

ECONOMIC AND ENVIRONMENTAL CHALLENGES TO BULGARIAN FORESTS

In recent years, global climate change has a particular place on the agenda of society. These changes are related to a number of natural disasters - droughts, fires, floods, hailstorms, hurricane winds, landslides, etc. Exploded globally, these problems pose serious environmental, economic and social problems to mankind. Undoubtedly, one of the reasons for part of these regional problems is the loss of forest land. The present study aims to reveal some of the reasons for the loss of part of the Bulgarian forest and the problems that this loss predicts. Particular attention is paid to the shortcomings in the Bulgarian legislation, which help the felling, arson and eradication of part of the forest massifs. The lack of an overall economic assessment of forests creates additional negative consequences. The scarcity of the environmental benefits of forests leads to their destruction in key places with severe social consequences.

JEL: D04; O1; Q5; E7; L51

Introduction

The main problems of the Bulgarian forests can be systematized as – fires, illegal logging, extraction and exporting of timber. Diseases, pests, climate change also undoubtedly influence the Bulgarian forests, but the purpose of the present study is to be limited mainly to the human factor, the economic interest and the short-sighted policy of the Bulgarian political elite. Looking for profit at all costs is the basis of many of the problems of the Bulgarian forests. Particularly important is whether and to what extent the laws are adequate to solve the problems.

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1. Forest fires

One of the main factors for the loss of forest land, farm buildings, housing, wildlife fund and sometimes human casualties are forest fires. It is quite difficult to determine the causes of these fires, especially when they are deliberate and are caused by certain economic interests. Therefore, any statistics can be accepted as conditional. According to official data, forest fires have burned hundreds of thousands of ha in the past 10 years. It is a critical year for 2007 with 1479 fires with 429 99,0 ha of forest area affected, while in 2017 there are 513 affected with 45 69,4 ha of forest.

Table 1

Forest fires

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Registered forest fires (number)	1479	582	314	222	635	875	408	151	429	583	513
Affected forest territories in general (ha)	42999.0	5289.2	2276.4		6882.6		3313.9	916.0	4312.8	6338.9	4569.4
Out of them high fires (ha)	7033.5	654.6	83.2		498.5		486.6		166.7	715.6	989.0

Sources: *Annual Reports of the Executive Forest Agency 2006-2017*

<http://www.iag.bg/docs/lang/1/cat/4/index>

The largest share of the burnt areas in 2017 is state property – 70%, municipal – 13%, private – 15%, and 2% are owned by legal entities. According to official data from the 513 fires that occurred in 2017, 3% are natural causes of lightning, 6% are deliberate, 78% are caused by human negligence, and 13% are for unknown reasons (Gogov, 2017, p.14). It is likely that intentional fires here are lowered at the expense of those of negligence and unknown causes. An in-depth analysis of who buys and where it sells the burnt wood and whether there is a change in the designation of certain forest areas could give some answers.

The direct damage from the forest fires in 2017 is estimated at almost 4 mln BGN, which is below the average of about 5 mln levs for the last 10 years. The rating is actually very low. This amount does not include the costs necessary to restore the forest fires that have been burned in the next three years by state-owned enterprises and other forest owners. These financial indicators do not include the costs of Ministry of Interior, Ministry of Defense, district administrations, municipalities, volunteers and other owners of forest areas for fire suppression. And what is most important – does not include damage to nature, flora and fauna, and long-term damage to the ecosystem (Gogov, 2017, p. 15).

In 2017, in connection with the implementation of the National Strategy for Development of the Forestry Sector in the Republic of Bulgaria for the period 2013-2020 and of the

Strategic Plan for Development of the Forest Sector in the Republic of Bulgaria 2014-2023, developed and approved.³

"Practically forest fires can occur anywhere. Especially dangerous is the summer season, when hundreds of tourists make excursions to the countryside. Potentially endangered are all Bulgarian mountains during periods of prolonged drought. However, fires can occur not only in the mountains. Annually, authorities warn farmers to take measures in the heat of outdoor work. A serious fire hazard occurs during harvesting in the regions of Dobroudja, the Danube Plain, Thrace, Sofia Field, etc. where large distances and the lack of sufficient quantities of water nearby hamper the rapid response to fire suppression" (Bourlando, et al., 2016, p. 23).

