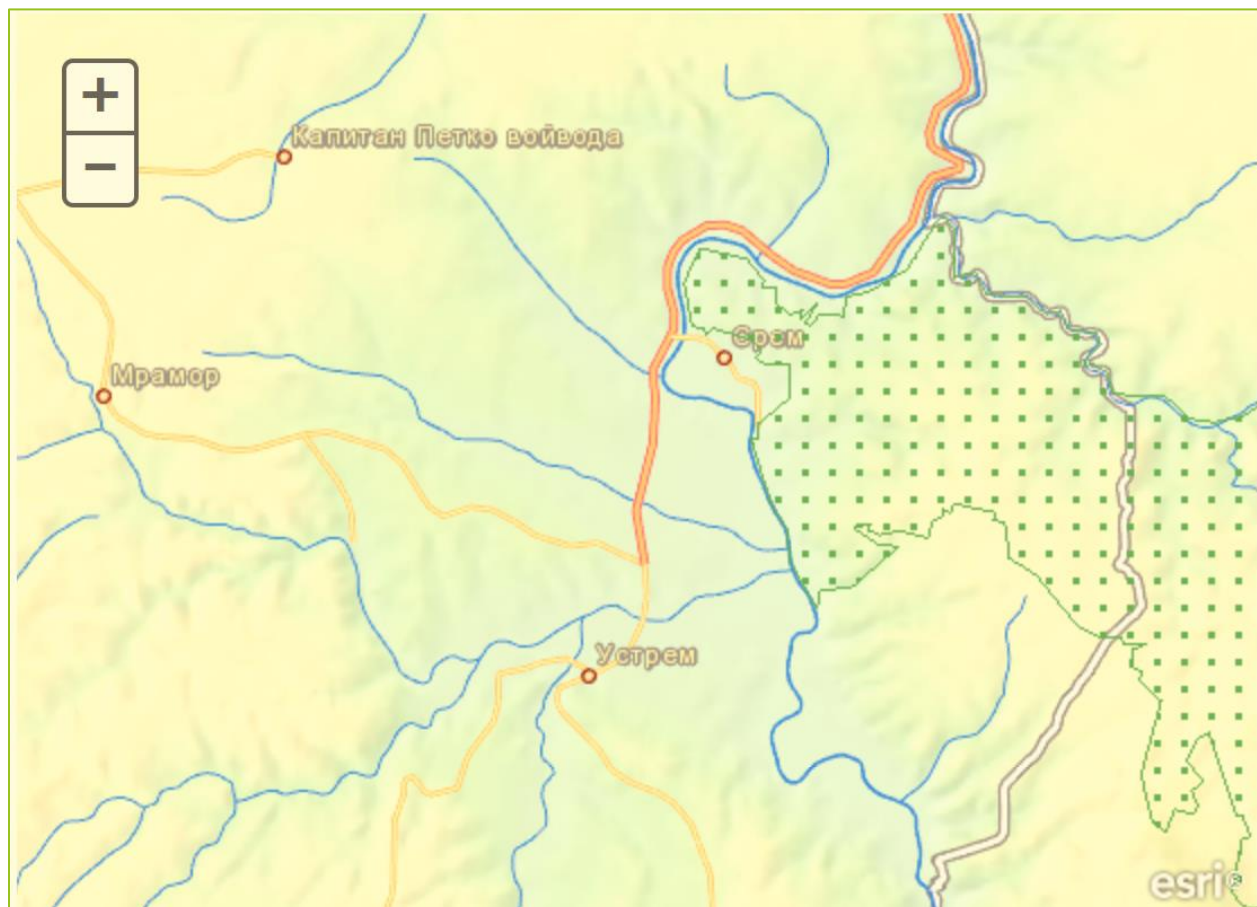


They stretch from the west to the east at about 50 km, and their width in total on Bulgarian and Turkish territory is also about 45 - 50 km. They are located between the Srem Gorge of the Tundja River in the west and the valleys of the Popovska River (left tributary of Tundja) and the Chengerlidere (the right tributary of Ergene in Turkey) to the east, which separates them from the Strandja Mountain and in the region of the Bulgarian village of Strandja. To the north and south, their hills extend to the Elhovo field and the Edirne plain in Turkey. On the main ridge of the hills, a division of Bulgaria border crosses Turkey.