"Some of the factors contributing to fires are the abandonment of farmland (which increases the size of areas with natural and uncontrolled vegetation) and the disappearance of traditional use of forests by rural communities that have in the past harvested wood, herbs or resins. Another factor that deserves to be noted is the climate and its impact on the number of fires. The statistics match for years of severe drought and years of torrential rains. From the point of view of the affected areas (burned land), the state and the landscape of the forests influence. Most fires nowadays are caused by people." (Bourlando, et al., 2016, p. 28).

"From the point of view of prevention, technology has many applications for preventing and timely detection of forest fires. National Park for example, Devesa (Spain) has an automatic fire detection system designed to identify and locate fires at an early stage.

The system, which started in 2002 and operates continuously, is called DISTER (locating fires using heat sensors). It was developed by the Polytechnic University of Valencia in cooperation with the fire department of the Valencian City Council" (Bourlando, et al., 2016, p. 31).

"It is important to recognize the fact that while old firefighting tactics remain effective, tactics and fire prevention strategies have changed. We can no longer afford to invest all our resources in personnel, equipment and fire-fighting strategies. "Reactive" firefighting programs should develop into "proactive" fire management programs that effectively apply techniques to prevent fires and reduce the amount of hazardous fuels. The goal is only to reduce the number of unwanted incendiaries, but also to minimize the damage and hazards to which the staff is exposed." (Bourlando, et al., 2016, p. 35).

Unfortunately, innovative practices in fire prevention and detection at an early stage are poorly addressed in Bulgaria. The localization and elimination of fire outbreaks at this stage ensure the minimization of losses and the saving of huge resources. In this respect, large-scale thermal cameras and thermosensors could be used as part of a uniform early warning system, the deployment of old military equipment in risky areas, which could be retrofitted for blasting and firefighting. Such a proposal was given by one of the authors in 2006 in the Bulgarian Parliament, but unfortunately, it received no support. Much of the tanks and

³ "Forest Fire Protection Program" with a period of operation until 2023. "The program is published on the website of the Bulgarian Academy of Sciences in the section" Projects / Programs / Strategies "under the section" Documents "(<http://www.iag.bg/docs/lang/1/cat/5/index>).

armored machines were cut and handed over to scrap. The use of satellites to cover, particularly critical areas, would also be realistic and particularly effective. Unfortunately, the Bulgarian state does not take real action in this direction, even though such an investment would save a huge amount of money. Especially critical is the situation with regard to fire-fighting aircraft – helicopters and airplanes. At present, Bulgaria has no such instrument that borders on a crime. Instead, however, several Bulgarian governments and parliamentary majorities find money for new government aircraft or the purchase of several military aircraft worth nearly 1.5 billion euros. The availability of fire-fighting aircraft is perhaps the most effective way to counteract forest fires as they operate in difficult-to-reach and intersected terrain, and the speed at which they can respond guarantees the extinguishing of fires before they develop a wide front and encompass huge areas. Underestimating and neglecting the need for firefighting equipment by the Bulgarian political elite is one of the major crimes against the Bulgarian forest.

2. Legal issues

The lack of adequate legislation, the neglect by the politicians of the opinion of the foresters – specialists and their professional community lead to severe consequences for the Bulgarian forest. For example, several specific legislative decisions could help to reduce intentional fires. The introduction of strict state control over the exploitation of burned timber, a ban on changing the use of forest areas affected by fires for at least 20-25 years, a drastic increase in sanctions in the Penal Code for intentional burning. For example, Cyprus has introduced up to 20 years in prison and a fine of 50,000 euros for arson perpetrators and deliberately caused forest fires.

A major problem is the fact that state-owned forest enterprises are registered under the Commercial Act but do not represent commercial companies. They can not go bankrupt because they protect the public interest in forests. The mistake so far has been that their top priority was to maximize their profits, which is not difficult with the resources they have (Dimitrova, 2017).

It was wrongly believed that this was in the interest of the state. This philosophy will be changed. In the interest of the state, it will no longer be possible to achieve maximum profit, but to keep the forest fund in optimal condition. Otherwise, state forest enterprises will continue to turn the forestry into logging.

Another important problem is whether the control of the Bulgarian forests is effective enough and the offenders are actually punished. According to the WWF international nature conservation organization, Al-Dunchev comments that illegal logging in Bulgaria is between 10 and 25%. If that is true, illegal logging forms a shady business for nearly 50 million euros.⁴ In fact, if the legal or semi-illegal harvesting is combined, the utilization of fire-burned (often intentional) wood, the figure is many times larger.

⁴ Illegal logging in Bulgaria is between 10% and 25% of ... https://novini247.com/novini/nezakonniyat-darvodobiv-v-balgariya-e-mejdu-10-i-25-ot_67716.html.

Direct control in the country is carried out by 407 forest inspectors in RDF. In 2017 a total of 19 995 violations of forest legislation were found. In the forest territories – state property, with acts and founding protocols a total of 8479 violations were found, in municipal property – 508, in private ownership – 5305 violations. Under the Forestry Act, 13 637 acts were drawn up. How do criminal procedures work and how many offenders are actually punished? 11,117 punitive decrees were issued, 412 cases were canceled by the directors of the regional forest directorates. 2985 files were sent to the Prosecutor's Office, of which 758 were without a decision, 1989 were returned for administrative proceedings, and 238 were initiated for criminal proceedings. Put directly – out of 2985 files sent to the prosecutor's office, only 238 criminal proceedings were instituted. Taking into account the practice of the Bulgarian court, it is likely that the vast majority of these 238 criminal proceedings have resulted in acquittals. This, in essence, means a denial of justice to the perpetrators of such acts. Penalties and penalties imposed by penal sanctions (PA) amount to a total of BGN 1,794,883, with the punitive decrease in force at the amount of BGN 1,161,293. BGN 165,786 were collected from the enforced punitive decrees, which represents only 14% collection (Gogov, 2017). This low collectability largely explains the infidelity and the sense of impunity of the offenders with respect to the Bulgarian forest.

In order to form an objective attitude towards the forests and the legislation that is in their defense, the creation of conditions for economic and ecological evaluation of the benefits they provide, but also the influence of the social aspects in their realization, comes to the fore. More and more in the specialized literature is the term ecosystem benefits of forests. That is why their knowledge and ecological and economic assessment is an important factor for the forestry legislative activity.

3. Aspects of the forest ecosystem

Forests protect us from climate change by swallowing large amounts of CO₂ from the atmosphere and storing it in the trees, vegetation and soil. Over 40% (1.77 million square kilometers) of the EU's land territory is occupied by forests. Unlike many other parts of the world, forest cover in the EU is increasing – by 0.4% per year. Forest habitats are almost 20% (over 14 million hectares) of the Natura 2000 network. European forests are facing the challenge of climate change, so they need to be managed appropriately. Most forestry laws are determined by EU countries alone. However, the Union is an active participant in international forest talks around the world. Deforestation and degradation of forests in developing countries account for about one-sixth of the world's CO₂ emissions (European Commission).

There is no single term in the specialized literature, and scientists prefer the use of the term environmental service in some of their publications. Recently, the term “environmental benefit” has also begun. This is also reflected in Forest Law The need for accurate terminology is important for legislative work in this area. Ecosystem benefits (services) are an integral part of natural renewal capital. They enter into the content of natural capital in the sense of a natural fact that provides economic value. Ecosystem benefits (services) are the benefits, direct or indirect, that people receive from the functioning of ecosystems.

4. Natural capital

Natural capital, these are all stocks of natural assets, the soil, forests, the planet's water resources, the species, the landscapes, the wetlands formed over the millennia. The created assimilation abilities of nature are another reason to be included by some authors as natural capital, as well as the effects of biochemical cycles and energy flows. The characteristic of appreciation is the tendency to give a price to everything produced by man and to have almost no value given by nature. The purpose of evaluating is to create conditions for preserving non-renewable capital and developing the renewable (such as forests), which is a good basis for the balance of nature in the direction of sustainable development. The correct definition of "Natural Capital" is that part of the natural resources that is actually involved in economic turnover. It is an economic asset in the process of public reproduction (which allows it to be assessed) and can participate in the legislative process as a terminology.

For economists exploring national wealth, natural capital is the natural resource that is involved in economic turnover and brings income to its owner. Natural capital, which is determined by the value of inventories of renewable and non-renewable resources such as farmland, pastures, productive forests, more natural products, forest areas, protected areas, oil, coal, natural gas, metals and precious minerals. Old traditional indicators of the value of natural resources in the second half of the last century are usually based on direct pricing parameters of the individual components of the raw material flows involved in the production of consumer goods and services. Not always important environmental and life-sustaining functions of natural systems are always taken into account, the existence of which is, in fact, a necessary condition and opportunity for production processes.