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The ridge of the hills is flat and slightly sloping at an altitude of 300-450 m above which the rounded peaks rise, the highest of which is Gyergenbair (555.2 m), situated on the Bulgarian territory, about 2 km southwest of the village of Kraynovo. They are mostly made of limestone and granite. There are over 30 large karst caves. The climate is Mediterranean. The rivers Popovska, Araplijska and Praravidere (left tributaries of the Tundja) start from them; Saslidere (left tributary of Maritza); Tatarder, Havsadere and Chengerlider (Ergene's right tributaries). Much of their ridge and slopes are overgrown with deciduous forests and extensive pastures. The region is a habitat for about 120 bird species, of which 25 are included in the Red Book of Bulgaria. The Derventski Heights are a protected NATURA 2000 site.

On the territory of Haskovo region a very small part of the Dervent hills is located, on the territory of Srem village - Topolovgrad municipality, on the left bank of the river Tundzha.



Hydrological conditions of the area: The low-folded terrain did not allow to form a very dense hydrographic network. The Tundzha River is the largest watercourse in this area. It springs

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from Middle Stara Planina, crosses the Elhovo Field and the Derventski Heights through a beautiful gorge and leaves the country. In this part of the river, the river is wide and has a meander across flat terrain. The total area of the catchment area of the river is 7884 sq. Km. Despite the large catchment, the annual runoff is relatively small. The winter rainfall, most of which fall in the form of rain, leads to a larger winter runoff, with a peak around the end of winter, coinciding with snowfall in the upper stream. The smallest average monthly effluent is in October and is associated with poor wetting in late summer and early autumn.

2. Protected Area "Derventski Heights" 1

The protected area is part of NATURA 2000 designated with identification code BG0000218

Type: Habitats protected area overlapping a protected area under the Birds Directive.

Subject and objectives of conservation (pursuant to Art 8 para 1, p. 2 of the Biological Diversity Act)

1. Objectives of conservation:

Conservation of the area of natural habitats and habitats of species and their populations subject to conservation within the protected area.

- Conservation of the natural state of the natural habitats and habitats of species subject to conservation within the protected area, including the natural species composition of these habitats, typical species and environmental conditions.
- Recovery if necessary the area and the natural condition of priority natural habitats and habitats of species and populations of species subject to conservation within the protected area.
- Conservation of the area of natural habitats and habitats of species and their populations subject to conservation within the protected area.
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- Recovery if necessary the area and the natural condition of priority natural habitats and habitats of species and populations of species subject to conservation within the protected area.

2. Subject of conservation:

- Natural habitats - Priority habitat or species of Directive 92/43 / EEC
- Mammals

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- Amphibians and reptiles
- Fish
- Invertebrates
- Plants

3. Flood Analysis for "Derventski Heights 1" on the territory of Haskovo Region

For the period 2013-2017 in the area of the Srem village, which is part of the **Protected Area Derventski Heights 1 of NATURA 2000 on the territory of Haskovo Region**, two flood events are reported:

- On 01.02.2015 a state of emergency was announced by the Mayor of Topolovgrad on the territory of the villages of Srem, Sinapovo, Knyazhevo, Ustrem and Chukurovo. The situation is complicated for the period **31 January - 2 February**. The flood is a result of heavy rainfall and accelerated snowfall along the Tundzha River, as well as heavy rainfall of 60 l / sq. m in the area of affected villages. In the view taken after the drainage of the Srem village, flooded in the southeastern part, it was found that the flood damage in all properties was expressed in wet household goods in the residential buildings, wood, coal, animal feed, wet farm and other secondary buildings. There are no demolished buildings, as well as such in need of repair and restoration work. There are no disruptions and damage to the infrastructure in the area. The victims with their own labor and means have cleaned and dried their living quarters, household goods, fire materials, feeds and farm buildings. Within 2-3 days the normal rhythm of life is restored. The reason for the flood in the region, apart from the mentioned rainfall, the uncleaned bed is the absence of a protective dike with a length of 1700 m on the Tundzha River, to the regulation of Srem, which allows the waters of the river at higher levels to flood agricultural land from the urbanized territory of the village.
- On 17.01.2016 a state of emergency was announced by the mayor of Topolovgrad Municipality on the territory of the villages of Srem, Sinapovo and Ustrem. On **January 16 and 17, 2016**, rain fall in the area about 60 l / sq. m and increase the levels of Tundzha, Sinapovska, Manastirska and Golyama Rivers. In the valley of Tundzha, the level is further increased due to snowfall in the upper stream. In the village of Srem, the river Tundja has gone out of its bed and has flooded six houses in the southeastern end of the village, farm buildings, cots, streets in the village, gardens, fields, stadium and dressing rooms. There are no demolished buildings, as well as ones in need of repair and restoration work. There are no disruptions and damage to the infrastructure in the area. The reason for the flood

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in the region, apart from the precipitation, the uncleaned bed is again the lack of a 1700 m long protective dyke on the Tundzha River, to the regulation of the Srem village, which allows the waters of the river at higher levels to flood agricultural land and part from the urbanized territory of the village.

General in cases of identified flood over the period can be derived as follows:

- Extreme rainfall in the area;
- Soft winter with conditions for snow melting in the upper stream;
- Lack of protective dike on the Tundzha river, on the left bank near Srem - about 1700 m;
- Flooding area several hundred acres southeast of the village of Srem and part of the village;
- Floods have not caused damage to infrastructure, residential and commercial buildings.

4. Implementation of preventive action against floods in Haskovo Region

Flood protection is done through:

- Engineering measures - designed to regulate water flow;
- Forestry measures - river bed cleaning is important for predicting, signaling and early warning of flood hazard;
- Organizational measures and behavioral response to floods - actions of institutions and people on the ground.

Annually, the mayors of municipalities and "Irrigation Systems" EAD submit sites that are a potential flood hazard. The regional governor issues an order to check the mentioned objects and forms a committee comprising:

- Representative of the regional administration;
- Representative of the Regional Directorate of Fire Safety and Protection of the Population;
- "Irrigation Systems" EAD;
- Regional Department of the Basin Directorate,
- CD "Surveillance of the dam walls and their facilities “;
- "VIK" EOOD;
- Representative of the relevant municipal administration.

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The Commission carries out control checks on the:

1. **The technical and operational status of the dam walls and their facilities**, the availability of updated emergency plans, their readiness to implement and their provision for dams and tailing ponds on the territory of the region:
 - analyzes the provided information and verifies on site the technical condition of the dam walls and the facilities to them;
 - prescribes to the owners of the dam walls and to the facilities the implementation within a certain period of the necessary actions to ensure their technical condition and their safe operation;
 - verifies the implementation of activities to ensure the river beds' conductivity at a distance of up to 500m below the dam;
 - draws up a record of the findings and prescriptions made within 14 days of the inspection and submit it to the Regional Governor and send to the owner of the dam and the facilities to it, to the Chairperson of the State Agency for Metrological and Technical Surveillance and to the Director of the respective Basin Directorate , to take action in accordance with their statutory powers. The protocol shall also be sent to the mayor of the municipality on whose territory the dam and its facilities are located;
 - the protocols for the inspection of the dam walls and the facilities to them shall be prepared according to a model of SAMTS-Sofia and for the other sites the protocols shall be prepared in an accepted form detailing the status and the prescriptions of the participants in the commission according to their competencies.
2. **The state of the systems and facilities for protection against the harmful effects of water, drainage systems, water supply systems and water bodies / opencast mines, quarries for extraction of aggregates etc./** on the territory of the district;
3. **The non-fulfilled instructions of the interdepartmental commission from the previous year**, related to the improvement of the technical condition and the emergency planning of water-saving systems and hydrotechnical facilities and the reasons for their non-fulfillment;
4. **The presence and status of local systems for public disclosure in the immediate threatened settlements**, as well as the procedures for informing when necessary.
5. **The conductivity of the river beds on the territory of the district**. River beds and their condition outside the urbanized areas are within the competence of the Regional Governor and are