Traditional methods for measuring the value of products and services based on market assessments of only processed raw materials directly engaged in business turnover. In addition, the total does not include the cost of maintaining national parks, nature reserves and other protected areas, as well as the variety of local recreational resources needed to organize complete recreation of the local population and profitable international tourism. The debate on valuation depends on the understanding of the benefits and costs of assessing the different options. In a very broad sense, valuation techniques provide a set of tools that help people compare the benefits and costs associated with the different options.

The predominant patterns of production, consumption and distribution become extremely irrational.⁵ Human activity, as well as evidence of excessive and sometimes reckless exploitation of natural resources, leads to the loss of important habitats and biodiversity. Contamination of soil, seas and the atmosphere are becoming more and more obvious. Thanks to scientific explanations, there is a clear picture of what enormous economic, social and environmental issues are related to threats such as climate change and the loss of important ecosystem benefits (services) stemming from the fact that humanity is approaching the so-called "planetary boundaries" or have already been crossed in terms of the environmental footprint of a number of developed countries around the world.⁶

⁵ 2011, Goals and Conferences, Conferences Organizations Nationals on Sustainable Development, see A / CONF.216 / PC / 7.

⁶ Intergovernmental Panel on Climate Change, 2013, Rockstrom and others, 2009.

Figure 1



Sources: Gore, A., *The Inconvenient Truth*, 2006 Schafer, K., *National Geographic* (14).

The concept of ecosystem services is a relatively new element in environmental and forestry experiences. It is documented by the Millennium Ecosystem Assessment (MEA, 2005), the speed at which ecosystems change as a direct or indirect consequence of human activity, and is unprecedented.

The Millennium Ecosystem Assessment (MEA, 2005) distinguishes between the following four types of ecosystem services: provision of services such as food, water, timber and fibers; regulatory services, such as flood regulation, drought, land degradation, diseases and others; supporting services such as soil formation and nutrient circulation; cultural services such as recreational, spiritual, religious; non-pecuniary benefits.

The Millennium Ecosystem Assessment was conducted between 2001 and 2005 under the auspices of the United Nations. The aim is for nations to assess the impact of human ecosystem changes on human well-being and to establish the scientific basis for actions needed to improve the conservation and sustainable use of ecosystems and their contribution to human well-being.

6. Conclusion

The lack of interest and the lack of political will to solve the problems of the Bulgarian forest - fires and fires, illegal logging, the lack of adequate penal policy towards offenders, the lack of listening by the political elite to the established specialists leads to serious negative consequences – deforestation, erosion processes, problems with water resources, flora and fauna. Especially scandalous is the unwillingness of Bulgarian politicians to pay attention to the creation and development of fire aviation, one of the most effective means of combating forest fires. The reluctance to invest funds in this direction, as well as a

modern and effective early warning system, including thermosensors, satellites and terrestrial specialized equipment, is perplexing against the backdrop of enormous and often unjustified costs in terms of public interest. For example, for party subsidies, more than EUR 250 million have been spent in recent years, for projects to purchase combat aircraft – about EUR 1 billion for the purchase of armored infantry – over EUR 700 million for a new multi-purpose warship – 500 million dollars euro. The latest military projects have been voted by the National Assembly literally in recent months. The lack of adequate legislative measures against those who cause severe damage to the Bulgarian forest is particularly perplexed. It is unclear the fact that the direct control over the forests of Bulgaria is carried out by only 417 employees. It is hardly a problem for the Bulgarian state to double or triple their composition, to improve their working conditions and, more importantly, to guarantee their inviolability by the frequent harassment of poachers. It is scandalously quoted above that a total of 11,217 penalties were issued in 2017 and only 238 criminal proceedings were instituted. This, in essence, means a denial of justice for the perpetrators of such acts and stimulates the encroachments on the Bulgarian forest. The long-term environmental and economic consequences of such a policy would be extremely severe. Examples of climate change and the transformation of forest massifs into deserts are numerous – Afghanistan, North Africa, and so on. It is therefore necessary to change the overall state strategy regarding the Bulgarian forest. An issue that is directly related to political will and political representation.

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