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therefore checked by the commission appointed by him. River beds in urban areas are the responsibility of local authorities.

River Tundzha near Srem village – the missing dyke is outside the urbanized area. In the high waters of the Tundzha river near the village of Srem, due to lack of left dike in the area of about 1700 m at coordinates: from the 42,05118o and 026,47346o to 42,94641o and 026,48502o residential and industrial buildings in the village are flooded. The Municipality of Topolovgrad has a request to the Interministerial Reconstruction and Assistance Commission to the Council of Ministers with a copy to the Regional Governor of Haskovo for financing. The Regional governor gave a positive opinion for the financing of the site, given that the lack of the dike leads to the flooding of private homes, farm buildings and agricultural land, causing damage to the population.

IV. ANALYSIS OF FOREST FIRES ON THE TERRITORY OF HASKOVO REGION IN THE PERIOD 2013-2017

For the period on the territory of Haskovo region occurred **132 forest fires**.

Years distribution is presented in the following table:

Year	2013	2014	2015	2016	2017
Number	44	4	20	52	12

In years with longer droughts such as 2013 and 2016, the number of forest fires has been significantly increased. The analysis of the data for the last 20 years in Haskovo region shows that 28 forest fires occur on average per year.

In **months of occurrence**, the fires are distributed as follows:

January	February	March	April	May	June	July	August	Sept	October	November	December
0	1	2	0	0	1	23	50	47	4	2	2

From the data presented above it is evident that there is a **concentration of more than 90% of the fires in the period July-September**, which is also the hottest and driest period of the year. In the remaining months the number is negligible.

By **periods of occurrence** within the day the fires occurred as follows:

Time	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-12	11-12
number	0	0	2	1	1	0	1	1	1	1	7	10

12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	22-22	22-23	23-24
20	20	23	18	12	10	0	1	1	1	0	1

There is a tendency that as the daytime temperature rises, the number of fires occurring increases and their number decreases with the lowering of the daily temperature accordingly. The **most likely hours of occurrence are between 11 a.m. and 6 p.m** - the warmest period of the day, exactly during this period, 85% of forest fires occur. Accordingly, after 6 p.m. and until 10.00 a.m. the number of emerging fires is negligible.

The distribution of forest fires by the **municipalities** in which territory they have occurred is presented in the following table:

Municipality	Haskovo	Dimitrograd	Harmani	Svilengrad	Simeonograd	Stambolovo	Ivaylovgrad	Topolovgrad	Madzharovo	Min. Bani	Lyubimetz
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Number	11	13	36	14	9	9	6	21	5	4	4
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In general, mountainous territory of Sakar Mountain: Topolovgrad, Harmanli and Svilengrad - **71 forest fires in the region - 55%.**

The following table presents the distribution of forest fires for **reasons of occurrence**:

Reasons of occurrence	Nb Fires
Negligence when handling open fire	49
Grass cleaning	31
Unknown	26
By purpose	16
Short circuit	3
Technical malfunction	2
Natural phenomena /thunder/	1
Children playing with fire	1
Fire works	1
Military Shooting	1
Sparks from a passing train	1

The data show that the main reason for the occurrence of forest fires in Haskovo region over the period under review is **human activity**.

Damage caused by forest fires in the period 2013-2017:

Damages	Quantity
Forest massif /coniferous massif/	38627 dka /2974 dka/
Shrubs	108 304 dka
Vineyards	1013 dka
Walnut and almond plantations	1663 dka
Pastures and meadows	3080 dka
Orchards	115 dka
Buildings and shelters	26

Bee hives	132
Tractor	1
Injured citizens	1

In case of fires in the forest massifs, the **damage to the coniferous forests is greatest**, in which they require total clearing of the burned wood and afforestation. In deciduous forests, most of the forest usually recovers itself with the years.

During the period under review Haskovo region has been declared **4 times a state of emergency** due to forest fires - all in 2016:

- **31.07.2016:** A state of emergency in the municipality Madzharovo of the villages: Malki Voden, Borislavtsi, Gorno pole, Gaberovo and Malko Bryagovo;
- **08.03.2016:** A state of emergency in the municipality Haranli for the lands of the village of Cherna mogila;
- **08.20.2016:** A state of emergency in the municipality Harmanli for the villages Izvorovo and Dripchevo;
- **22.08.2016:** A state of emergency in the territory of Harmanli municipality for the lands of the villages of Ostar kamak, Ivanovo, Leshnikovo, Nadezhden and the town of Harmanli - Kazala area “;

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V. ANALYSIS OF FLOODS ON THE TERRITORY OF HASKOVO REGION IN THE PERIOD 2013-2017

1. Floods in Haskovo Region in 2013

On **09.07.2013**, around 3 - 4 p.m. due to heavy rain in the northwestern town of Dimitrovgrad, in the amount of 110l / sq accompanied by hail and strong winds flooded the neighborhoods of Mariynovo, Vulcan and Chernokonevo were flooded. All houses in the streets of: Maritsa, Saedinie, Merichlerska, Baba Tonka, Stoil Voyvoda and Septemvriiski fall into the flood area. Affected 31 houses courtyards, barns, forage, agricultural produce, vegetable gardens, beehives. Drowned pets. Also affected are industrial sites. Damage also occurs on the road surface, as well as deposits left by the water wave. 500 acres are flooded areas with sunflower. In the streets 6400 square meters of asphalt flooring has been destroyed. The destroyed crops is 1500 hectares. The most seriously affected was Maritsa Street in Marinovo, where the water has reached a meter and a half. Saved by the water are 6 people. There are no flood victims.

Cause - the water intake from the water in large quantities for a short time and the inability of the wastewater system to absorb enough rainwater.

2. Floods in Haskovo Region in 2014

During the year, due to heavy rainfall there are 4 flood periods in September, October and December. Local flood on April 24 in the area around the village Vinevo municipality Mineral Baths caused an incident with 4 victims.

6th September

As a result of heavy rainfall on the territory of the region there are floods in the municipalities of Harmanli, Dimitrovgrad, Simeonovgrad, Lyubimets and Svilengrad. In the first three a state of emergency was announced.

Harmanli in a critical situation, the rainfall is 84 liters per square meter. , and the international road through the city is closed because of the flood waters of Olu-dere. Almost all the streets of the city in the lower part are flooded with water. 56 sites are flooded: commercial, manufacturing, residential, hospital, veterinary clinic, government offices, offices, bank branches. Many cars were flooded. Several small dams south of the city are overflowing. There is no critical reach of an elevation overflow of large dams, which would require water leakage.

A state of emergency was declared in **Dimitrovgrad** Municipality. Dimitrovgrad over the municipal center have flowed 60 liters per square meter, and in the villages almost twice more between 110 and 140 liters per square meter, as a recorder is Yabulkovo with 143 l / sq.m. The situation on the Ring Road and in the Warehouse Area is the most serious in the city, Mariinovo, Chernokonevo, East are flooded. In the village of Stransko, the dike was torn off one of the dams near the village. The reason for breaking the dam is a huge tidal wave that has formed from torn dikes of two ponds in Opan Municipality and has invaded the waters of the dam of the village of stransko. The village has no power supply. 23 houses are flooded in the lower part, people refuse to leave them. There were no destroyed houses in the Stransko village itself except two farm buildings. A small dam near Bryast overflowed. Firefighters have evacuated people in the most endangered houses in the village of Stransko. No injuries.

The road to Stara Zagora is under water and the passage of cars is impossible. Cars were not allowed in the direction of Simeonovgrad.

Tons of mud from the swollen river Klokotnitsa flooded the streets of the village Kasnakovo. To river sediments was added the dust of lying above the village fields. A total of 6 houses in Kaznakovo are flooded, agricultural land is destroyed.

The Merichlerska and Martina rivers flew over the road connecting Dimitrovgrad with Brod, Zlato pole and Dolno Belevo. The asphalt was partially destroyed.

In the afternoon, the flood of 300 houses in the Dimitrovo village of Brod was prevented, after the dike of the Martina River between Brode and Zlato Pole was broken. The river overflowed and got out of the riverbed, there was a real danger for the population.

Simeonovgrad – there are flooded houses in the village of Kalugerovo. The bridge over the village of Troyan is flooded and impassable, and the latter is found to be compromised in the foundations. The main roads to Dimitrovgrad and Harmanli are flooded and impassable.

Svilengrad – 32 sites have been flooded: residential, public and industrial buildings. There are no victims of the floods in the Haskovo region.

16-17th September

As a result of heavy rainfall on the 16th and 17th of September in the territory of Mineralni Bani Municipality, the catchment area and the level rise and exit from the bed of the river Banska passing through the villages of Tatarovo and Susam. Farm buildings and infrastructure is under water. Domestic animals have been emitted and vehicles have been flooded.

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There are spills in the Mineral Baths, Bryastovo and Spahievo. The main road to Kardzhali is flooded by a tidal wave. The dam in Spahievo overflows. The situation creates a danger for the population. A state of emergency is announced.

The cause of the flood except the rain is also unclear from the shrubs and trees river bed and unfinished dike.

25th October

After long heavy rainfall the village of Dobrich is flooded in Dimitrovgrad municipality, which is most affected in the area. At places in the municipality 80 l / sq. m is the amount of rainfall. More than 20 houses in the lower part of the village are affected by the water, domestic animals are drowned.

The Banska River has come out of its bed and has flooded hives, fields and gardens in the area. Animals - buffaloes, sheep, hens in different parts of the village were drowned.

The incoming waters have carried two pedestrian bridges in the village and one is heavily damaged.

The water on the road to the village of Chernogorovo in the area of the railway line is flooded by a meter. Local floods occur in Marienovo, Mlada Gvardia quarter, Panorama Road in Dimitrovgrad, Krum village.

In the town of Haskovo a tidal wave on the river of Haskovo floods parts of the city center. The flood is a result of heavy rainfalls on the catchment of the river from the Mineral Baths region and west of the town of Haskovo, where the previous two days have fallen by over 140 liters per sq m of rain.

There is no damage to the infrastructure from the flood in Haskovo, the river bed, the bridges, parking lots and sewerage are strong. 64 sites are flooded along the river, schools, business premises, social facilities, warehouses, a gas station.

In the municipality of Haskovo there are damages on the road to Lyubenovo about 200 meters of asphalt pavement. The bridge to the village, which is the only connection of the village, is further damaged.

Damage is on the way to the village of Rodopi, streets and flooded houses in the villages of Klokotnitsa, Vaglarovo and Garvanovo have been destroyed. The fallen houses in the villages of

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Haskovo municipality are 28. Four people have been evacuated with a rubber boat from the village of Vaglarovo, There are no victims of the flood.

4-5th December

The torrential rains of the 3rd against 4th of December caused a huge catch-up of the rivers in the Haskovo region, which flooded the country and cut off a number of Haskovo villages. The most affected are the villages of Rodopi, Lyubenovo, Bryagovo and Dinevo, whose exits from the international E-80 were under water, and in the villages there are flooded houses. Near Svilengrad Maritsa River has reached its critical level of 5.2 meters. The river springs from Lyubimets, the level is high in Dimitrovgrad and Simeonovgrad. On the territory of Haskovo there are 95 flooded sites distributed by municipalities like this:

- Haskovo municipality - 10 sites
- Dimitrovgrad Municipality - 27 sites
- Svilengrad Municipality - 22 objects
- Harmanli Municipality - 2 sites
- Municipality of Simeonovgrad - 12 sites
- Topolovgrad Municipality - 12 sites
- Municipality of Ivaylovgrad - 6 sites
- Lyubimets Municipality - 4 sites

No threatened and distressed people. There is no state of emergency except Topolovgrad municipality. There are closed roads and settlements without drinking water because of flooded pumping stations. The Captain Andreevo border is closed. There are two critical dams in Dimitrovgrad, which overflow. The road Dimitrovgrad - Simeonovgrad is closed, as the Martina River, which is outside its bed, has taken a rather serious stretch of it. A lot of agricultural land is flooded. There are settlements without electricity. A bridge in the village of Malko Bryagovo is destroyed. Closed roads are in the municipalities of Dimitrovgrad, Simeonovgrad and Madzharovo. The road to Svilengrad via Lyubimets municipality is flooded in several places.

3. Floods in Haskovo Region in 2015

Three waves of heavy rainfall occur during the year, causing floods in February, March and September. The most important ones are for the period **01-18 February** - heavy rainfall on the territory of the region floods roads, sites and agricultural lands on the territory of all municipalities.

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The rivers of Haskovo, Harmanlijska, Sazliyka and other smaller tributaries of Maritsa cause damage:

- Haskovo municipality - 35 sites are flooded, most of them in the village of Dinevo, where people have been evacuated. The roads to Dinevo, Lyubenovo, Stoykovo, Rodopi, the road has been destroyed. The villages of Rodopi, Dinevo, Koren and Bryagovo in Haskovo municipality are without water. for the villages Dinevo, Stoikovo and Rodopi has been declared a state of emergency. No injured people. The dike of the Haskovo river near the village of Stoykovo is also broken, agricultural land is flooded;
- Municipality of Harmanli - 6 sites (commercial sites and petrol stations) are flooded in the city center;
- Topolovgrad Municipality - 21 sites, public, industrial and residential buildings flooded. The mayor of Topolovgrad declared a state of emergency - for the villages of Sinapovo, Srem and Ustrem.;
- Municipality of Simeonovgrad - 8 buildings - residential buildings flooded, Sazliyka River floods the road to the village of Troyan;
- Svilengrad Municipality - 2 sites, Kapitan Andreevo border checkpoint is closed for vehicles. A compromised dike on the Maritsa River overflows the pumping station in the village of Momkovo, which supplies 17 villages with water;
- Lyubimets Municipality - 9 sites are flooded, the road Lyubimets - Svilengrad is flooded;
- Municipality of Ivaylovgrad - 3 sites including the border checkpoint;
- Stambolovo Municipality - 2 sites;
- Dimitrovgrad Municipality - The Maritsa River dike near the village of Yabulkovo is compromised and the river is ruining the coast near the wells that supply Haskovo. The danger is that the river will enter the water sources and pollute it, which happens to part of the wells.

The second wave of heavy islands in the region of Haskovo is in the period **7- 16 March**. Precipitation is more intense in the northern part of the area. There are no rivers out of the troughs, flooded and closed roads, no infrastructure and farmland destroyed. No state of emergency declared. There are no endangered citizens. There are 8 residential buildings affected by the water in Haskovo municipality. In Dimitrovgrad Municipality, 34 residential buildings have

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been affected by the flood, mostly in the villages of Krum, Radievo and Merichleri. Harmanli in the city center - 4 residential buildings and the bus station. In the municipality of Simeonovgrad - 21 houses in the town of Simeonovgrad and the town hall and commercial site in the village of Kalugerovo. 9 residential buildings have been flooded in Topolovgrad. Three residential buildings are flooded in the municipality of Lyubimets.

The third wave of heavy islands in the Haskovo region is in the period **11-12 September**. There are no river spills, flooded and closed roads, no destroyed infrastructure and affected agricultural land. No state of emergency declared. There are no endangered citizens. There are 14 residential buildings and 5 business premises in Haskovo. In the town of Harmanli 5 residential buildings and 2 shops in the city center. In Svilengrad 4 houses and one school.

4. Floods in Haskovo Region in 2016

On the territory of Haskovo region an intense rainfall was created for the period **16-18 January**. In total, 14 residential buildings and 6 business premises have been flooded, with no serious damage. Most are again in the center of Harmanli. Maritsa Motorway is flooded at 66 km. Kapitan Andeevo border checkpoint is flooded, and for several hours the post is closed.

5. Floods in Haskovo Region in 2017

Local intensive rainfall on **26-27 May in the region of Svilengrad and Lyubimets** flooded 6 residential buildings and 6 public buildings / school, community centers, sports hall, commercial sites /. There are no damages. On 30 June local intensive rainfall floods the center of Harmanli. Four residential buildings and a Hypermarket are affected.

6. Conclusions

From the presented data on the floods in the region of Haskovo for the period 2013-2017, it can be seen that for **repeatability in the period of occurrence** one can speak of September /2 in 2014 and 1 in 2015/. /. In August, which is the driest year, there have been no floods. The most significant floods occurred in 2014, with 4 fatalities. Similarly, compared to forest fires, this is the year when they are the minimum, and dependence is inversely proportional. The main **reason** for the floods during the period is **intense rainfall**, which creates a large water runoff on rivers, gullies and low parts of settlements. There is also a **repeatability of places** where floods occur:

- Dimitrovgrad - Mariinovo, Chernokonevo and Vulkan villages Krum, Dobrich and Radievo;

- Haskovo - on the river of Haskovo river, Dinevo village, Vaglarovo. The stops from the main road to the villages of Rodopi, Lyubenovo, Bryagovo and Dinevo; The villages along the river Banska - Susam, Spahievo, Klokotnitsa;
- Harmanli - central city area Svilengrad - mostly the neighborhoods on the right bank of Maritsa, border checkpoints;
- Simeonovgrad - Kalugerovo village and the road to Troyan;
- Topolovgrad - village of Srem;
- Madjarovo - the bridge on the road Malki Voden - Borislavtsi

Declared states of emergency during the period under consideration, in accordance with Article 48 of the Flood Protection Act:

- By Regional Governor - on 11.09. 2014 for the territory of the municipalities of Dimitrovgrad, Harmanli and Simeonovgrad
- By Mayors:
 - Svilengrad – 11.03.2014
 - Dimitrovgrad - on 11.09.2014
 - Simeonovgrad - on 11.09.2014
 - Harmanli - on 11.09.2014
 - Mineral Baths - 17.09.2014
 - Topolovgrad - on 04.12.2014
 - Topolovgrad - on 01.02.2015
 - Haskovo - on 17.01.2016

SOURCES OF INFORMATION

- Directorate General "Fire Safety and Protection of the Population"
- Regional Directorate of Fire Safety and Protection of the Population - Haskovo
- Basin Directorate "East Aegean Region"
- Information system for protected areas of ecological Natura 2000 network, <http://natura2000.moew.government.bg/>